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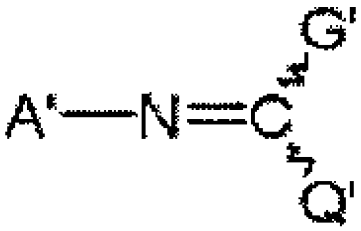
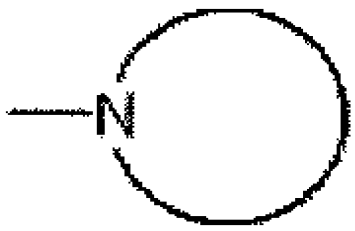
(57) Resumo: HERBICIDA, E, COMPOSTOS DE AMIDINA. São descritos compostos de amidina inéditos que podem ser ingredientes ativos em herbicidas que são confiavelmente eficazes em uma dose menor e altamente seguros, e herbicidas contendo estes compostos como ingredientes ativos. Compostos de amidina representados pela fórmula (1') e herbicidas contendo pelo menos um tipo destes compostos como ingredientes ativos, em que G é um grupo heterocíclico contendo nitrogênio opcionalmente substituído representado pela fórmula (2') com a condição de que o número de carbonos que constituem o heterociclo contendo nitrogênio do grupo heterocíclico contendo nitrogênio seja 10 ou menos e que anel indazol 2H seja excluído; Q' representa ciano ou similares; e A' representa fenila substituído ou similares.





"HERBICIDA, E, COMPOSTOS DE AMIDINA"

[Campo Da Invenção]

A presente invenção diz respeito a compostos inéditos de amidina e herbicidas que contêm estes compostos.

É reivindicada prioridade para os pedidos de patente japoneses No. 2005-224452 e 2006-128341, depositados em 2 de agosto de 2005 e 2 de maio de 2006, respectivamente, cujo conteúdo está aqui incorporado pela referência.

[Fundamentos Da Invenção]

Muitos herbicidas são usados para controle de erva daninha, que exigiu trabalho intensivo no passado no cultivo de lavouras de campos e jardins. Entretanto, o desenvolvimento de drogas que são confiavelmente efetivas em uma dose menor e que também podem ser usadas seguramente é desejado, em virtude da ocorrência de danos químicos aos plantios, persistência ambiental das drogas e poluição ambiental causada pelas drogas.

Com relação à presente invenção, o documento não patente 1 descreve o método de produção de N-aril-N'alquilcianoformamidina similar aos compostos da presente invenção. Entretanto, este documento não descreve que N-aril-N'alquilcianoformamidina tem atividade herbicida. [documento não patente 1] J. Org. Chem., Vol. 58, 7001 (1993)

[Descrição Da Invenção]

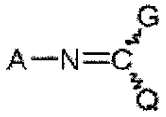
[Problemas a ser resolvidos pela invenção]

Um objetivo da presente invenção é fornecer compostos inéditos de amidina que podem ser ingredientes ativos de herbicidas que são confiavelmente efetivos quando usados em uma baixa dose e são altamente seguros, e fornecer herbicidas que contêm estes compostos como ingredientes ativos.

[Meios para Resolver o Problema]

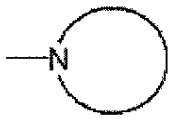
Em decorrência de pesquisa intensiva para resolver o problema

mencionado anteriormente, os presentes inventores descreveram que compostos de amidina representados pela fórmula a seguir (1) têm uma excelente atividade herbicida para completar a presente invenção. Em outras palavras, a presente invenção primeiramente fornece herbicidas caracterizados por conter pelo menos um tipo de composto de amidina representados pela fórmula (1).



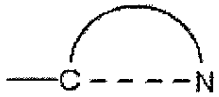
(1)

Na fórmula, G é um grupo heterocíclico contendo nitrogênio opcionalmente substituído representado pela fórmula (2).



(2)

Q representa ciano, iminoalquila opcionalmente substituído, amida opcionalmente substituído, tioamida opcionalmente substituído, ou um grupo heterocíclico contendo nitrogênio opcionalmente substituído representado pela fórmula (3).



(3)

(Na fórmula, uma linha pontilhada representa uma ligação simples ou dupla que conecta átomos de carbono e nitrogênio), e

A representa um grupo aromático opcionalmente substituído.

Nos herbicidas da presente invenção, a fórmula (2) na fórmula (1) é preferivelmente um grupo heterocíclico contendo nitrogênio que é grupo de 3 a 8 membros, saturado ou insaturado, e opcionalmente substituído e mais preferivelmente um grupo azetidina-1-ila opcionalmente substituído ou um pirrolidina-1-ila opcionalmente substituído.

Nos herbicidas da presente invenção, na fórmula (1), A é preferivelmente um composto tendo um grupo hidrocarboneto aromático

opcionalmente substituído, e mais preferivelmente um composto tendo um grupo representado pela fórmula (4).



(4)

Na fórmula, X representa halogênio, alquila C_{1-6} opcionalmente substituído, alquenila C_{2-6} opcionalmente substituído, alquinila C_{2-6} opcionalmente substituído, arila opcionalmente substituído, alquil C_{1-6} carbonila opcionalmente substituído, alquenil C_{2-6} carbonila opcionalmente substituído, alquinil C_{2-6} carbonila opcionalmente substituído, aril carbonila opcionalmente substituído, alquiltiocarbonila C_{1-6} opcionalmente substituído, alqueniltiocarbonila C_{2-6} opcionalmente substituído, alquiniltiocarbonila C_{2-6} opcionalmente substituído, ariltiocarbonila C_{2-6} opcionalmente substituído, ciano, substituinte representado por X^{11}, amino opcionalmente substituído, nitro, hidroxila, alcóxi C_{1-6} opcionalmente substituído, alquenilóxi C_{2-6} opcionalmente substituído, alquinilóxi C_{2-6} opcionalmente substituído, arilóxi opcionalmente substituído, heteroilóxi opcionalmente substituído, mercapto, alquiltio C_{1-6} opcionalmente substituído, alqueniltio C_{2-6} opcionalmente substituído, alquiniltio C_{2-6} opcionalmente substituído, ariltio opcionalmente substituído, heteroiltio opcionalmente substituído, alquilsulfinila opcionalmente substituído, arilsulfinila opcionalmente substituído, alquilsulfonila opcionalmente substituído, arilsulfonila opcionalmente substituído, ou heterociclo opcionalmente substituído.

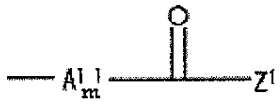
Além disso, substituintes que estão em posições de maneira tal que eles possam ser ligados uns aos outros podem se ligar para formar anéis.

Aqui, o número de carbonos presente substituintes mencionados anteriormente com a frase "opcionalmente substituído" (isto é, alquila C_{1-6}, alquenila C_{2-6}, alquinila C_{2-6}, alquilcarbonila C_{1-6}, alquenilcarbonila C_{2-6}, alquinilcarbonila C_{2-6}, alquiltiocarbonila C_{1-6}, alquenilqiocarbonila C_{2-6}, alquiniltiocarbonila C_{2-6}, alcóxi C_{1-6}, alquenilóxi C_{2-}

$_6$, alquiniloxi C_{2-6}, alquiltio C_{1-6}, alqueniltio C_{2-6} e alquiniltio C_{2-6}) refere-se ao número de carbonos presente nos grupos sem nenhum substituinte (isto é alquila, alquenila, alquinila, alquilcarbonila, alquenilcarbonila, alquinilcarbonila, alquiltiocarbonila, alqueniltiocarbonila, alquiniltiocarbonila, alcóxi, alqueniloxi, alquiniloxi, alquiltio, alqueniltio, e alquiniltio). Daqui em diante, o mesmo se aplica.

n é um número inteiro de 0 a 5. Quando n é 2 ou mais, cada X pode ser o mesmo ou diferente um do outro.

X^{11} é um substituinte representado por uma fórmula (5).



(5)

em que m^1 representa um número inteiro de 0 a 3; A^1 representa um átomo selecionado de carbono, nitrogênio, oxigênio, e enxofre, e que pode ser oxidado em uma faixa quimicamente aceitável e que pode ser substituído; quando m^1 é 2 ou mais, cada A^1 pode ser o mesmo ou diferente um do outro e combinações de cada A^1 estão em uma faixa quimicamente aceitável e todos A^1 podem, em uma faixa quimicamente aceitável de multiplicidade, se ligar uns aos outros.

Quando A^1 é carbono e um ou mais A^1 é substituído por dois ou mais substituintes, os substituintes que estão em uma relação de posição que pode ser ligada podem ser ligar para formar um anel.

Z^1 representa um grupo representado por $-OR^{11}$ ou $NR^{12}R^{13}$,

R^{11} representa hidrogênio, alquila C_{1-6} opcionalmente substituído, alquenila C_{2-6} opcionalmente substituído, alquinila C_{2-6} opcionalmente substituído, arila opcionalmente substituído, heterociclo opcionalmente substituído, ou um grupo representado por X^{12}.

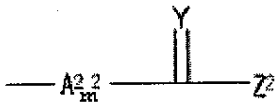
R^{12} e R^{13} cada um independentemente representa hidrogênio, alquila C_{1-6} opcionalmente substituído, alquenila C_{2-6} opcionalmente

substituído, alquinila C_{2-6} opcionalmente substituído, arila opcionalmente substituído, heterociclo opcionalmente substituído, um grupo representado por X^{12}, hidroxila, alcóxi C_{1-6} opcionalmente substituído, alquenilóxi C_{2-6} opcionalmente substituído, alquinilóxi C_{2-6} opcionalmente substituído, arilóxi opcionalmente substituído, alquilsulfinila opcionalmente substituído, arilsulfinila opcionalmente substituído, alquilsulfonila opcionalmente substituído, arila opcionalmente substituído sulfonila, ou amino opcionalmente substituído.

Além disso, estes grupos podem formar ligações covalentes ou, em uma faixa quimicamente aceitável, podem formar ligações iônicas.

Além do mais, R^{12} e R^{13} podem ser ligar para formar um anel.

X^{12} é um substituinte representado pela fórmula (6).



(6)

[Na fórmula, m^2 é um número inteiro de 1 a 3, A^2 representa carbono opcionalmente substituído e pode ser substituído em uma faixa quimicamente aceitável. Quando m^2 é 2 ou mais, cada A^2 pode se ligar um ao outro em uma faixa quimicamente aceitável de multiplicidade.

Quando um ou mais A^2 é substituído por dois ou mais substituintes, os substituintes que estão em uma relação de posição que pode ser ligada podem ser ligar para formar um anel.

Y representa oxigênio ou nitrogênio opcionalmente substituído.

Z^2 é um grupo representado por $-OR^{21}$ ou $-NR^{22}R^{23}$ quando Y é oxigênio e Z^2 representa hidrogênio ou alquila C_{1-6} opcionalmente substituído quando Y é nitrogênio.

R^{21} representa hidrogênio, alquila C_{1-6} opcionalmente substituído, alquenila C_{2-6} opcionalmente substituído, alquinila C_{2-6} opcionalmente substituído, arila opcionalmente substituído, heterociclo

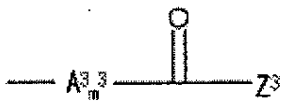
opcionalmente substituído, ou um grupo representado por X^{13}.

R^{22} e R^{23} cada um independentemente representa hidrogênio, alquila C_{1-6} opcionalmente substituído, alquenila C_{2-6} opcionalmente substituído, alquinila C_{2-6} opcionalmente substituído, arila opcionalmente substituído, heterociclo opcionalmente substituído, um grupo representado por X^{13}, alcóxi C_{1-6} opcionalmente substituído, alquenilóxi C_{2-6} opcionalmente substituído, alquinilóxi C_{2-6} opcionalmente substituído, arilóxi opcionalmente substituído, alquilsulfinila opcionalmente substituído, arilsulfinila opcionalmente substituído, alquilsulfonila opcionalmente substituído, ou arilsulfonila opcionalmente substituído.

Além disso, estes grupos podem formar ligações covalentes ou, em uma faixa quimicamente aceitável, podem formar ligações iônicas.

Além do mais, R^{22} e R^{23} podem ser ligar para formar um anel quando nenhum for hidrogênio.

X^{13} é um substituinte representado pela fórmula (7).



(7)

(Na fórmula, m^3 é um número inteiro de 1 a 3, A^3 representa carbono opcionalmente substituído e pode ser substituído em uma faixa quimicamente aceitável. Quando m^3 é 2 ou mais, cada A^3 pode se ligar um ao outro em uma faixa quimicamente aceitável de multiplicidade.

Quando um ou mais A^3 é substituído por dois ou mais substituintes, os substituintes que estão em uma relação de posição que pode ser ligada podem ser ligar para formar um anel.

Z^3 é um grupo representado por $-OR^{31}$ ou $-NR^{32}R^{33}$.

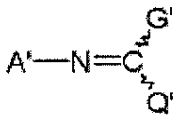
R^{31} representa hidrogênio, alquila C_{1-6} opcionalmente substituído, alquenila C_{2-6} opcionalmente substituído, alquinila C_{2-6} opcionalmente substituído, arila opcionalmente substituído, ou heterociclo opcionalmente substituído.

R^{32} e R^{33} cada um independentemente representa hidrogênio, alquila C_{1-6} opcionalmente substituído, alquenila C_{2-6} opcionalmente substituído, alquinila C_{2-6} opcionalmente substituído, arila opcionalmente substituído, heterociclo opcionalmente substituído, alcóxi C_{2-6} opcionalmente substituído, alqueniloxi C_{2-6} opcionalmente substituído, alquiniloxi C_{2-6} opcionalmente substituído, ariloxi opcionalmente substituído, alquilsulfinila opcionalmente substituído, arilsulfinila opcionalmente substituído, alquilsulfonila opcionalmente substituído, ou arilsulfonila opcionalmente substituído.

Além disso, estes grupos podem formar ligações covalentes ou, em uma faixa quimicamente aceitável, podem formar ligações iônicas.

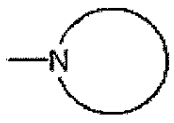
Além do mais, R^{32} e R^{33} podem ser ligar para formar um anel quando nenhum for hidrogênio.

Em segundo lugar, a presente invenção fornece compostos de amidina representados pela fórmula (1').



(1')

Na fórmula, G' representa um grupo heterocíclico contendo nitrogênio opcionalmente substituído representado pela fórmula (2')



(2')

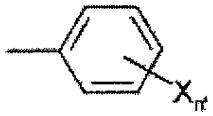
com a condição de que o número de carbonos que constituem o heterociclo contendo nitrogênio do grupo heterocíclico contendo nitrogênio seja 10 ou menos e que anel indazol 2H seja excluído.

Q' representa grupo ciano, iminoalquila opcionalmente substituído, amida opcionalmente substituído, tioamida opcionalmente substituído, ou anel de 5 membros opcionalmente substituído e condensado representados pela fórmula (3').



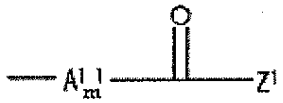
(3')

A' é um grupo representado pela fórmula (4').



(4')

[Na fórmula, X representa halogênio, alquila C_{1-6} opcionalmente substituído, alquenila C_{2-6} opcionalmente substituído, alquinila C_{2-6} opcionalmente substituído, arila opcionalmente substituído, alquil C_{1-6} carbonila opcionalmente substituído, alquenil C_{2-6} carbonila opcionalmente substituído, alquinil C_{2-6} carbonila opcionalmente substituído, aril carbonila opcionalmente substituído, alquiltiocarbonila C_{1-6} opcionalmente substituído, alqueniltiocarbonila C_{2-6} opcionalmente substituído, alquiltiocarbonila C_{2-6} opcionalmente substituído, ariltiocarbonila C_{2-6} opcionalmente substituído, ciano, substituinte representado por X^{11}, amino opcionalmente substituído, nitro, hidroxila, alcóxi C_{1-6} opcionalmente substituído, alqueniloxi C_{2-6} opcionalmente substituído, alquiniloxi C_{2-6} opcionalmente substituído, ariloxi opcionalmente substituído, heteroiloxi opcionalmente substituído, mercapto, alquiltio C_{1-6} opcionalmente substituído, alqueniltio C_{2-6} opcionalmente substituído, alquiniltio C_{2-6} opcionalmente substituído, ariltio opcionalmente substituído, heteroiltio opcionalmente substituído, alquilsulfinila opcionalmente substituído, arilsulfinila opcionalmente substituído, alquilsulfonila opcionalmente substituído, arila opcionalmente substituído sulfonila, ou um grupo heterocíclico opcionalmente substituído. Além disso, substituintes que estão em posições de maneira tal que eles possam ser ligados uns aos outros podem se ligar para formar anéis. n' é um número inteiro de 2 a 5. Cada X pode ser o mesmo ou diferente um do outro. X^{11} é um substituinte representado pela fórmula (5).



(5)

Na fórmula, m^1 representa um número inteiro de 0 a 3; A^1 representa um átomo selecionado de carbono, nitrogênio, oxigênio, e enxofre, e que pode ser oxidado em uma faixa quimicamente aceitável e que pode ser substituído; quando m^1 é 2 ou mais, cada A^1 pode ser o mesmo ou diferente um do outro e combinações de cada A^1 estão em uma faixa quimicamente aceitável e cada A^1 pode, em uma faixa quimicamente aceitável de multiplicidade, se ligar um ao outro.

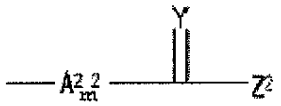
Quando A^1 é carbono e um ou mais A^1 é substituído por dois ou mais substituintes, os substituintes que estão em uma relação de posição que pode ser ligada podem ser ligar para formar um anel.

Z^1 representa um grupo representado por $-OR^{11}$ ou $-NR^{12}R^{13}$.

R^{11} representa hidrogênio, alquila C_{1-6} opcionalmente substituído, alquenila C_{2-6} opcionalmente substituído, alquinila C_{2-6} opcionalmente substituído, arila opcionalmente substituído, heterociclo opcionalmente substituído, ou um grupo representado por X^{12}.

R^{12} e R^{13} cada um independentemente representa hidrogênio, alquila C_{1-6} opcionalmente substituído, alquenila C_{2-6} opcionalmente substituído, alquinila C_{2-6} opcionalmente substituído, arila opcionalmente substituído, heterociclo opcionalmente substituído, um grupo representado por X^{12}, hidroxila, alcóxi C_{1-6} opcionalmente substituído, alqueniloxi C_{2-6} opcionalmente substituído, alquiniloxi C_{2-6} opcionalmente substituído, ariloxi opcionalmente substituído, alquilsulfinila opcionalmente substituído, arilsulfinila opcionalmente substituído, alquilsulfonila opcionalmente substituído, arila opcionalmente substituído sulfonila, ou amino opcionalmente substituído. Além disso, R^{12} e R^{13} podem ser ligar para formar um anel.

X^{12} é um substituinte representado pela fórmula (6).



(6)

Na fórmula, m^2 é um número inteiro de 1 a 3, A^2 representa carbono opcionalmente substituído e pode ser substituído em uma faixa quimicamente aceitável. Quando m^2 é 2 ou mais, cada A^2 pode se ligar um ao outro em uma faixa quimicamente aceitável de multiplicidade. Quando um ou mais A^2 é substituído por dois ou mais substituintes, os substituintes que estão em uma relação de posição que pode ser ligada podem ser ligar para formar um anel.

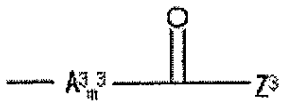
Y representa oxigênio ou nitrogênio opcionalmente substituído.

Z^2 é um grupo representado por $-OR^{21}$ ou $-NR^{22}R^{23}$ quando Y é oxigênio e Z^2 representa hidrogênio ou alquila C_{1-6} opcionalmente substituído quando Y é nitrogênio.

R^{21} representa hidrogênio, alquila C_{1-6} opcionalmente substituído, alquenila C_{2-6} opcionalmente substituído, alquinila C_{2-6} opcionalmente substituído, arila opcionalmente substituído, heterociclo opcionalmente substituído, ou um grupo representado por X^{13}.

R^{22} e R^{23} cada um independentemente representam hidrogênio, alquila C_{1-6} opcionalmente substituído, alquenila C_{2-6} opcionalmente substituído, alquinila C_{2-6} opcionalmente substituído, arila opcionalmente substituído, heterociclo opcionalmente substituído, um grupo representado por X^{13}, alcóxi C_{1-6} opcionalmente substituído, alquenilóxi C_{2-6} opcionalmente substituído, alquinilóxi C_{2-6} opcionalmente substituído, arilóxi opcionalmente substituído, alquilsulfinila opcionalmente substituído, arilsulfinila opcionalmente substituído, alquilsulfonila opcionalmente substituído, ou arilsulfonila opcionalmente substituído. Além disso, R^{22} e R^{23} podem ser ligar para formar um anel quando nenhum for hidrogênio.

X^{13} é um substituinte representado pela fórmula (7).



(7)

Na fórmula, m^3 é um número inteiro de 1 a 3, A^3 representa carbono opcionalmente substituído e pode ser substituído em uma faixa quimicamente aceitável. Quando m^3 é 2 ou mais, cada A^3 pode se ligar um ao outro em uma faixa quimicamente aceitável de multiplicidade.

Quando um ou mais A^3 é substituído por dois ou mais substituintes, os substituintes que estão em uma relação de posição que pode ser ligada podem ser ligar para formar um anel.

Z^3 é um grupo representado por $-OR^{31}$ ou $-NR^{32}R^{33}$.

R^{31} representa hidrogênio, alquila C_{1-6} opcionalmente substituído, alquenila C_{2-6} opcionalmente substituído, alquinila C_{2-6} opcionalmente substituído, arila opcionalmente substituído, ou um grupo heterocíclico opcionalmente substituído.

R^{32} e R^{33} cada um independentemente representa hidrogênio, alquila C_{1-6} opcionalmente substituído, alquenila C_{2-6} opcionalmente substituído, alquinila C_{2-6} opcionalmente substituído, arila opcionalmente substituído, heterociclo opcionalmente substituído, alcóxi C_{1-6} opcionalmente substituído, alquenilóxi C_{2-6} opcionalmente substituído, alquinilóxi C_{2-6} opcionalmente substituído, arilóxi opcionalmente substituído, alquilsulfinila opcionalmente substituído, arilsulfinila opcionalmente substituído, alquilsulfonila opcionalmente substituído, ou arilsulfonila opcionalmente substituído.

Além disso, R^{32} e R^{33} podem ser ligar para formar um anel quando nenhum for hidrogênio.

Nos compostos de amidina da presente invenção, fórmula (2') na fórmula (1') é preferivelmente um heterociclo contendo nitrogênio que é de 3 a 8 membros, saturado ou insaturado, e opcionalmente substituído; e mais preferivelmente grupo azetidina-l-ila opcionalmente substituído ou grupo

pirrolidina-1-ila opcionalmente substituído.

Efeitos da invenção

De acordo com a presente invenção, compostos inéditos de amidina e herbicidas contendo estes compostos como ingredientes ativos são fornecidos.

Modalidades preferidas da invenção

A presente invenção será descrita com detalhes a seguir.

A presente invenção é um herbicida caracterizado contendo um ou mais compostos de amidina representados pela fórmula (1) e os compostos inéditos de amidina representados pela fórmula (1').

(1) Compostos de amidina representados pelas fórmulas (1) e (1')

Nos compostos de amidina representados pela fórmula (1) (daqui em diante referido como o "composto (1)" às vezes), G é um grupo representado pela fórmula (2) (daqui em diante referido como o " grupo heterocíclico contendo nitrogênio (2)").

O heterociclo contendo nitrogênio- no grupo heterocíclico contendo nitrogênio (2) é um heterociclo tendo um ou mais nitrogênio no anel e que é saturado ou insaturado. O heterociclo contendo nitrogênio pode conter oxigênio e/ou enxofre além de nitrogênio e pode ser monocíclico ou pode ter uma estrutura de anel condensado ou uma estrutura reticulada.

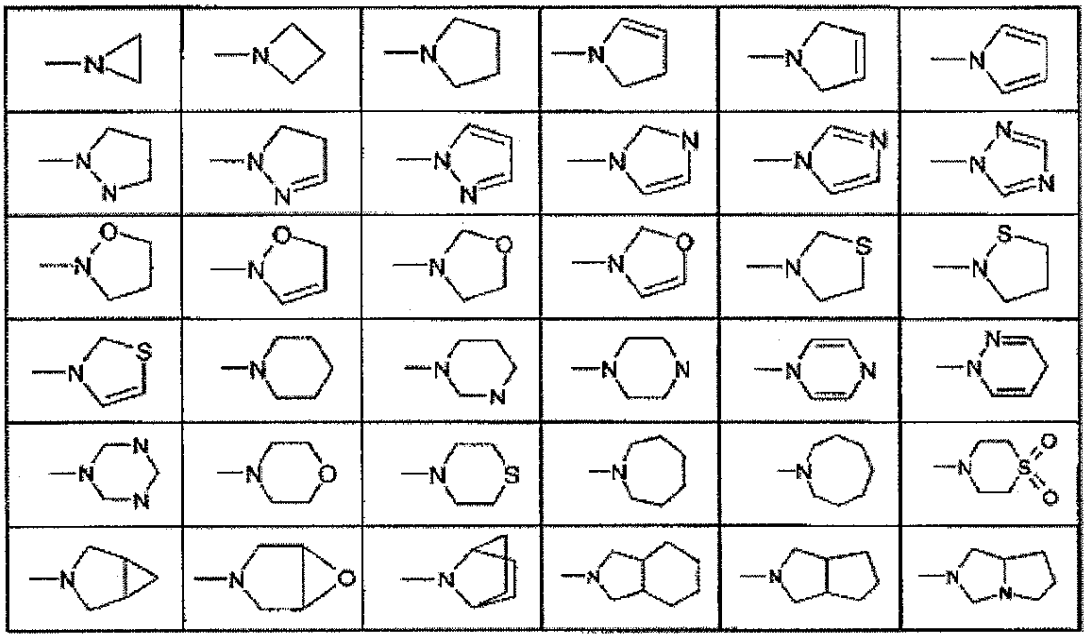
O número total de nitrogênio, oxigênio, e enxofre que constituem o heterociclo contendo nitrogênio é normalmente 1 a 4 e preferivelmente 1 a 3.

Além disso, o número de carbonos que constituem o heterociclo contendo nitrogênio do grupo heterocíclico contendo nitrogênio (2) é preferivelmente 10 ou menos e mais preferivelmente 1 a 8.

Embora exemplos específicos do grupo heterocíclico contendo nitrogênio (2) incluam os apresentados na tabela 1 a seguir, não se limitam a

eles. Observe que os substituintes no nitrogênio e nos átomos que constituem o anel são abreviados e somente a espinha dorsal básica é aqui descrita.

[Tabela 1]



Os substituintes do grupo heterocíclico contendo nitrogênio (2) não são particularmente limitados.

Por exemplo, halogênio, tais como flúor, cloro, e bromo; Alquila C_{1-6} que pode ter um substituinte, tais como metila, etila, trifluormetila, e benzila; Alquenila C_{2-6} que pode ter um substituinte, tais como arila ou 3-cloroarila; Alquinila C_{2-6} que pode ter um substituinte, tais como propargila; arila que pode ter um substituinte, tais como fenila ou 4-metilfenila; formila;

Alquil C_{1-6}carbonila que pode ter um substituinte, tal como acetila, ou trifluoracetila; alquenil C_{2-6}carbonila que pode ter um substituinte, tal como cinamila; Alquinilcarbonila C_{2-6} que pode ter um substituinte, tal como propargilcarbonila; aril carbonila que pode ter um substituinte, tais como benzoíla ou 4-clorobenzoíla; alquil C_{1-6}tiocarbonila que pode ter um substituinte, tal como tioacetila; alquenil C_{2-6}tiocarbonila que pode ter um substituinte, tal como aliltiocarbonila; alquinila C_{2-6}tiocarbonila que pode ter

um substituinte, tal como propargiltiocarbonila; ariltiocarbonila que pode ter um substituinte, tal como tiobenzoíla; carboxila; alcoxicarbonila C_{1-6} que pode ter um substituinte, tal como metoxicarbonila ou etoxicarbonila; alquenil C_{2-6}oxicarbonila que pode ter um substituinte, tal como acriloíla ou metacriloíla;

Alquinilóxicarbonila C_{3-6} que pode ter um substituinte, tal como propargilóxicarbonila; arilóxicarbonila que pode ter um substituinte, tal como fenoxicarbonila ou 2,4-diclorofenoxicarbonila; ciano; amino que pode ter um substituinte, tais como amino, dimetilamino, ou acetilamino; imino que pode ter um substituinte, tais como imino ou dimetilimino; nitro; hidroxila; oxo; alcóxi C_{1-6} que pode ter um substituinte, tais como metóxi, etóxi, t-butóxi; alquenilóxi C_{2-6}, que pode ter um substituinte, tais como alilóxi ou crotilóxi; alquinilóxi C_{2-6} que pode ter um substituinte, tais como propargilóxi; arilóxi que pode ter um substituinte, tais como fenóxi ou 4-metilfenóxi; heteroilóxi que pode ter um substituinte; mercapto; alquila C_{1-6}tio que pode ter um substituinte, tais como metiltio ou etiltio; alquenil C_{2-6}tio que pode ter um substituinte, tais como aliltio ou crotiltio; alquiniltio C_{2-6} que pode ter um substituinte, tais como propargiltio; ariltio que pode ter um substituinte, tais como feniltio; heteroiltio que pode ter um substituinte; alquilsulfinila que pode ter um substituinte, tais como metilsulfinila; arilsulfinila que pode ter um substituinte, tais como fenilsulfinila; alquilsulfonila que pode ter um substituinte, tais como metilsulfonila; arilsulfonila que pode ter um substituinte, tais como fenilsulfonila; e um grupo heterocíclico que pode ter um substituinte.

Além do mais, heterociclo de grupo heteroilóxi que pode ter um substituinte, de grupo heteroiltio que pode ter um substituinte, de um grupo heterociclo que pode ter um substituinte inclui compostos cíclicos tendo pelo menos um átomo selecionado de nitrogênio, oxigênio e enxofre no anel e que é saturado ou insaturado. Exemplos específicos incluem

heterociclos aromáticos, tais como imidazol, pirazol, piridina, pirimidina, pirazina, piridazina, triazol, triazina, indol, indazol, purina, tiadiazol, oxadiazol, quinolina, ftalazina, naftiridina, quinoxalina, quinazolina, quinolina, pteridina, acridina, fenantrolina, fenazina, tetrazol, tiazol, oxazol, benzoimidazol, benzoxazol, benzotiazol, indolenina, tetrazaindeno, e furano; e heterociclos não aromáticos, tais como pirrolidina, piperidina, morfolina, tetraidrofurano, tetraidropirano, aziridina, azetidina, oxazolidina, piperazina, tiazolidina, e trioxano.

Além disso, o grupo heterocíclico contendo nitrogênio (2) pode ter uma pluralidade dos mesmos ou diferentes substituintes em posições arbitrárias.

Q representa ciano, iminoalquila que pode ter um substituinte, amida que pode ter um substituinte, tioamida que pode ter um substituinte, ou um grupo heterocíclico contendo nitrogênio representado pela fórmula (3) e que pode ter um substituinte.

Exemplos de iminoalquila que pode ter um substituinte incluem iminoalquila C_{1-6}, iminometila, iminoetila, e iminopropila.

Exemplos de iminoalquila que pode ter um substituinte incluem iminometila N-substituído onde nitrogênio é substituído por hidroxila, por alcóxi C_{1-6} que pode ter um substituinte, por alquenila C_{2-6}óxi que pode ter um substituinte, por alquinilóxi C_{2-6} que pode ter um substituinte, por arilóxi que pode ter um substituinte, ou por heteroilóxi que pode ter um substituinte.

Exemplos de amida que pode ter um substituinte incluem aminocarbonila onde 0 a 2 nitrogênios são substituídos pelo grupo, tais como alquila C_{1-6} que pode ter um substituinte, alquenila C_{2-6} que pode ter um substituinte, alquinila C_{2-6} que pode ter um substituinte, arila que pode ter um substituinte, um grupo heterocíclico que pode ter um substituinte, acila C_{2-10} que pode ter um substituinte, alquenil C_{2-6}carbonila que pode ter um

substituinte, alquinil C_{2-6}carbonila que pode ter um substituinte, arilcarbonila que pode ter um substituinte, e heteroilcarbonila que pode ter um substituinte. Adicionalmente, quando 2 nitrogênios são substituídos, os substituintes no nitrogênio podem se ligar para formar uma estrutura de anel em uma faixa quimicamente aceitável.

Exemplos específicos de tioamida que pode ter um substituinte incluem aminotiocarbonila onde 0 a 2 nitrogênios são substituídos por um grupo, tais como alquila C_{1-6} que pode ter um substituinte, alquenila C_{2-6} que pode ter um substituinte, alquinila C_{2-6} que pode ter um substituinte, arila que pode ter um substituinte, um grupo heterocíclico que pode ter um substituinte, acila C_{2-10} que pode ter um substituinte, alquenil C_{2-6}carbonila que pode ter um substituinte, alquinil C_{2-6}carbonila que pode ter um substituinte, arilcarbonila que pode ter um substituinte, e heteroilcarbonila que pode ter um substituinte. Adicionalmente, quando 2 nitrogênios são substituídos, os substituintes no nitrogênio podem se ligar para formar uma estrutura de anel em uma faixa quimicamente aceitável.

No grupo representado pela fórmula (3) (daqui em diante referido como o "grupo heterocíclico contendo nitrogênio (3)" às vezes), a linha pontilhada representa uma ligação simples ou dupla que liga carbono e nitrogênio. E outras palavras, o grupo heterocíclico contendo nitrogênio (3) é um onde o átomo adjacente ao carbono tendo ligações é sempre nitrogênio e este carbono e nitrogênio se ligam por uma ligação simples ou dupla, e também, tendo 1 a 4 nitrogênios no anel e que é saturado ou insaturado.

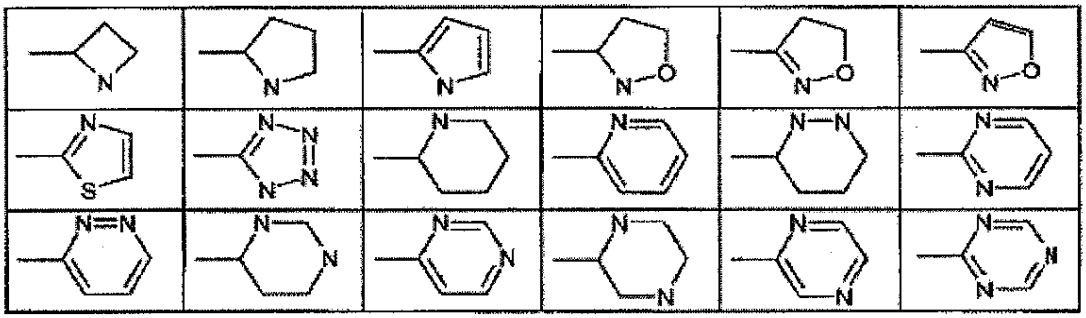
O grupo heterocíclico contendo nitrogênio (3) pode conter oxigênio e/ou enxofre além de nitrogênio. O número total de nitrogênio, oxigênio, e enxofre que constituem o heterociclo é normalmente 1 a 4 e preferivelmente 1 a 3.

Além disso, embora o número de membros que constituem o heterociclo contendo nitrogênio do grupo heterocíclico contendo nitrogênio

(3) não é particularmente limitado, ele é normalmente 3 a 10 e preferivelmente 3 a 8.

Embora exemplos específicos do grupo heterocíclico contendo nitrogênio (3) incluam imidazolila, pirazolila, morfolinila, triazolila, indolila, oxadiazolila, quinolila, oxazolila, e os descritos na tabela 2 a seguir, não se limitam a eles. Observe que na tabela 2 a seguir, os substituintes no nitrogênio e nos átomos que constituem o anel são abreviados e somente a espinha dorsal básica é descrita.

Tabela 2



O substituinte do grupo heterocíclico contendo nitrogênio (3) não é particularmente limitado e exemplos destes incluem substituintes similares aos apresentados como exemplos do grupo heterocíclico contendo nitrogênio (2). Além disso, o grupo heterocíclico contendo nitrogênio (3) pode ter uma pluralidade dos mesmos ou diferentes substituintes em posições arbitrárias.

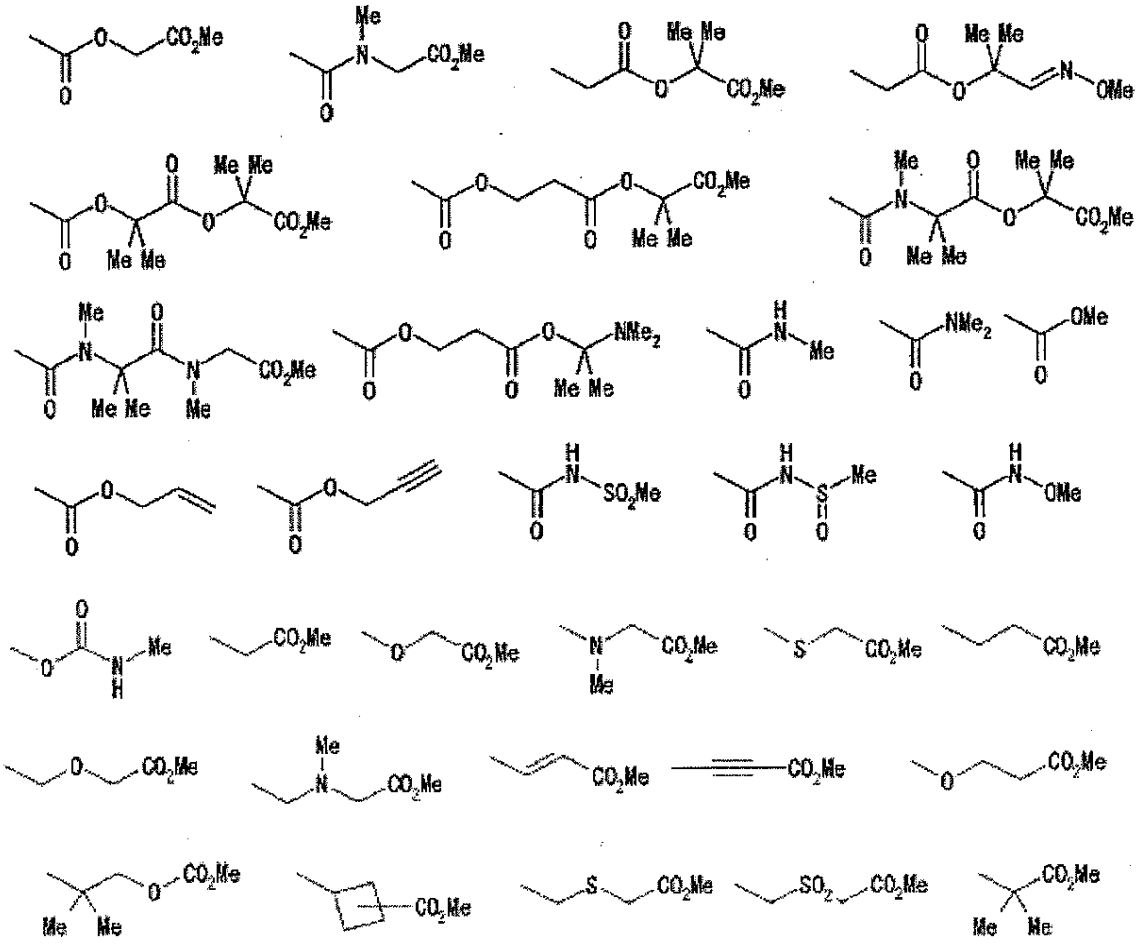
A representa um grupo aromático que pode ter um substituinte.

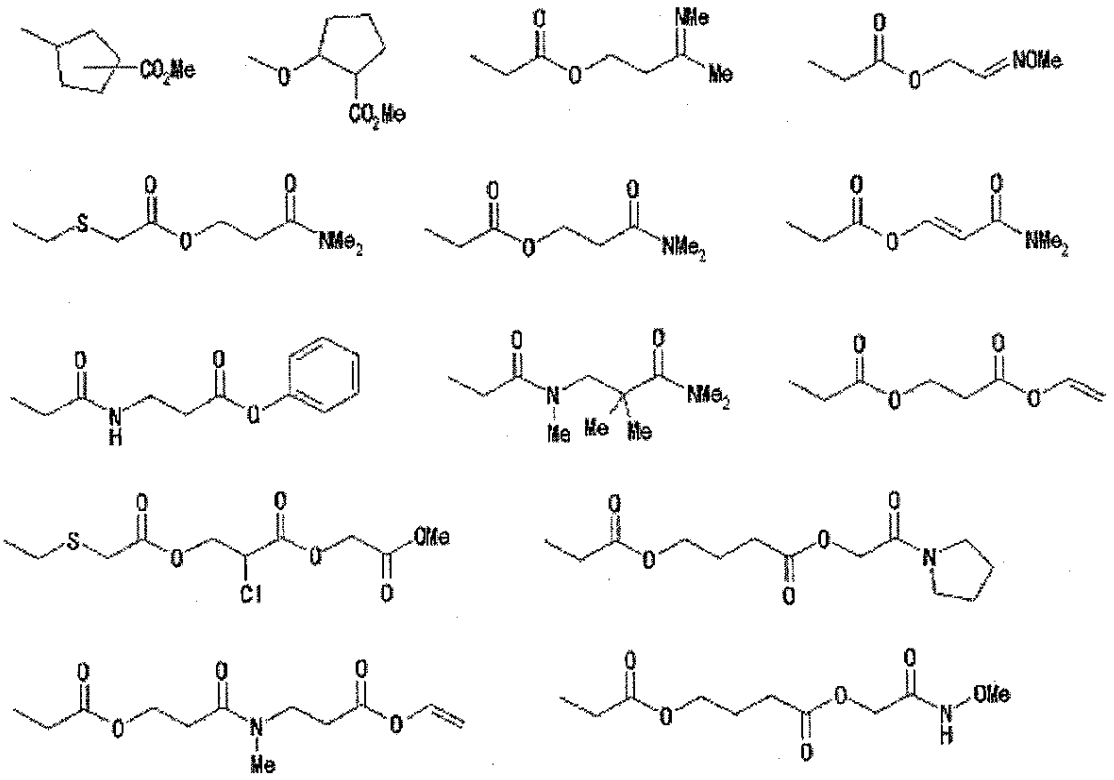
Exemplos do grupo aromático de A incluem grupos hidrocarboneto aromáticos, tais como fenila, 1-naftila, ou 2-naftila; e grupos aromáticos heterocíclicos, tais como piridila, tiazol, ou oxazol.

Entre eles, fenila, que pode ter um substituinte, é preferível como A e o grupo representado pela fórmula (4) é mais preferível.

Exemplos específicos de uma fórmula (5), que é um substituinte da fórmula (4), incluem substituintes apresentados a seguir. A

fórmula (5) a seguir inclui os contendo as fórmulas (6) e (7).





Além disso, exemplos do substituinte do grupo funcional em X da fórmula (4) incluem substituintes similares aos apresentados como exemplos específicos do grupo heterocíclico contendo nitrogênio (2).

O substituinte de R^{11}, R^{12}, e R^{13} em Z^1 não é particularmente limitado e exemplos destes incluem substituintes similares aos apresentados como exemplos específicos do grupo heterocíclico contendo nitrogênio (2).

Na fórmula (6), Y representa oxigênio ou nitrogênio opcionalmente substituído e especificamente representa NR^{101}, $NNR^{102}R^{103}$, NOR^{104}, $NS(=O)R^{105}$, $NS(=O)_2R^{106}$, ou similares.

R^{101} a R^{106} cada um independentemente representa hidrogênio, alquila C_{1-6} opcionalmente substituído, alquil C_{1-6} carbonila opcionalmente substituído, alquiltiocarbonila C_{1-6} opcionalmente substituído, alcóxi C_{1-6} opcionalmente substituídocarbonila, alquenila C_{2-6} opcionalmente substituído, alquenil C_{2-6} carbonila opcionalmente substituído, alqueniltiocarbonila C_{2-6} opcionalmente substituído, alquenilóxi C_{2-6} opcionalmente substituídocarbonila, alquinila C_{2-6} opcionalmente substituído, alquinil C_{2-6}

carbonila opcionalmente substituído, alquiniltiocarbonila C_{2-6} opcionalmente substituído, alquinilóxi C_{2-6} opcionalmente substituídocarbonila, arila opcionalmente substituído, aril carbonila opcionalmente substituído, ariltiocarbonila C_{2-6} opcionalmente substituído, arilóxi opcionalmente substituídocarbonila, heterociclo opcionalmente substituído, opcionalmente substituído heteroilcarbonila, heteroiltio opcionalmente substituídocarbonila, heteroilóxi carbonila opcionalmente substituído, e o substituinte que substitui estes grupos não é particularmente limitado e exemplos destes incluem os similares ao substituinte do grupo heterocíclico contendo nitrogênio (2).

Entre eles, na presente invenção, A é preferivelmente o grupo representado pela fórmula (4) do ponto de vista de fornecer excelente atividade herbicida, e mais preferivelmente fenila 2,4-di-substituído, fenila 4,5-di-substituído, ou fenila 2,4,5-tri-substituído, e acima de tudo preferivelmente fenila 2,4,5-tri-substituído.

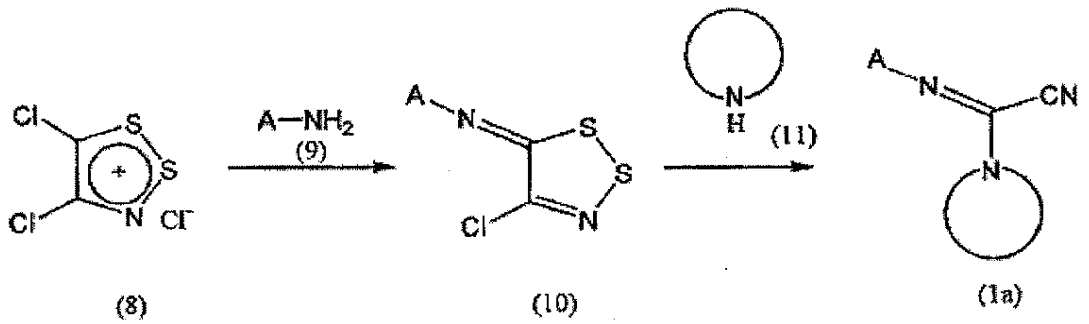
Adicionalmente, embora isomeria geométrica nas ligações imino não seja particularmente limitada, os substituintes A e G são preferivelmente transisômeros.

O composto (1) pode ser produzido pelo método de produção 1 a 7 apresentado a seguir, por exemplo. Observe que a menos que particularmente apresentado claramente nas figuras a seguir, estereoespecificidade da reação não existe.

Método de produção 1

O composto (1) pode ser produzido pelo método descrito na literatura a seguir.

J. Org. Chem., Vol. 58, 7001 (1993), etc.



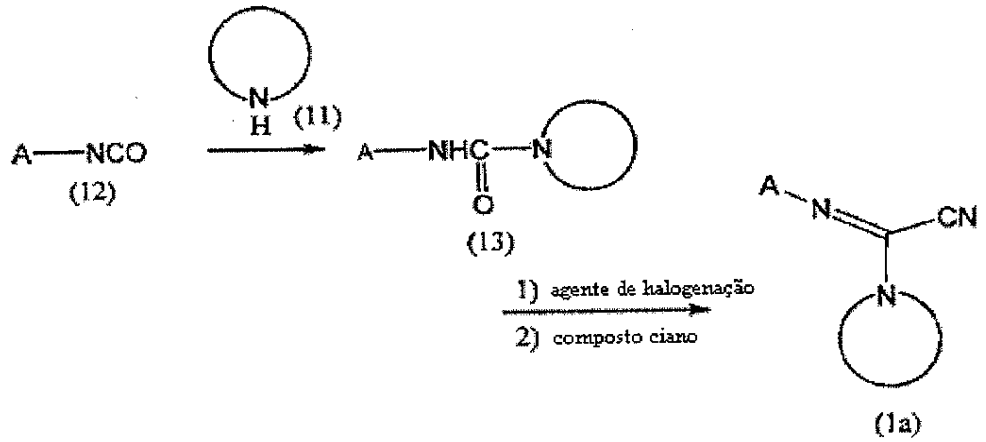
(8) (10) (1a)

(Na fórmula, A é da forma definida anteriormente.)

Um composto (8), que é uma matéria-prima para a produção, pode ser produzido pelo método descrito na literatura (R. Appel et al., Chem. Ber., Vol. 118, 1632 (1985)).

Método de produção 2

O composto (1a) também pode ser produzido pelo método apresentado a seguir.



(1a)

(Na fórmula, A é da forma definida anteriormente.)

Exemplos de agentes de halogenação usados na reação de halogenação de um composto (13) incluem CCl_4-PPh_3, CBr_4-PPh_3, tricloreto de fósforo, pentacloreto de fósforo, oxicloreto de fósforo, cloreto de tionila, cloreto de enxofre, cloro, oxibrometo de fósforo, brometo de tionila, e bromo.

A quantidade de agente de halogenação usada é normalmente 1 a 5 vezes a do composto (13), que é o substrato, em termos de mols.

A reação usando um agente de halogenação como este pode

ser realizada em um solvente inerte apropriado.

O solvente inerte a ser usado não é particularmente limitado desde que ele seja solvente inerte na reação. Exemplos incluem, por exemplo, hidrocarbonetos halogenados, tais como diclorometano, clorofórmio, tetracloreto de carbono, e 1,2-dicloroetano; hidrocarbonetos aromáticos, tais como benzeno, tolueno, e xileno; hidrocarbonetos alifáticos, tais como pentano, hexano, e octano; hidrocarbonetos alicíclicos, tais como ciclopentano e cicloexano; éteres, tais como éter dietílico e tetraidrofurano; amidas, tais como N, N-dimetilformamida e N-metilpirrolidona; sulfóxidos, tal como dimetilsulfóxido; nitrilas, tal como acetonitrila; e solventes misturados de dois ou mais tipos destes.

Embora a temperatura de reação não seja particularmente limitada, a faixa de temperatura é normalmente de 0 °C ao ponto de ebulição do solvente usado.

Depois que a reação foi completa usando um agente de halogenação, prefere-se reagir compostos cianos depois da remoção de excesso de agente de halogenação do sistema de reação.

Exemplos de compostos ciano a serem usados incluem, por exemplo, cianetos metálicos, tais como cianeto cuproso, cianeto de potássio, e cianeto de sódio.

A quantidade de compostos ciano usada é normalmente 1 a 5 vezes a do composto (13), que é o substrato, em termos de mol.

A reação usando compostos ciano pode ser realizada em um solvente inerte apropriado.

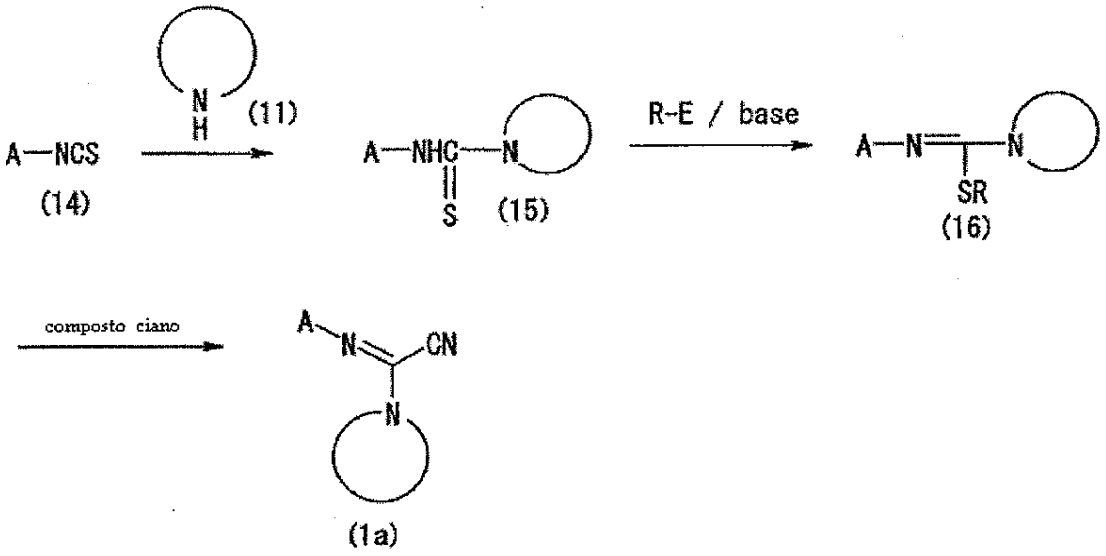
Exemplos do solvente inerte a ser usado incluem os similares aos solventes listados mencionados anteriormente que podem ser usados na reação usando um agente de halogenação.

Embora a temperatura de reação não seja particularmente limitada, a faixa de temperatura é normalmente de 0 °C ao ponto de ebulição

do solvente usado.

Método de produção 3

O composto (1a) também pode ser produzido pelo método apresentado a seguir.



(Na fórmula, A é da forma definida anteriormente. R representa alquila e E representa um grupo abandonador.)

O composto representado por R-E para reagir com o composto (15) é um agente de alquilação, e exemplos destes incluem, por exemplo, haletos de alquila, tais como iodeto de metila e sulfatos de dialquila, tais como sulfatos de dimetila.

Exemplos das bases usadas aqui incluem hidróxidos metálicos, tais como hidróxido de sódio e hidróxido de potássio; carbonatos, tais como carbonato de sódio e carbonato de potássio; hidretos metálicos, tal como hidreto de sódio; alcóxidos metálicos, tais como metóxido de sódio e etóxido de sódio e bases orgânicas, tais como trietilamina e piridina.

A reação do composto (15) com o composto representado pela fórmula R-E pode ser realizada em um solvente inerte apropriado.

O solvente inerte a ser usado não é particularmente limitado desde que ele seja um solvente inerte na reação. Exemplos incluem, por exemplo, hidrocarbonetos halogenados, tais como diclorometano,

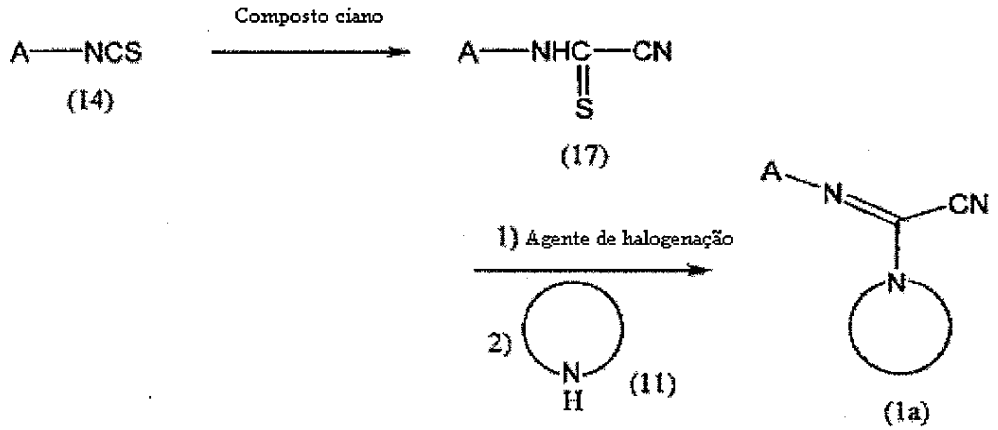
clorofórmio, tetracloreto de carbono, e 1,2-dicloroetano; hidrocarbonetos aromáticos, tais como benzeno, tolueno, e xileno; hidrocarbonetos alifáticos, tais como pentano, hexano, e octano; hidrocarbonetos alicíclicos, tais como ciclopentano e cicloexano; éteres, tais como éter dietílico e tetraidrofurano; cetonas, tais como acetona e metiletilcetona; amidas, tais como N, N-dimetilformamida; e mistura de solventes de dois ou mais tipos destes.

Embora a temperatura de reação não seja particularmente limitada, a faixa de temperatura é normalmente de 0 °C ao ponto de ebulição do solvente usado.

Exemplos dos compostos ciano para reagir com o composto (16) incluem os similares aos compostos ciano listados no método de produção 2 que pode ser adequadamente usado. Além do mais, o uso dos compostos ciano, solventes, ou similares a serem usados é similar aos do método de produção 2.

Método de produção 4

O composto (1a) também pode ser produzido pelo método apresentado a seguir.



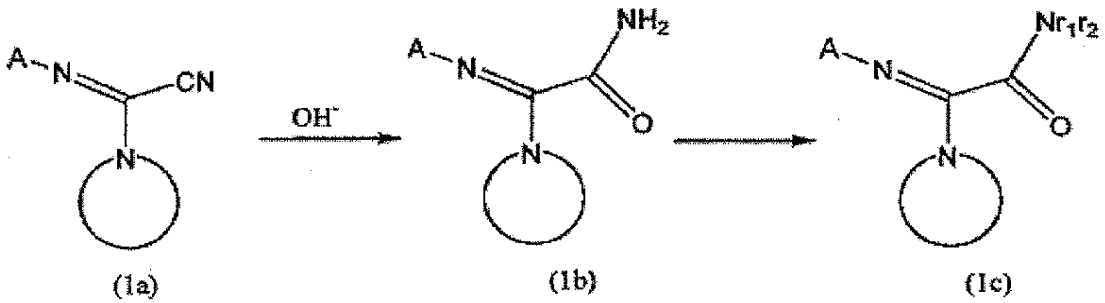
(Na fórmula, A é da forma definida anteriormente.)

Exemplos de compostos ciano, agentes de halogenação, e o composto (11) que pode ser aqui usado incluem os similares aos listados no método de produção 2. Além disso, os compostos ciano, agentes de

halogenação e o uso do composto (11), e solventes a serem usados, ou similares, também são similares aos do método de produção 2.

Método de produção 5

Um composto (1b) cujo Q é amida (CONHXXX2) na fórmula (1) (daqui em diante referido como o "composto (1b)") e um composto (1c) cujo Q é uma amida substituída ($CONH_2$) na fórmula (1) (daqui em diante referido como o "composto (1c)") pode ser produzido pelo método apresentado a seguir.



(1a) (1b) (1c)

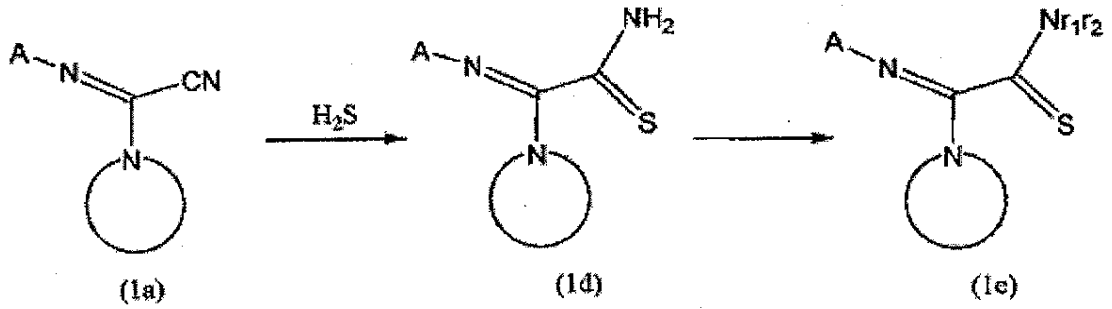
(Na fórmula, A é da forma definida anteriormente r1 e r2 cada um independentemente representa hidrogênio, alquila, arila, ou acila com a condição de que r1 e r2 não sejam hidrogênio.)

A reação para obter o composto (1b) hidrolizando o composto (1a) pode ser realizada de maneira similar a um método de reação conhecido para obter amidas hidrolizando cianos.

Exemplos do método de reação para obter o composto (1c) a partir do composto (1b) incluem, por exemplo, um método de aplicar agentes de alquilação, tais como iodeto de metila e sulfatos de dimetila ao composto (1b) na presença de uma base; ou um método de aplicar agentes de acilação, tais como cloreto de acetila e cloreto de benzoíla ao composto (lb) na presença de uma base.

Método de produção 6

Um composto (1d) cujo Q é tioamida na fórmula (1) e um composto (1e) cujo Q é uma tioamida substituída na fórmula (1) pode ser produzido pelo método apresentado a seguir.



(1a) (1d) (1e)

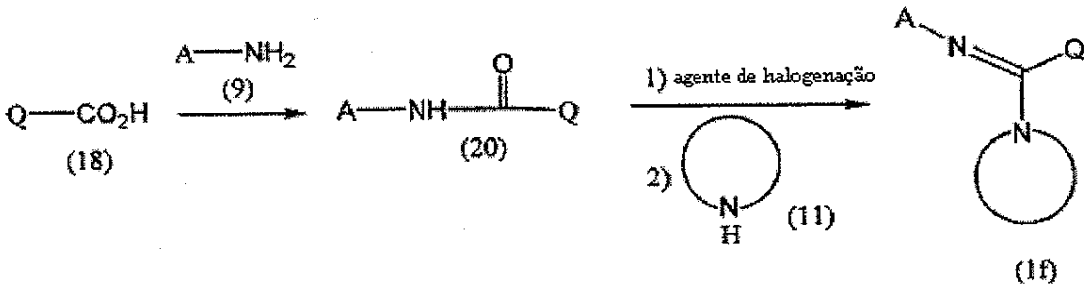
(Na fórmula, A, r1 e r2 são da forma definida anteriormente.)

A reação para obter o composto (1 d) a partir do composto (1a) pode ser realizada de maneira similar ao método de reação conhecido que converte cianos a tioamidas aplicando sulfeto de hidrogênio.

Além disso, a reação para obter o composto (1e) a partir do composto (1d) pode ser realizada de maneira similar ao método para obter o composto (1 c) a partir do composto (lb) no método de produção 5.

Método de produção 7

Um composto (1f) também pode ser produzido pelo método apresentado a seguir.



(Na fórmula, Q e A são da forma definida anteriormente.)

Exemplos específicos de agentes de halogenação e o composto (11) usado aqui, os usos destes, condições de reação, ou similares, são similares aos descritos anteriormente no método de produção 2.

Exemplos de sais do composto (1) incluem os sais obtidos do composto (1) e ácidos.

Exemplos específicos dos sais do composto (1) incluem sais de ácidos inorgânicos, tais como cloridratos, nitratos, sulfatos, e fosfato; e sais de

ácidos orgânicos, tais como acetatos, lactatos, benzoatos, e salicilatos.

O método de produção de sais do composto (1) não é particularmente limitado e exemplos destes incluem um método convencionalmente conhecido de produção, tais como o método de mistura/agitação do composto (1) com uma quantidade predeterminada de ácido em um solvente apropriado.

Em todos os casos, compostos alvejados podem ser isolados em alto rendimento depois que a reação foi completa por uma operação de pós-tratamento, operação de purificação ou similares depois dos procedimentos comuns na química orgânica sintética.

Estruturas de compostos alvejados podem ser identificadas por medições de espectro IV, espectro RMN e espectro de massa, análise elementar ou similares.

Observe que embora isômeros geométricos, ou similares, possam existir no composto (1) em virtude da ligação dupla entre carbono e nitrogênio, estes isômeros estão todos no escopo da presente invenção.

O composto (1) obtido da forma descrita anteriormente tem uma excelente atividade herbicida, da forma descrita posteriormente, e é usado como um ingrediente ativo de herbicidas.

(2) Herbicida

Herbicidas da presente invenção são caracterizados contendo pelo menos um tipo do composto (1) ou sais destes (daqui em diante referido como o "composto da presente invenção"), como um ingrediente ativo.

Os compostos da presente invenção apresentam alta atividade herbicida tanto no tratamento do solo quanto tratamento das folhas em condições de agricultura de planalto; são efetivos em várias ervas daninhas de planalto, tais como ervas daninhas, erva rabo de raposa, e caruru: e também incluem compostos que apresentam seletividade para lavouras, tais como milho.

Além disso, os compostos da presente invenção incluem compostos que apresentam atividade que regula o crescimento da planta, tais como retardo e desfoliação de plantas úteis, tais como lavouras de agricultura, plantas ornamentais e árvores frutíferas.

Adicionalmente, os compostos da presente invenção incluem compostos que têm excelente atividade herbicida em várias ervas daninhas de baixada e que apresentam seletividade para arroz.

Além do mais, os compostos da presente invenção também podem ser aplicados para controle de ervas daninhas em lugares tais como cultivo de frutas, gramado, margens do trilho da via férrea, e terrenos vazios.

Os compostos da presente invenção podem ser usados na forma pura sem adicionar nenhum outro componente quando aplicados praticamente, e também podem ser usados, com um objetivo de usar como agroquímicos, na forma que agroquímicos gerais podem adotar, isto é, pós umectantes, grânulos, pó de fácil escoamento, concentrados emulsificáveis, pó solúvel em água, agente de suspensão, escoável, ou similares.

Como aditivos e veículos, pós vegetais, tais como farinha de soja e farinha de trigo; pó mineral fino, tais como terra de diatomácea, apatita, gesso, talco, bentonita, pirofilita e argila; e compostos orgânicos e inorgânicos, tais como benzoato de sódio, uréia, e sulfato de sódio são usados quando é necessária uma formulação sólida.

Quando é necessária uma formulação líquida, frações de petróleo, tais como querosene, xileno, e solvente nafta e cicloexano, cicloexanona, dimetilformamida, sulfóxido de dimetila, álcool, acetona, tricloroetileno, metil isobutil cetona, óleo mineral, óleo vegetal, água, ou similares, são usados como um solvente.

Adicionalmente, de maneira a alcançar formas homogêneas e estáveis nestas formulações, também é possível adicionar agentes tensoativos se necessário.

Embora agentes tensoativos não sejam particularmente limitados, exemplos destes incluem, por exemplo, agentes tensoativos não iônicos, tais como éter alquilfenílico onde polioxietileno é adicionado, éter de alquila onde polioxietileno é adicionado, éster de ácido graxo superior onde polioxietileno é adicionado, éster de ácido graxo de sorbitan superior onde polioxietileno é adicionado, e éter triestirila fenílico onde polioxietileno é adicionado; éster sulfato de éter alquil fenílico onde polioxietileno é adicionado, sulfonato de alquil naftaleno, policarboxilato, sulfonato de lignina, formaldeído condensado de sulfonato de alquil naftaleno e copolímero isobutileno-anidrido maléico.

Embora concentrações de ingredientes ativos em herbicidas da presente invenção varie dependendo das formas mencionadas anteriormente de formulação, em pó umectável, por exemplo, a concentração de 5 a 90 % em peso (daqui em diante escrita simplesmente como "%") e preferivelmente 10 a 85 % é usada; 3 a 70 % e preferivelmente 5 a 60 % é usada em emulsão; e 0,01 a 50 % e preferivelmente 0,05 a 40 % é usada em grânulos.

Pó umectante e concentrado emulsificante obtido desta maneira, que são diluídos para concentrações predeterminadas por água, são jateados ou misturados no solo como solução de emulsão ou solução de suspensão antes ou depois da germinação da erva daninha. Quando herbicidas da presente invenção são praticamente usados, uma quantidade adequada de ingredientes ativos, que é 0,1 g ou mais por 1 hectare, é aplicada.

Herbicidas da presente invenção também podem ser usados misturando com fungicidas conhecidos, inseticidas, acaricidas, outros herbicidas, reguladores do crescimento da planta, fertilizantes ou similares. Além do mais, não somente economia de trabalho, mas também um efeito maior adicional pode ser esperado em virtude do sinergismo com substâncias químicas misturadas. Neste caso, o uso combinado com um dois ou mais dos herbicidas conhecidos também é possível.

Substâncias químicas adequadas para serem misturadas e usadas com os herbicidas da presente invenção incluem herbicidas de anilida, tais como diflufenican, picolinafen, e propanila; herbicidas de cloroacetanilida, tais como alachlor e pretilachlor; herbicidas de ácido ariloxialcanóico, tais como herbicidas de ácido 2,4-D e 2,4-DB; ariloxifenoxialcanóico, tais como diclofop-metila e fenoxaprop-etila; herbicidas de cicloexanodiona, tais como setoxidim e tralcoxidim; herbicidas de ácido carboxílico, tais como dicamba e picloram; herbicidas de imidazolinona, tais como imazaquin e imazethapyr; herbicidas de uréia, tais como diuron e isoproturon; herbicidas de carbamato, tais como clorprofam e fenmedifam; herbicidas de tiocarbamato, tais como tiobencarb e EPTC; herbicidas de dinitroanilina, tais como trifluralina e pendimetalina; herbicidas de éteres difenílicos, tais como acifluorfen e fomesafen; herbicidas de sulfoniluréias, tais como benenxofreon-metila e nicoenxofreon; herbicidas de pirimidinil carbóxi, tais como piritiobac e bispiribac; herbicidas de triazinona, tais como metribuzina e metamitron; herbicidas de triazina, tais como atrazina e cianazina; herbicidas de uracila, tais como bromacila e lenacila; herbicidas de triazolopirimidina, tais como flumetsulam e penoxsulam; herbicidas de nitrila, tais como bromoxinila e diclobenila; herbicidas de fosfato, tais como glifosato e glufosinato; herbicidas de bipiridílio, tais como paraquat e diquat; herbicidas de imida cíclica, tais como flumioxazina, flumiclorac-pentila, e fluthacet-metila; herbicidas de benzoilaminopropionato, tais como benzoilprop etila e furamprop etila; outros herbicidas, tais como MSMA, asulam, cloridazon, norflurazon, flurtamona, fluorcloridona, flucarbazona-sódio, propoxicarbazona-sódio, amicarbazona, isoxabeno, flupoxam, quinclorac, quinmerac, diflufenzopir-sódio, oxadiazona, oxadiargila, piperofos, daimurona, bentazona, benfuresato, etofumesato, difenzoquat, naproanilida, triazofenamida, clomazona, sulcotriona, mesotriona, pirasulfotol, isoxaflutol, isoxaclortol, topramezona, ditiopir, thiazopir,

amitrol, pirazoxifeno, pilazolinato, benzobiciclona, piridato, piridafol, azafenidina, carfentrazona-etila, sulfentrazona, pentoxazona, piraflufen-etila, fluazolato, flufenpir-etila, butafenacila, piraclonila, bencarbazona, cinmetilina, oxaziclomefona, dimetenamida, fentrazamida, indanofano, cafenstrol, piributicarb, pirimisulfan, pinoxaden, e KIH-485 (nome de teste).

Além disso, também é possível adicionar aditivos, tais como óleos vegetais e concentrados de óleo à composição, que são combinados com os herbicidas anteriores.

Exemplo

Embora a presente invenção seja descrita adicionalmente em detalhe a seguir usando os exemplos, o escopo da presente invenção não é limitado de nenhuma maneira aos exemplos a seguir. Deve-se notar que o número do composto descrito a seguir corresponde ao número químico na tabela 3 a seguir.

(Exemplo 1)

Produção de N'-(2,4-diclorofenil)-N,N-(butano-1,4-di-il)cianoformamidina (composto 1-1: número do composto 178)

Cloreto de 4,5-dicloro-1,2,3-ditiazólio foi sintetizado pelo método descrito na literatura (Appel, R. et al., Chem Ber., Vol. 118, 1632 (1985)). Reagindo 13,40 g do cloreto de 4,5-dicloro-1,2,3-ditiazólio obtido com 10,43 g de 2,4-dicloroanilina com o método descrito na literatura anterior, 13,66 g de 4-cloro-5-[(2,4-diclorofenil)imino]-5H-1,2,3-ditiazol foi obtido (rendimento 71 %).

Reagindo 0,50 g deste 4-cloro-5-[(2,4-diclorofenil)imino]-5H-1,2,3-ditiazol com 0,37 g de pirrolidina seguindo o método descrito na literatura (J. Org. Chem., Vol. 58, 7001 (1993)), 0,20 g de N'-(2,4-diclorofenil)-NN-(butano-1,4-di-il)cianoformamidina (1-1) foi obtido (rendimento: 44 %).

$n_D^{20,7}$ 1,6158

(Exemplo 2)

Produção de N'-(2,4-diclorofenil)-NN-(butano-1,4-di-il)cianoformamidina (composto 1-1: número do composto 178)

3,76 g de isocianato de 2,4-diclorofenila foi dissolvido em 100 mL de benzeno e 1,44 g de pirrolidina foi adicionado a esta solução resultante e reagiu por 8 horas a temperatura ambiente. Depois que a reação foi completa, benzeno foi evaporado em pressão reduzida para obter 5,19 g de N-(2,4-diclorofenil)pirrolidina-l-carboxamida. 0,50 g do N-(2,4-diclorofenil)pirrolidina-1-carboxamida obtido foi dissolvido no solvente misturado composto de 10 mL de acetonitrila e 0,4 mL de tetracloreto de carbono e 0,69 g de trifenilfosfina foi então adicionado a esta solução resultante e toda a mistura foi agitada por 1 hora a temperatura ambiente. 0,55 g de cianeto cuproso foi adicionado a esta solução de reação e toda a mistura foi refluxada por 2,5 horas. Depois do resfriamento da solução de reação, insolúveis foram removidos por filtração e o concentrado obtido por evaporação do filtrado em pressão reduzida foi purificado por cromatografia em coluna de sílica gel para obter 0,39 g de N'-(2,4-diclorofenil)-N,N-(butano-1,4-di-il)cianoformamidina (1-1) (rendimento: 72 %).

(Exemplo 3)

Produção de N'-(4-cloro-2-flúor-5-propargiloxifenil)-N,N-(butano-1,4-di-il)cianoformamidina (composto 1-2: número do composto 141)

0,30 g de isotiocianato de 4-cloro-2-flúor-5-propargiloxifenila foi dissolvido em 5 mL de acetonitrila e 0,09 g de pirrolidina foi então adicionado a este e agitado por 0,5 horas a temperatura ambiente. 0,17 g de carbonato de potássio e subseqüentemente 0,19 g de iodeto de metila foram adicionados a esta solução resultante e refluxados por 1 hora. Depois do resfriamento, insolúveis foram separados por filtração e o filtrado resultante foi evaporado em pressão reduzida para obter 0,38 g de N'-(4-cloro-2-flúor-5-

propargiloxifenil)-N,N-(butano-1,4-di-il)metiltioformamida. 0,05 g de N'-(4-cloro-2-flúor-5-propargiloxifenill-N,N-(butano-1,4-di-il)metiltioformamida foi dissolvido em 1 mL de dimetilformamida e 0,02 g de cianeto de potássio foi então adicionado à solução resultante e reagiu por 5 horas a 60 a 80 °C. A solução resultante foi purificada por cromatografia de camada delgada preparativa (PTLC) para obter 0,02 g de N'-(4-cloro-2-flúor-5-propargiloxifenil)-N,N-(butano-1,4-di-il)cianoformamidina (1-2). Rendimento foi 47 %. P.e. 88-89 °C.

(Exemplo 4)

Produção de N'-(2,4-diclorofenil)-NN-(butano-1,4-di-il)cianoformamidina (composto 1-1: número do composto 178)

40 mL de solução de acetonitrila contendo 6,44 g de isotiocianato de 2,4-diclorofenila foi adicionado gota-a-gota a 40 mL de solução aquosa contendo 2,28 g de cianeto de potássio a 0 °C durante 1 hora. Depois de 3 horas de reação a temperatura ambiente, a solução de reação foi vertida em uma solução misturada de 50 mL de ácido clorídrico 1 N e gelo. Cristais depositados foram separados por filtração e foram secos em pressão reduzida para obter 7,14 g de N-(2,4-diclorofenil)cianotioformamida (rendimento: 97 %).

0,50 g de N-(2,4-diclorofenil)cianotioformamida foi dissolvido em 25 mL de benzeno e depois da adição de 0,51 g de pentacloreto de fósforo, a solução resultante foi refluxada por 2 horas. A solução de reação foi concentrada em vácuo e o concentrado foi dissolvido em 30 mL de acetonitrila, e depois da adição de 0,63 g de pirrolidina a 0 °C, reagiu por 1,5 horas a temperatura ambiente. O concentrado obtido por concentração a vácuo da solução de reação resultante foi purificado por cromatografia em coluna de sílica gel para obter 0,08 g de N'-(2,4-diclorofenil)-N,N-(butano-1,4-di-il)cianoformamidina (1-1) (rendimento: 13 %).

(Exemplo 5)

Produção de 2-[2,4-dicloro-5-(1-etoxicarboniletóxi)fenilimino]-2-(pirrolidina-1-il)acetamida (composto 1-3: número do composto 293)

Com exceção do uso de 2,4-dicloro-5-hidroxianilina em vez de 2,4-dicloroanilina, N'-(2,4-dicloro-5-hidroxifenil)-N,N-(butano-1,4-di-il)cianoformamidina foi obtido da mesma maneira que no exemplo 1. 3,22 g de N'-(2,4-dicloro-5-hidroxifenil)-N,N-(butano-1,4-di-il)cianoformamidina foram dissolvidos em 30 mL de éter dietílico e 30 mL de solução de hidróxido de sódio 10 % fora então adicionados e a solução resultante foi agitada por 1 hora a temperatura ambiente. A camada aquosa foi separada e depois da adição de ácido clorídrico concentrado a ela com resfriamento em gelo-água, benzeno foi adicionado resultando na deposição de matéria sólida branca. Removendo os cristais por filtração, 2,53 g de 2-(2,4-dicloro-5-hidroxifenilimino)-2-(pirrolidina-1-il)acetamida foram obtidos (rendimento 83 %).

0,5 g da 2-(2,4-dicloro-5-hidroxifenilimino)-2-(pirrolidina-1-il)acetamida obtida foi dissolvido em 50 mL de acetonitrila e 0,25 g de carbonato de potássio foi então adicionado e toda a mistura foi aquecida a refluxo por 1 hora. 0,37 g de 2-bromopropionato de etila foi adicionado à solução de reação resultante e adicionalmente aquecido a refluxo por 1 hora. Insolúveis foram removidos da solução de reação resultante por filtração e o concentrado obtido por evaporação dos solventes do filtrado por evaporação em pressão reduzida foi purificado por cromatografia em coluna de sílica gel para obter 0,37 g de 2-[2,4-dicloro-5-(1-etoxicarboniletoxi)fenilimino]-2-(pirrolidina-1-il)acetamida (1-3) (rendimento 55 %). p.e. 160-163 °C.

(Exemplo 6)

Produção de 1-etóxi-2-metil-1-oxopropano-2-il-5-(2-acetamida-1-(pirrolidina-1-il)-2-tioxoetili deneamino)-2-cloro-4-fluorbenzoato (composto 1-4: número do composto 201)

Com exceção do uso de 2-flúor-4-cloro-5-(1-etoxicarbonil-l-metiletoxicarbonil)anilina em vez de 2,4-dicloroanilina, 1-etóxi-2-metil-1-oxopropano-2-il-2-cloro-5-[ciano(pirrolidina-1-il)metilenoami no]-4-fluorbenzoato foi obtido da mesma maneira que no exemplo 1. 1,95 g de 1-etóxi-2-metil-1-oxopropano-2-il-2-cloro-5-[ciano(pirrolidina-1-il)metilenoami no]-4-fluorbenzoato foi dissolvido em uma mistura de 3 mL de piridina e 0,48 g de trietilamina e sulfeto de hidrogênio foi então introduzida na solução resultante a temperatura ambiente. Depois de verificar que a reação foi completa por cromatografia de camada delgada, a solução de reação foi vertida em água gelada e extraída com acetato de etila. A camada orgânica foi lavada com salina saturada e seca com sulfato de magnésio anidro. 2,06 g de um produto bruto de 1-etóxi-2-metil-1-oxopropano-2-il-5-(2-amino-1-(pirrolidina-1-il)-2-tioxoetilideno amino)-2-cloro-4-fluorbenzoato foi obtido por evaporação dos solventes em pressão reduzida.

0,23 g do 1-etóxi-2-metil-1-oxopropano-2-il-5-(2-amino-1-(pirrolidina-1-il)-2-tioxoetilideno amino)-2-cloro-4-fluorbenzoato obtido foi dissolvido em 10 mL de acetona e depois da adição de 0,09 g de piridina, uma solução de 5 mL de acetona contendo 0,09 g de cloreto de acetila foi adicionada gota-a-gota a ela a temperatura ambiente durante 20 minutos. Depois de refluxar a solução de reação por 2 horas, a solução resultante foi vertida em água gelada e extraída com clorofórmio. A camada orgânica foi lavada com salina saturada, seca com sulfato de magnésio anidro, e filtrada. O concentrado obtido por evaporação dos solventes do filtrado em pressão reduzida foi purificado por cromatografia em coluna de sílica gel para obter 0,06 g de 1-etóxi-2-metil-1-oxopropano-2-il-5-(2-acetamida-1-(pirrolidina-1-il)2-tioxoetilideneamino)-2-cloro-4-fluorbenzoato (1-4) (rendimento 23 %). Amorfo.

(Exemplo 7)

Produção de 2-(4-cloro-2-flúor-5-propargiloxifenilimino)-2-

(pirrolidina-1-il)acetaldeído O-metiloxima (composto 1-5: número do composto 190)

6 mL de solução aquosa contendo 4,19 g de cloridrato de O-metilidroxilamina foram adicionados a 6 mL de solução aquosa contendo 4,67 g de ácido glicólico monoidratado. 5 mL de solução aquosa contendo 2,0 g de hidróxido de sódio foi adicionado gota-a-gota à solução obtida em resfriamento com gelo e depois da adição, a solução resultante foi agitada a temperatura ambiente por 1,5 horas. A solução de reação resultante foi extraída pela adição de acetato de etila. Depois da lavagem com salina saturada, a camada orgânica foi seca com sulfato de magnésio anidro e filtrada. 4,62 g de 2-(metoxiimino)acetato foram obtidos por evaporação dos solventes do filtrado em pressão reduzida (rendimento 89 %).

0,58 g do 2-(metoximino)acetato obtido foi dissolvido em 30 mL de xileno e 1,00 g de 4-cloro-2-flúor-5-propargiloxianilina foi adicionado a ele. 0,17 mL de tricloreto de fósforo foi então adicionado à solução resultante e toda a mistura foi aquecida a refluxo por 1 hora. Depois do resfriamento da solução de reação resultante, água de bicarbonato de sódio foi adicionada a ela e a solução resultante foi então extraída com acetato de etila. Depois da lavagem com salina saturada, a camada orgânica foi seca com sulfato de magnésio anidro e filtrada. O concentrado obtido por evaporação dos solventes do filtrado em pressão reduzida foi lavado com um solvente misturado de éter-hexano normal para obter 0,70 g de N-(4-cloro-2-flúor-5-propargiloxifenil)-2-(metoximino)acetamida (rendimento 49 %).

0,42 g da N-(4-cloro-2-flúor-5-propargiloxifenil)-2-(metoximino)acetamida obtida foi dissolvido em 30 mL de benzeno e depois da adição de 0,36 g de pentacloreto de fósforo, a solução resultante foi refluxada por 4 horas. O concentrado obtido por concentração da solução de reação resultante em pressão reduzida foi dissolvido em 20 mL de diclorometano e 0,32 g de pirrolidina foi adicionado gota-a-gota a ela a

temperatura ambiente e a solução resultante foi agitada a temperatura ambiente por 1 hora. O concentrado obtido por evaporação dos solventes da solução de reação resultante em pressão reduzida foi purificado por cromatografia em coluna de sílica gel para obter 0,32 g de 2-(4-cloro-2-flúor-5-propargiloxifenilimino)-2-(pirrolidina-1-il)acetaldeído O-metiloxima (1-5) (rendimento 64 %). p.e. 73-75 °C.

(Exemplo 8)

Produção de N'-(4-cloro-2-flúor-5-propargiloxifenil)-N,N-(butano-1,4-di-il)-4,5-diidroisooxaz ol-3-carboxiamidina (composto 1-6: número do composto 207)

0,63 g de ácido 4,5-diidroisooxazol-3-carboxílico foi dissolvido em 40 mL de diclorometano e então 0,66 mL de cloreto de oxalila e subseqüentemente uma quantidade catalítica de N,N-dimetilformamida foram adicionadas a ele a temperatura ambiente e toda a mistura foi agitada a temperatura ambiente por 45 minutos. 0,77 g de cloreto ácido 4,5-diidroisooxazol-3-carboxílico foi obtido por evaporação dos solventes da solução de reação resultante em pressão reduzida.

Por outro lado, 1,00 g de 4-cloro-2-flúor-5-propargiloxianilina foi dissolvido em 30 mL de diclorometano e 0,53 g de piridina foi adicionado a ele. 20 mL de solução de diclorometano contendo 0,77 g de cloreto ácido 4,5-diidroisooxazol-3-carboxílico, que foi obtido antecipadamente, foi então adicionado gota-a-gota à solução resultante com resfriamento em gelo durante 10 minutos e depois que a adição foi completa, a solução resultante foi agitada a temperatura ambiente por 2 horas. A camada orgânica foi separada da solução de reação resultante, seqüencialmente lavada com ácido clorídrico 1 N, água de bicarbonato de sódio e salina saturada, seca com sulfato de magnésio anidro, e então filtrada. O concentrado obtido por evaporação dos solventes do filtrado em pressão reduzida foi lavado com um solvente misturado de éter- hexano normal para obter 1,43 g de N-(4-cloro-2-flúor-5-

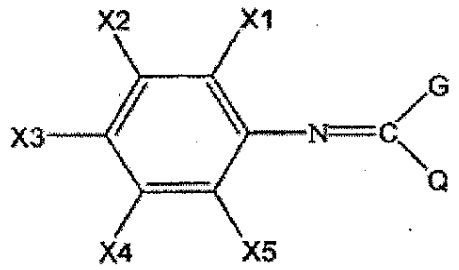
propargiloxifenil)-4,5-diidroisooxazol-3-carboxiamida (rendimento 88 %).

1,27 g da N-(4-cloro-2-flúor-5-propargiloxifenil)-4,5-diidroisooxazol-3-carboxiamida obtida reagiu com pentacloreto de fósforo e subseqüentemente com pirrolidina da mesma maneira que no exemplo 7 para obter 1,42 g de N'-(4-cloro-2-flúor-5-propargiloxifenil)-N,N-(butano-1,4-di-il)-4,5-diidroisooxaz ol-3-carboxiamidina (1-6) (rendimento 94 %). p.e. 79-81 °C.

Exemplos específicos do composto (1) produzido da forma descrita até aqui são apresentados na tabela 3 a seguir.

Na tabela 3, quando existe uma descrição na seção de constante física "132-133", por exemplo, mostra-se que a temperatura de fusão (°C) é entre 132 °C e 133 °C. Da mesma maneira, "22,4 °C 1.5928" mostra um índice de refração a 22,4 °C, "amorfo" mostra um estado amorfo e "óleo viscoso" mostra um estado de óleo viscoso.

Além do mais, abreviações usadas na tabela 3 são as apresentadas na tabelas a seguir que mostram exemplos de fórmulas químicas e substituintes.



[Tabela 3]

Tabela de exemplos de substituinte (N, O, S, heterocíclico)

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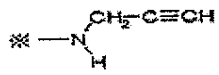
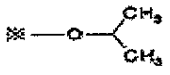
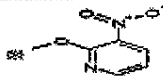
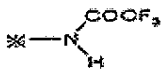
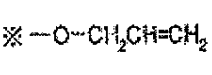
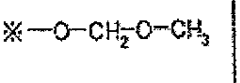
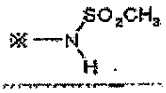
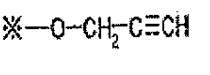
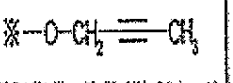
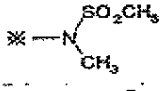
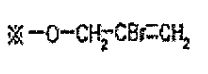
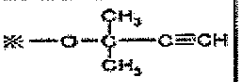
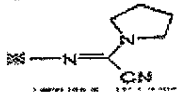
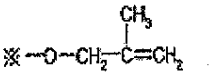
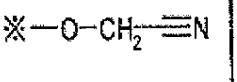
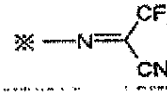
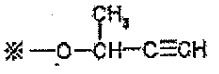
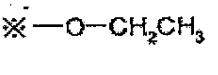
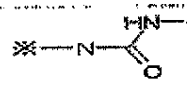
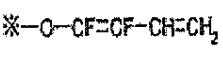
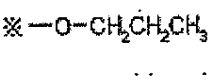
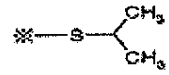
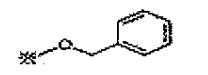
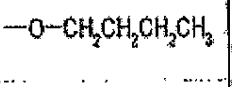
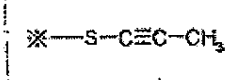
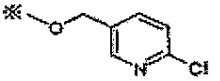
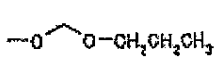
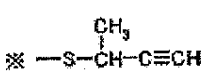
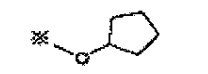
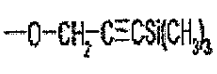
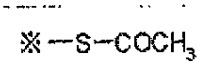
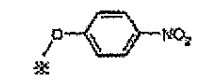
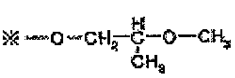
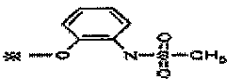
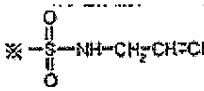
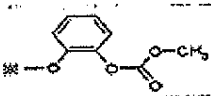
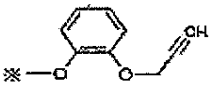
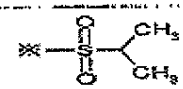
N001		T001		T017	
N002		T002		T018	
N003		T003		T019	
N004		T004		T020	
N005		T005		T021	
N006		T006		T022	
N007		T007		T023	
S001		T008		T024	
S002		T009		T025	
S003		T010		T026	
S004		T011		T027	
S005		T012		T028	
S006		T013		T029	
S007		T014		T030	
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[Tabela 4]

Tabela de exemplos de substituinte (N, O, S, heterocíclico)

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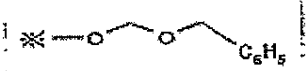
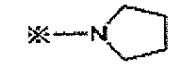
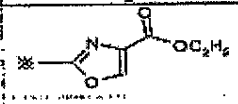
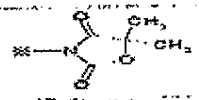
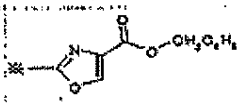
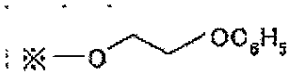
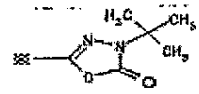
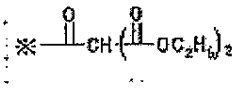
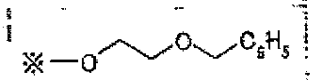
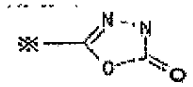
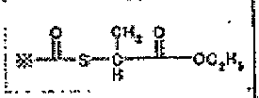
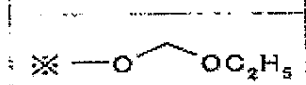
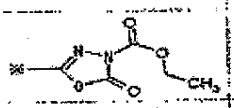
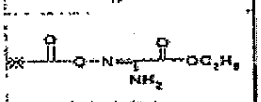
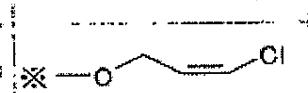
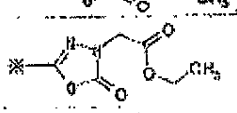
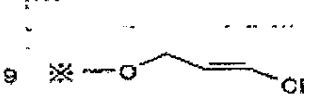
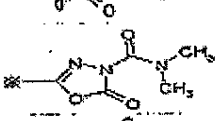
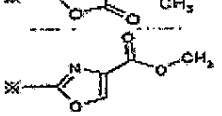
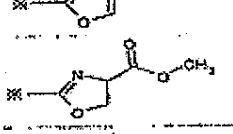
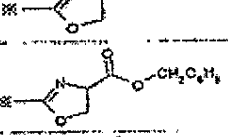
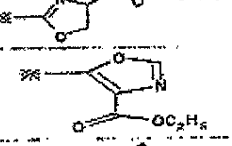
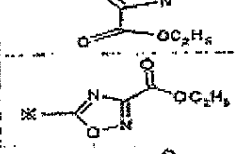
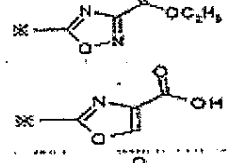
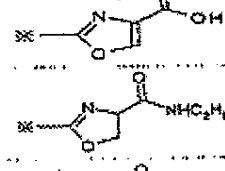
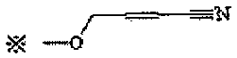
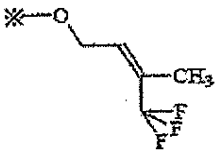
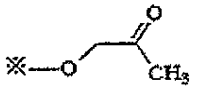
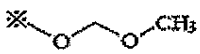
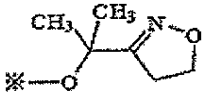
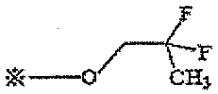
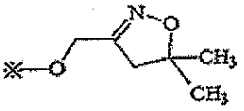
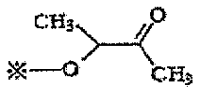
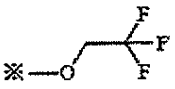
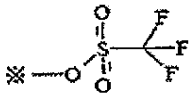
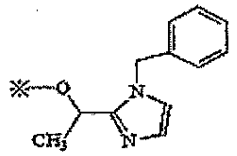
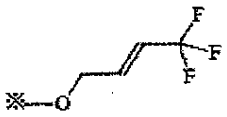
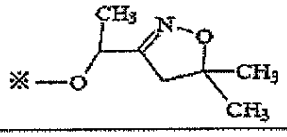
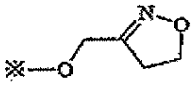
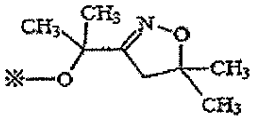
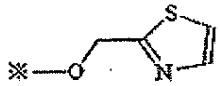
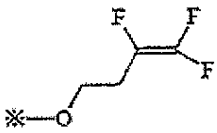
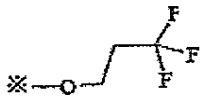
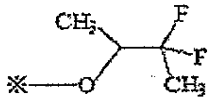
T033		H001		H017	
T034		H002		H018	
T035		H003		C001	
T036		H004		C002	
T037		H005		C003	
T038		H006			
T039		H007			
T040		H008			
T041		H009			
T042		H010			
		H011			
		H012			
		H013			
		H014			
		H015			
		H016			

[Tabela 5]

Tabela de exemplos de substituinte (N, O, S, heterocíclico)

No.	Fórmula química	No.	Fórmula química	No.	Fórmula química
T043		T050		T057	
T044		T051		T058	
T045		T052		T059	
T046		T053		T060	
T047		T054		T061	
T048		T055		T062	
T049		T056		T063	

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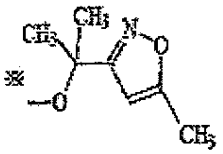
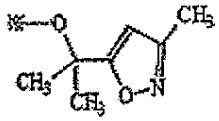
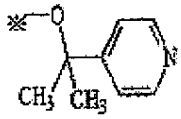
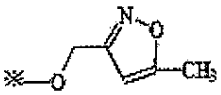
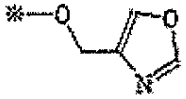
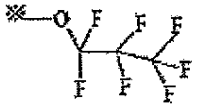
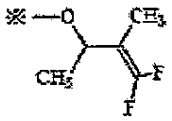
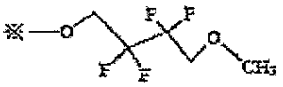
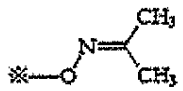
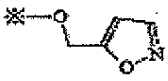
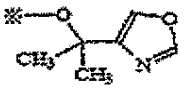
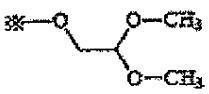
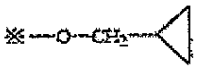
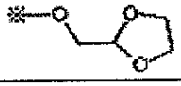
[Tabela 6]

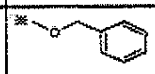
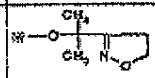
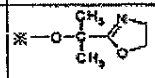
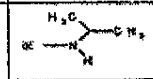
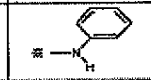
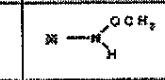
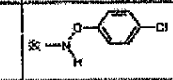
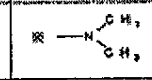
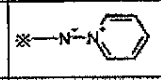
Tabela de exemplos de substituinte (N, O, S, heterocíclico)

No.	Fórmula química	No.	Fórmula química	No.	Fórmula química
T064		T071		T078	
T065		T072		T079	
T066		T073		T080	
T067		T074			
T068		T075			
T069		T076			
T070		T077			

[Tabela 7]

NO.	※—A1(m1)—Z1		X12 [※—A2(m2)—Y—Z2]			X13 [※—A3(m3)—Z3]	
	(A1)m1	Z1	(A2)m2	Y	Z2	(A3)m3	Z3
X101	m1=0	※—OH	—	—	—	—	—
X102	m1=0	※—OCH_3	—	—	—	—	—
X103	m1=0	※—OC_2H_5	—	—	—	—	—
X104	m1=0	※—O—CH(CH3)2	—	—	—	—	—
X105	m1=0	※—OCH_2—CH=CH_2	—	—	—	—	—
X106	m1=0	※—O—C(CH3)2—CN	—	—	—	—	—
X107	m1=0	※—O—C(CH3)2—CH_2OH	—	—	—	—	—
X108	m1=0	※—O—C(CH3)2—CF_3	—	—	—	—	—
X109	m1=0	※—O—C(CH3)(OC2H5)2	—	—	—	—	—
X110	m1=0	※—OCH_2—C(CH3)2—OH	—	—	—	—	—
X111	m1=0	※—O—C(CH3)2—CH(CH3)—OH	—	—	—	—	—

[Tabela 8]

NO.	※—A1$_{m1}$—Z1		X12 [※—A2$_{m2}$—Z2]			X13 [※—A3$_{m3}$—Z3]	
	(A1)$_{m1}$	Z1	(A2)$_{m2}$	Y	Z2	(A3)$_{m3}$	Z3
X112	m1=0		—	—	—	—	—
X113	m1=0		—	—	—	—	—
X114	m1=0		—	—	—	—	—
X115	m1=0		—	—	—	—	—
X116	m1=0		—	—	—	—	—
X117	m1=0		—	—	—	—	—
X118	m1=0		—	—	—	—	—
X119	m1=0		—	—	—	—	—
X120	m1=0		—	—	—	—	—
X121	m1=0		—	—	—	—	—
X122	※—CH_2—CHCl—	※—OC_2H_5	—	—	—	—	—

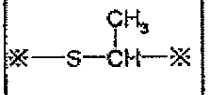
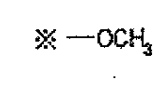
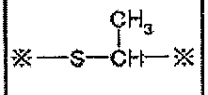
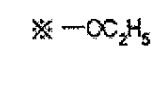
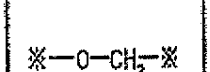
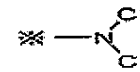
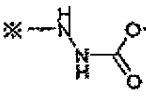
[Tabela 9]

NO.	※—A1$_{m1}$(=O)—Z1		X12 [※—A2$_{m2}$(=O)—Z2]			X13 [※—A3$_{m3}$(=O)—Z3]	
	(A1)$_{m1}$	Z1	(A2)$_{m2}$	Y	Z2	(A3)$_{m3}$	Z3
X123	※—CH=CCl—	※—OC_2H_5	—	—	—	—	—
X124	※—CH_2—O—CH(CH$_3$)—	※—OC_2H_5	—	—	—	—	—
X125	※—NH—	※—O—C(CH$_3$)$_2$—CH_3	—	—	—	—	—
X126	※—NH—	※—N(pyrrolidine)	—	—	—	—	—
X127	※—N(—H_2C—C≡CH)—	※—O—C(CH$_3$)$_2$—CH_3	—	—	—	—	—
X128	※—NH—CH_2—	※—OC_2H_5	—	—	—	—	—
X129	※—O—CH_2—	※—OH	—	—	—	—	—
X130	※—O—CH_2—	※—OC_2H_5	—	—	—	—	—
X131	※—O—CH_2—	※—O—CH(CH$_3$)$_2$	—	—	—	—	—
X132	※—O—CH_2—	※—OCH_2—C≡CH	—	—	—	—	—
X133	※—O—CH_2—	※—O(cyclopentyl)	—	—	—	—	—

[Tabela 10]

NO.	※—A1$_{m1}$—(=O)—Z1		X12 [※—A2$_{m2}$—(=Y)—Z2]			X13 [※—A3$_{m3}$—(=O)—Z3]	
	(A1)$_{m1}$	Z1	(A2)$_{m2}$	Y	Z2	(A3)$_{m3}$	Z3
X134	※—O—CH_2—	※—N(H_3C)—CH_2	—	—	—	—	—
X135	※—O—CH(CH_3)—	※—OCH_3	—	—	—	—	—
X136	※—O—CH(CH_3)—	※—OC_2H_5	—	—	—	—	—
X137	※—O—C(CH_3)$_2$—	※—OH	—	—	—	—	—
X138	※—O—C(CH_3)$_2$—	※—OC_2H_5	—	—	—	—	—
X139	※—O—C(CH_3)$_2$—	※—O—C(CH_3)$_2$—CH_3	—	—	—	—	—
X140	※—O—C(CH_3)$_2$—	※—N(CH_3)$_2$	—	—	—	—	—
X141	※—O—C(H_2C—CH_2)—	※—OCH_3	—	—	—	—	—
X142	※—S—CH_2—	※—OC_2H_5	—	—	—	—	—
X143	※—S—CH_2—	※—O—C(CH_3)$_2$	—	—	—	—	—
X144	※—S—CH_2—	※—OCH_2—CH=CH_2	—	—	—	—	—

[Tabela 11]

NO.	※—A1(m1)—Z1		X12 [※—A2(m2)—Y—Z2]			X13 [※—A3(m3)—Z3]	
	(A1)m1	Z1	(A2)m2	Y	Z2	(A3)m3	Z3
X145			—	—	—	—	—
X146			—	—	—	—	—
X147			—	—	—	—	—
X148	m1=0		—	—	—	—	—
X149	m1=0	※-OCH2-C≡CH	-	-	-	-	-
X150	m1=0	※-OCH2-C2F5	-	-	-	-	-
X151	m1=0	※-NH-C2H5	-	-	-	-	-
X152	m1=0	※-OCH2CF3	-	-	-	-	-
X153	m1=0	※-OCH(CF3)2	-	-	-	-	-

[Tabela 12]

NO.	※—A1$_{m1}$(=O)—Z1		X12 [※—A2$_{n2}$(=Y)—Z2]			X13 [※—A3$_{n3}$(=O)—Z3]	
	$(A1)_{m1}$	Z1	$(A2)_{n2}$	Y	Z2	$(A3)_{n3}$	Z3
X201	m1=0	※-OX12	※—CH_2—	O	※—OC_2H_5	—	—
X202	m1=0	※-OX12	※—CH(CH$_3$)—	O	※—OC_2H_5	—	—
X203	m1=0	※-OX12	※—CH(CH$_3$)—	O	※—N(H)(C_2H_5)	—	—
X204	m1=0	※-OX12	※—CH(C_3H_7)—	O	※—OC_2H_5	—	—
X205	m1=0	※-OX12	※—CH(C$_6$H$_5$)—	O	※—OC_2H_5	—	—
X206	m1=0	※-OX12	※—C(CH$_3$)$_2$—	O	※—OH	—	—
X207	m1=0	※-O-X$_{12}$	※—C(CH$_3$)$_2$—	O	※—OCH_3	—	—

[Tabela 13]

NO.	※—A1$_{m1}$—Z1		X12 [※—A2$_{m2}$—Y—Z2]			X13 [※—A3$_{m3}$—Z3]	
	$(A1)_{m1}$	Z1	$(A2)_{m2}$	Y	Z2	$(A3)_{m3}$	Z3
X208	m1=0	※—OX12	※—C(CH$_3$)$_2$—	0	※—OC$_2$H$_5$	—	—
X209	m1=0	※—OX12	※—C(CH$_3$)$_2$—	0	※—O—CH(CH$_3$)$_2$	—	—
X210	m1=0	※—OX12	※—C(CH$_3$)$_2$—	0	※—OCH$_2$CH=CH$_2$	—	—
X211	m1=0	※—NHX12	※—C(CH$_3$)$_2$—	0	※—OC$_2$H$_5$	—	—
X212	m1=0	※—OX12	※—C(CH$_3$)$_2$—	0	※—NH$_2$	—	—
X213	m1=0	※—OX12	※—C(CH$_3$)$_2$—	0	※—N(CH$_3$)H	—	—
X214	m1=0	※—OX12	※—C(CH$_3$)$_2$—	0	※—N(C$_2$H$_5$)H	—	—
X215	m1=0	※—OX12	※—C(CH$_3$)$_2$—	0	※—N(CH$_2$CH$_2$Cl)H	—	—
X216	m1=0	※—OX12	※—C(CH$_3$)$_2$—	0	※—N(C$_3$H$_7$)H	—	—
X217	m1=0	※—OX12	※—C(CH$_3$)$_2$—	0	※—N(H)—C(CH$_3$)$_2$—OCH$_3$	—	—
X218	m1=0	※—OX12	※—C(CH$_3$)$_2$—	0	※—N(CH$_2$CH=CH$_2$)H	—	—

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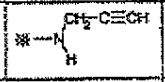
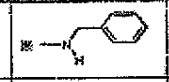
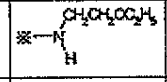
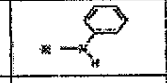
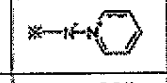
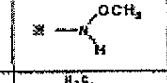
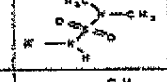
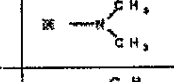
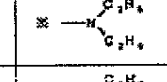
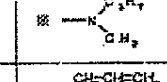
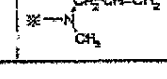
[Tabela 14]

NO.	※—A1$_{m1}$(=O)—Z1		X12 [※—A2$_{m2}$(=Y)—Z2]			X13 [※—A3$_{m3}$(=O)—Z3]	
	(A1)$_{m1}$	Z1	(A2)$_{m2}$	Y	Z2	(A3)$_{m3}$	Z3
X219	m1=0	※—OX12		0		—	—
X220	m1=0	※—OX12		0		—	—
X221	m1=0	※—OX12		0		—	—
X222	m1=0	※—OX12		0		—	—
X223	m1=0	※—OX12		0		—	—
X224	m1=0	※—OX12		0		—	—
X225	m1=0	※—OX12		0		—	—
X226	m1=0	※—OX12		0		—	—
X227	m1=0	※—OX12		0		—	—
X228	m1=0	※—OX12		0		—	—
X229	m1=0	※—OX12		0		—	—

[Tabela 15]

NO.	※—A1(m1)—Z1		X12[※—A2(m2)—Z2]			X13[※—A3(m3)—Z3]	
	(A1)m1	Z1	(A2)m2	Y	Z2	(A3)m3	Z3
X230	m1=0	※—OX12	※—C(CH3)2—	O	※—N(CH3)(CH2C≡CH)	—	—
X231	m1=0	※—OX12	※—C(CH3)2—	O	※—N(CH3)(CH2CN)	—	—
X232	m1=0	※—OX12	※—C(CH3)2—	O	※—N(pyrrolidine)	—	—
X233	m1=0	※—OX12	※—C(CH3)2—	O	※—N(morpholine)	—	—
X234	m1=0	※—OX12	※—C(CH3)2—	O	※—H	—	—
X235	m1=0	※—OX12	※—C(CH3)2—	O	※—CH_3	—	—
X236	m1=0	※—OX12	※—C(CH3)2—	O	※—C_2H_5	—	—
X237	m1=0	※—OX12	※—C(CH3)2—	O	※—CH_2SCH_3	—	—
X238	m1=0	※—OX12	※—C(CH3)2—	O	※—CH_2S—C(=NH)—CH_3	—	—
X239	m1=0	※—OX12	※—C(CH3)2—	NOH	※—H	—	—
X240	m1=0	※—OX12	※—C(CH3)2—	$NOCH_3$	※—H	—	—

[Tabela 16]

NO.	※—A1(m1)—Z1		X12 [※—A2(m2)—Y—Z2]			X13 [※—A3(m3)—Z3]	
	(A1)m1	Z1	(A2)m2	Y	Z2	(A3)m3	Z3
X241	m1=0	※—OX12	※—C(CH3)2—	NOC_2H_5	※—CH_3	—	—
X242	m1=0	※—OX12	※—C(CH3)2—	$NOCH_2$-CH=CHCl	※—H	—	—
X243	m1=0	※—OX12	※—C(CH3)2—	$NNHCOOC_2H_5$	※—H	—	—
X244	m1=0	※—OX12	※—C(CH2)2—	0	※—OH	—	—
X245	m1=0	※—OX12	※—C(CH2)2—	0	※—OC_2H_5	—	—
X246	m1=0	※—OX12	※—C(CH2)2—	0	※—N(H)(C_2H_5)	—	—
X247	m1=0	※—OX12	※—C(CH2)2—	0	※—N(CH_3)(CH_3)	—	—
X248	m1=0	※—OX12	※—C(CF_3)(CH_3)—	0	※—OH	—	—
X249	m1=0	※—OX12	※—C(CF_3)(CH_3)—	0	※—OC_2H_5	—	—
X250	m1=0	※—OX12	※—C(CF_3)(CH_3)—	0	※—N(H)(C_2H_5)	—	—
X251	m1=0	※—OX12	※—C(CF_3)(CH_3)—	0	※—N(CH_3)(CH_3)	—	—

[Tabela 17]

NO.	※—A1(m1)—Z1		X12 [※—A2(m2)—Z2]			X13 [※—A3(m3)—Z3]	
	(A1)m1	Z1	(A2)m2	Y	Z2	(A3)m3	Z3
X252	m1=0	※—OX12	※—C(C2H5)(CH3)—	0	※—OH	—	—
X253	m1=0	※—OX12	※—C(C2H5)(CH3)—	0	※—OC2H5	—	—
X254	m1=0	※—OX12	※—C(C2H5)(CH3)—	0	※—N(C2H5)H	—	—
X255	m1=0	※—OX12	※—C(C2H5)(CH3)—	0	※—N(CH3)CH3	—	—
X256	m1=0	※—OX12	※—C(C2H5)(C2H5)—	0	※—OH	—	—
X257	m1=0	※—OX12	※—C(C2H5)(C2H5)—	0	※—OC2H5	—	—
X258	m1=0	※—OX12	※—C(C2H5)(C2H5)—	0	※—N(C2H5)H	—	—
X259	m1=0	※—OX12	※—C(C2H5)(C2H5)—	0	※—N(CH3)CH3	—	—
X260	m1=0	※—OX12	※—C(CH3)(CH3)—CH2—	0	※—OC2H5	—	—
X261	m1=0	※—OX12	※—C(CH3)(CH3)—CH=CH—※	0	※—OC2H5	—	—

[Tabela 18]

NO.	※—A1$_{m1}$(=O)—Z1		X12 [※—A2$_{m2}$(=Y)—Z2]			X13 [※—A3$_{m3}$(=O)—Z3]	
	$(A1)_{m1}$	Z1	$(A2)_{m2}$	Y	Z2	$(A3)_{m3}$	Z3
X262	m1=0	※-NHX12	※—CH(CH$_2$OH)—	O	※-OCH$_3$	-	-
X263	m1=0	※-NHX12	※—C(=CH$_2$)—	O	※-OCH$_3$	-	-
X264	m1=0	※-NHX12	※—CH(CH$_2$OH)—	O	※-OCH$_2$C$_6$H$_5$	-	-
X265	m1=0	※ —OX12	※—C(CH$_3$)$_2$—	O	※-OCH$_2$C$_2$F$_5$	-	-
X266	m1=0	※ —OX12	※—C(CH$_3$)$_2$—	O	※-OCH(CF$_3$)$_2$	-	-
X267	m1=0	※ —OX12	※—C(CH$_3$)$_2$—	O	※-OCH$_2$CF$_3$	-	-
X268	m1=0	※ —OX12	※—C(CH$_3$)$_2$—	O	※-NHCH$_2$CF$_3$	-	-
X302	m1=0	※ —OX12	※—C(CH$_3$)$_2$—	O	※—N(X13)H	※—CH$_2$—	※ —OC$_2$H$_5$

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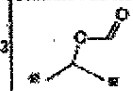
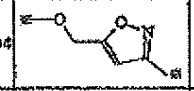
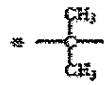
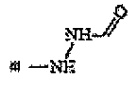
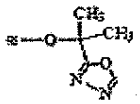
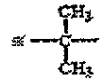
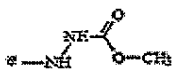
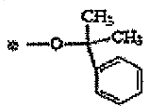
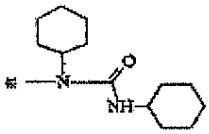
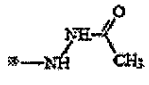
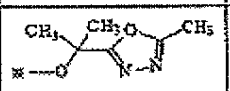
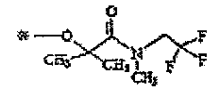
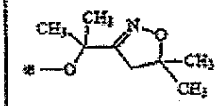
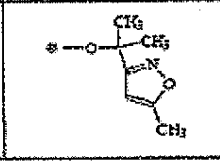
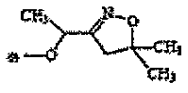
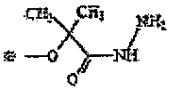
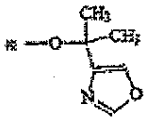
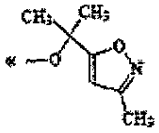
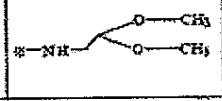
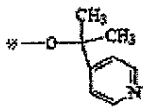
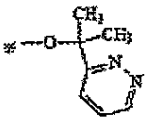
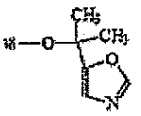
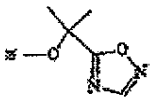
[Tabela 19]

NO.	※—A1m1—C(=O)—Z1		X12[※—A2m2—C(=Y)—Z2]			X13[※—A3m3—C(=O)—Z3]	
	$(A1)_{m1}$	Z1	$(A2)_{m2}$	Y	Z2	$(A3)_{m3}$	Z3
X303			-	-	-	-	-
X304			-	-	-	-	-
X305	m=0	※—OX12		O		-	-
X306	m=0		-	-	-	-	-
X307	m=0	※—OX12		O		-	-
X308	m=0		-	-	-	-	-
X309	m=0		-	-	-	-	-
X310	m=0	※—OX12		O		-	-
X311	m=0		-	-	-	-	-
X312	m=0		-	-	-	-	-
X313	m=0		-	-	-	-	-
X314	m=0		-	-	-	-	-

[Tabela 20]

NO.	※—A1m1—C(=O)—Z1		X12 [※—A2m2—C(=Y)—Z2]			X13 [※—A3m3—C(=O)—Z3]	
	$(A1)_{m1}$	Z1	$(A2)_{m2}$	Y	Z2	$(A3)_{m3}$	Z3
X315	m=0		-	-	-	-	-
X316	m=0		-	-	-	-	-
X317	m=0		-	-	-	-	-
X318	m=0		-	-	-	-	-
X319	m=0		-	-	-	-	-
X320	m=0	※—OX12		O		-	-
X321	m=0		-	-	-	-	-
X322	m=0		-	-	-	-	-
X323	m=0		-	-	-	-	-
X324	m=0		-	-	-	-	-

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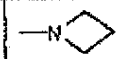
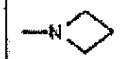
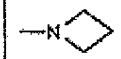
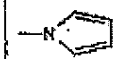
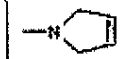
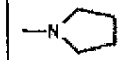
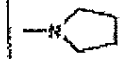
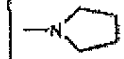
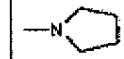
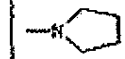
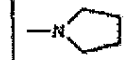
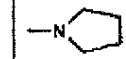
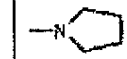
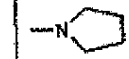
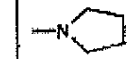
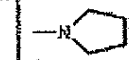
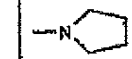
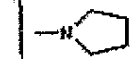
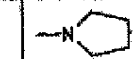
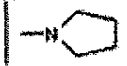
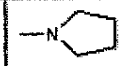
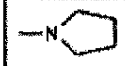
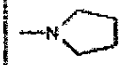
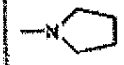
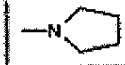
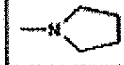
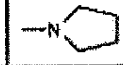
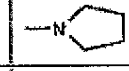
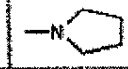
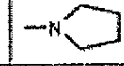
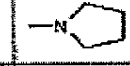
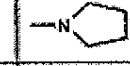
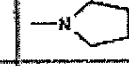
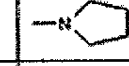
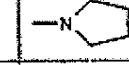
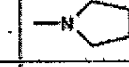
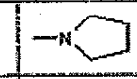
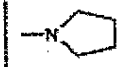
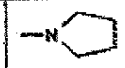
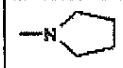
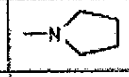
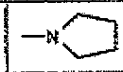
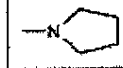
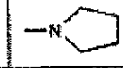
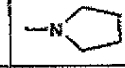
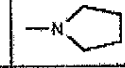
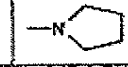
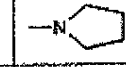
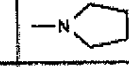
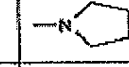
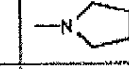
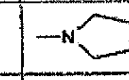
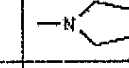
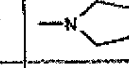
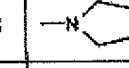
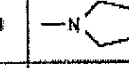
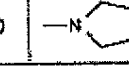
[Tabela 21]

No.	G	Q	X1	X2	X3	X4	X5	Cons.
1		—CN	—F	—H	—Cl	X208	—H	20, 5°C 1.5346
2		—CN	—F	—H	—Cl	X210	—H	20, 3°C 1.5468
3		—CN	—F	—H	—Cl	T003	—H	99–100
4		—CN	—F	—H	—Cl	T003	—H	132–133
5		—CN	—F	—H	—Cl	T003	—H	101–103
6		—CN	—H	—H	—CN	X112	—H	22, 4°C 1.5928
7		—CN	—H	—H	—CN	X226	—H	22, 1°C 1.5925
8		—CN	—H	—H	—Cl	X123	—H	22, 5°C 1.577
9		—CN	—H	—H	—Cl	X210	—H	22, 5°C 1.5506
10		—CN	—H	—H	—Cl	X102	—H	20, 6°C 1.6026
11		—CN	—F	—H	—CN	X208	—H	126–128
12		—CN	—F	—H	—CN	X226	—H	Amorfo
13		—CN	—F	—H	—Cl	N001	—H	118–120
14		—CN	—F	—H	—CN	T003	—H	113–115
15		—CN	—F	—H	$-OCHF_2$	—H	—H	22, 4°C 1.5376
16		—CN	—F	—H	$-OCHF_2$	X226	—H	22, 1°C 1.5329
17		—CN	—F	—H	$-OCHF_2$	X208	—H	22, 3°C 1.5056
18		—CN	—F	—H	T008	—H	—H	108–110
19		—CN	—F	—H	T009	—H	—H	81–83
20		—CN	—F	—H	—Cl	—H	—H	20, 6°C 1.5959

[Tabela 22]

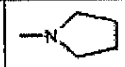
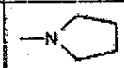
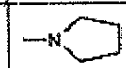
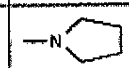
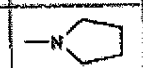
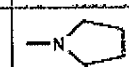
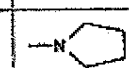
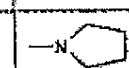
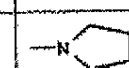
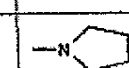
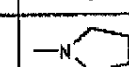
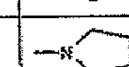
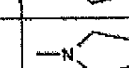
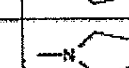
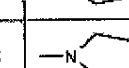
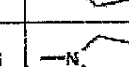
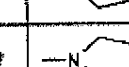
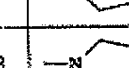
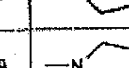
No.	G	Q	X1	X2	X3	X4	X5	Cons.
21		-CN	-F	-H	-Cl	-CH2OH	-H	23°C 1.5785
22		-CN	-F	-H	-Cl	X101	-H	166-169
23		-CN	-F	-H	-Cl	X103	-H	22.8°C 1.5426
24		-CN	-F	-H	-Cl	X104	-H	20.8°C 1.571
25		-CN	-F	-H	-Cl	X106	-H	22.5°C 1.5631
26		-CN	-F	-H	-Cl	X106	-H	23.1°C 1.565
27		-CN	-F	-H	-Cl	X107	-H	24.9°C 1.5692
28		-CN	-F	-H	-Cl	X108	-H	22.2°C 1.5353
29		-CN	-F	-H	-Cl	X109	-H	22.9°C 1.5233
30		-CN	-F	-H	-Cl	X110	-H	25.1°C 1.5578
31		-CN	-F	-H	-Cl	X111	-H	23.3°C 1.5686
32		-CN	-F	-H	-Cl	X112	-H	87-89
33		-CN	-F	-H	-Cl	X113	-H	109-110
34		-CN	-F	-H	-Cl	X114	-H	24.3°C 1.5369
35		-CN	-F	-H	-Cl	X115	-H	142-145
36		-CN	-F	-H	-Cl	X116	-H	132-135
37		-CN	-F	-H	-Cl	X117	-H	150-152
38		-CN	-F	-H	-Cl	X118	-H	147-150
39		-CN	-F	-H	-Cl	X119	-H	168-170
40		-CN	-F	-H	-Cl	X120	-H	Amorfo

[Tabela 23]

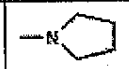
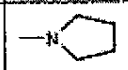
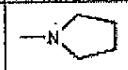
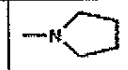
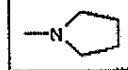
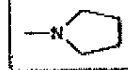
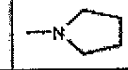
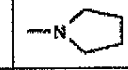
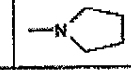
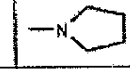
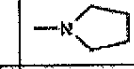
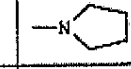
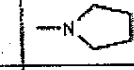
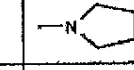
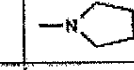
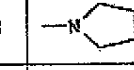
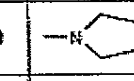
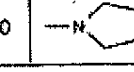
No.	G	Q	X1	X2	X3	X4	X5	Cons.
41		—CN	—F	—H	—Cl	X121	—H	173–174
42		—CN	—F	—H	—Cl	X122	—H	22,2°C 1.5402
43		—CN	—F	—H	—Cl	X123	—H	103–105
44		—CN	—F	—H	—Cl	X124	—H	23,1°C 1.5426
45		—CN	—F	—H	—Cl	X125	—H	108–112
46		—CN	—F	—H	—Cl	X127	—H	Amorfo
47		—CN	—F	—H	—Cl	X128	—H	22°C 1.5528
48		—CN	—F	—H	—Cl	X129	—H	164–166
49		—CN	—F	—H	—Cl	X130	—H	22.4°C 1.5641
50		—CN	—F	—H	—Cl	X130	—Cl	22,6°C 1.5542
51		—CN	—F	—H	—Cl	X131	—H	90–92
52		—CN	—F	—H	—Cl	X132	—H	99–100
53		—CN	—F	—H	—Cl	X133	—H	22,8°C 1.5599
54		—CN	—F	—H	—Cl	X134	—H	101–103
55		—CN	—F	—H	—Cl	X135	—H	22.9°C 1.5492
56		—CN	—F	—H	—Cl	X136	—H	22,4°C 1.5316
57		—CN	—F	—H	—Cl	X137	—H	Amorfo
58		—CN	—F	—H	—Cl	X138	—H	22,5°C 1.5478
59		—CN	—F	—H	—Cl	X139	—H	22,5°C 1.5187
60		—CN	—F	—H	—Cl	X140	—H	140–143

66
98

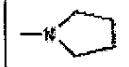
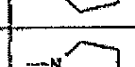
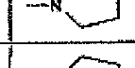
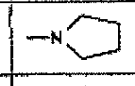
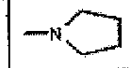
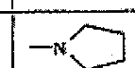
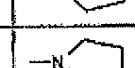
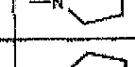
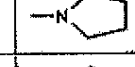
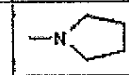
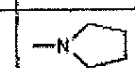
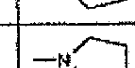
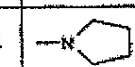
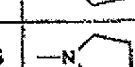
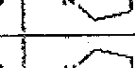
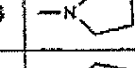
[Tabela 24]

No.	G	Q	X1	X2	X3	X4	X5	Cons.
61		—CN	—F	—H	—Cl	X141	—H	123–126
62		—CN	—F	—H	—Cl	X142	—H	22, 3°C 1.5768
63		—CN	—F	—H	—Cl	X143	—H	21, 9°C 1.576
64		—CN	—F	—H	—Cl	X144	—H	22°C 1.5936
65		—CN	—F	—H	—Cl	X145	—H	22, 8°C 1.586
66		—CN	—F	—H	—Cl	X146	—H	22, 6°C 1.5772
67		—CN	—F	—H	—Cl	X201	—H	22, 5°C 1.5598
68		—CN	—F	—H	—Cl	X202	—H	22°C 1.5388
69		—CN	—F	—H	—Cl	X203	—H	154–159
70		—CN	—F	—H	—Cl	X204	—H	23.2°C 1.5358
71		—CN	—F	—H	—Cl	X205	—H	
72		—CN	—F	—H	—Cl	X206	—H	Amorfo
73		—CN	—F	—H	—Cl	X207	—H	92–94
74		—CN	—F	—H	—Cl	X208	—H	46–48
75		—CN	—F	—H	—Cl	X209	—H	20, 4°C 1.53
76		—CN	—F	—H	—Cl	X210	—H	22, 2°C 1.5414
77		—CN	—F	—H	—Cl	X211	—H	104–106
78		—CN	—F	—H	—Cl	X212	—H	Óleo viscoso
79		—CN	—F	—H	—Cl	X213	—H	22, 8°C 1.5467
80		—CN	—F	—H	—Cl	X214	—H	Óleo viscoso

[Tabela 25]

No.	G	Q	X1	X2	X3	X4	X5	Cons.
81		—CN	—F	—H	—Cl	X215	—H	24, 9°C 1.5454
82		—CN	—F	—H	—Cl	X216	—H	23.5°C 1.5379
83		—CN	—F	—H	—Cl	X217	—H	117–119
84		—CN	—F	—H	—Cl	X218	—H	25.5°C 1.5389
85		—CN	—F	—H	—Cl	X219	—H	23, 3°C 1.5526
86		—CN	—F	—H	—Cl	X220	—H	Óleo viscoso
87		—CN	—F	—H	—Cl	X221	—H	22, 4°C 1.5349
88		—CN	—F	—H	—Cl	X222	—H	Amorfo
89		—CN	—F	—H	—Cl	X223	—H	Amorfo
90		—CN	—F	—H	—Cl	X224	—H	Óleo viscoso
91		—CN	—F	—H	—Cl	X225	—H	133–136
92		—CN	—F	—H	—Cl	X226	—H	Óleo viscoso
93		—CN	—F	—H	—Cl	X227	—H	23, 7°C 1.5342
94		—CN	—F	—H	—Cl	X228	—H	22, 1°C 1.5396
95		—CN	—F	—H	—Cl	X229	—H	22, 5°C 1.555
96		—CN	—F	—H	—Cl	X230	—H	22, 3°C 1.5423
97		—CN	—F	—H	—Cl	X231	—H	Óleo viscoso
98		—CN	—F	—H	—Cl	X232	—H	126–128
99		—CN	—F	—H	—Cl	X233	—H	187–190
100		—CN	—F	—H	—Cl	X234	—H	22, 8°C 1.5649

[Tabela 26]

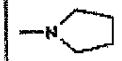
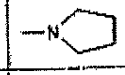
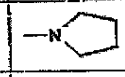
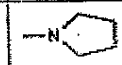
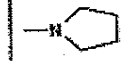
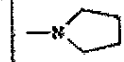
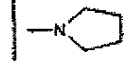
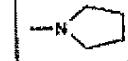
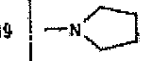
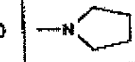
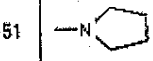
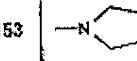
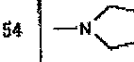
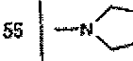
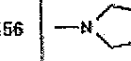
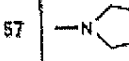
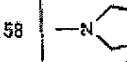
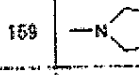
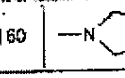
No.	G	Q	X1	X2	X3	X4	X5	Cons.
101		-CN	-F	-H	-Cl	X235	-H	118-119
102		-CN	-F	-H	-Cl	X236	-H	22,2°C 1.5543
103		-CN	-F	-H	-Cl	X237	-H	22,5°C 1.5618
104		-CN	-F	-H	-Cl	X238	-H	158-161
105		-CN	-F	-H	-Cl	X239	-H	111-112
106		-CN	-F	-H	-Cl	X240	-H	22,9°C 1.5615
107		-CN	-F	-H	-Cl	X241	-H	23,3°C 1.5491
108		-CN	-F	-H	-Cl	X242	-H	57-59
109		-CN	-F	-H	-Cl	X243	-H	Amorfo
110		-CN	-F	-H	-Cl	X244	-H	Amorfo
111		-CN	-F	-H	-Cl	X245	-H	22,4°C 1.5555
112		-CN	-F	-H	-Cl	X246	-H	163-167
113		-CN	-F	-H	-Cl	X247	-H	25,1°C 1.5818
114		-CN	-F	-H	-Cl	X248	-H	21,9°C 1.5211
115		-CN	-F	-H	-Cl	X249	-H	Amorfo
116		-CN	-F	-H	-Cl	X250	-H	Óleo viscoso
117		-CN	-F	-H	-Cl	X251	-H	Amorfo
118		-CN	-F	-H	-Cl	X252	-H	Amorfo
119		-CN	-F	-H	-Cl	X253	-H	23,6°C 1.5483
120		-CN	-F	-H	-Cl	X254	-H	24,4°C 1.5548

69
8

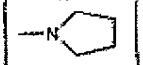
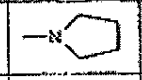
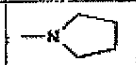
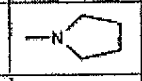
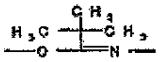
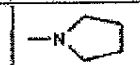
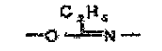
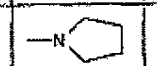
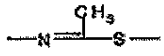
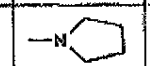
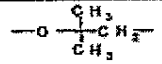
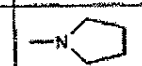
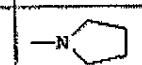
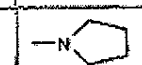
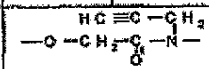
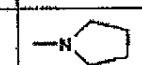
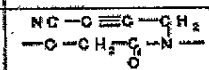
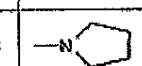
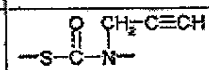
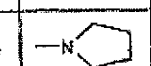
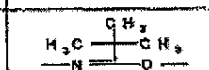
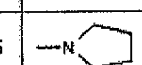
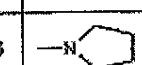
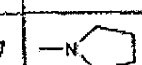
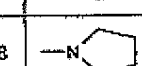
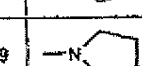
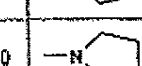
[Tabela 27]

No.	G	Q	X1	X2	X3	X4	X5	Cons.
121	—N	—CN	—F	—H	—Cl	X255	—H	24, 3°C 1.5535
122	—N	—CN	—F	—H	—Cl	X256	—H	Amorfo
123	—N	—CN	—F	—H	—Cl	X257	—H	22, 8°C 1.5352
124	—N	—CN	—F	—H	—Cl	X258	—H	22, 2°C 1.545
125	—N	—CN	—F	—H	—Cl	X259	—H	25, 1°C 1.5606
126	—N	—CN	—F	—H	—Cl	X260	—H	24, 8°C 1.539
127	—N	—CN	—F	—H	—Cl	X261	—H	24, 5°C 1.5428
128	—N	—CN	—F	—H	—Cl	X301	—H	23, 8°C 1.5161
129	—N	—CN	—F	—H	—Cl	X302	—H	24, 6°C 1.5261
130	—N	—CN	—F	—H	—Cl	—F	—H	22, 7°C 1.5733
131	—N	—CN	—F	—H	—Cl	—NH2	—H	83–85
132	—N	—CN	—F	—H	—Cl	—NO2	—H	20, 3°C 1.5982
133	—N	—CN	—F	—H	—Cl	N002	—H	116–118
134	—N	—CN	—F	—H	—Cl	N003	—H	135–137
135	—N	—CN	—F	—H	—Cl	N004	—H	134–137
136	—N	—CN	—F	—H	—Cl	N006	—H	22, 4°C 1.5425
137	—N	—CN	—F	—H	—Cl	—OH	—H	165–167
138	—N	—CN	—F	—H	—Cl	T045	—H	22, 3°C 1.5856
139	—N	—CN	—F	—H	—Cl	T001	—H	65–67
140	—N	—CN	—F	—H	—Cl	T002	—H	22, 4°C 1.5776

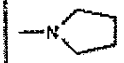
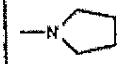
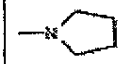
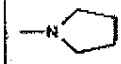
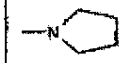
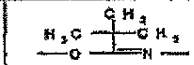
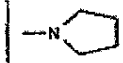
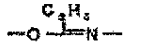
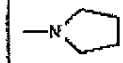
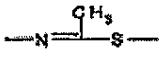
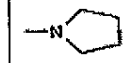
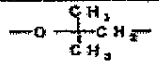
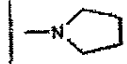
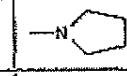
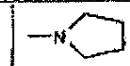
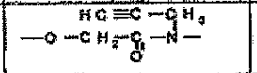
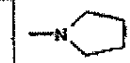
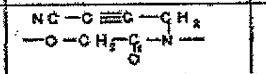
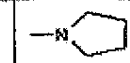
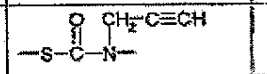
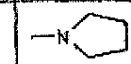
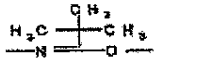
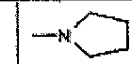
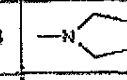
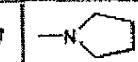
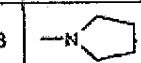
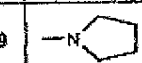
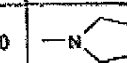
[Tabela 28]

No.	G	Q	X1	X2	X3	X4	X5	Cons. ...
141		—CN	—F	—H	—Cl	T003	—H	88–89
142		—CN	—F	—H	—Cl	T003	$-CH_2CH=CH_2$	63–64
143		—CN	—F	—H	—Cl	T003	—Cl	22,6°C 1.5861
144		—CN	—F	—H	—Cl	T003	—NO2	Óleo amorfo
145		—CN	—F	—H	—Cl	T005	—H	71–75
146		—CN	—F	—H	—Cl	T006	—H	22,8°C 1.5719
147		—CN	—F	—H	—Cl	T007	—H	22,2°C 1.56
148		—CN	—F	—H	—Cl	T008	—H	75–78
149		—CN	—F	—H	—Cl	T011	—H	110–113
150		—CN	—F	—H	—Cl	T012	—H	55–58
151		—CN	—F	—H	—Cl	T013	—H	22,4°C 1.5745
152		—CN	—F	—H	—Cl	T014	—H	22,2°C 1.6089
153		—CN	—F	—H	—Cl	T015	—H	110–113
154		—CN	—F	—H	—Cl	T016	—H	156–158
155		—CN	—F	—H	—Cl	T017	—H	151–153
156		—CN	—F	—H	—Cl	S001	—H	61–64
157		—CN	—F	—H	—Cl	S002	—H	22,4°C 1.62
158		—CN	—F	—H	—Cl	S003	—H	22,6°C 1.6018
159		—CN	—F	—H	—Cl	S004	—H	22,6°C 1.5868
160		—CN	—F	—H	—Cl	S005	—H	86–90

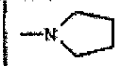
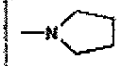
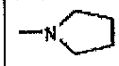
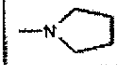
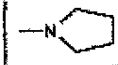
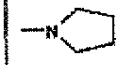
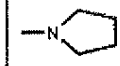
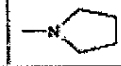
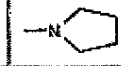
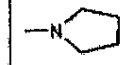
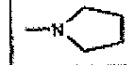
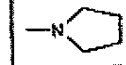
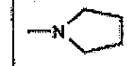
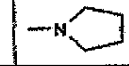
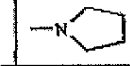
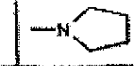
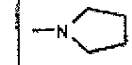
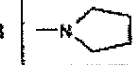
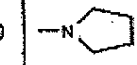
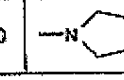
[Tabela 29]

No.	G	Q	X1	X2	X3	X4	X5	Cons.
161		—CN	—F	—H	—Cl	S006	—H	151–153
162		—CN	—F	—H	—Cl	S007	—H	113–114
163		—CN	—F	—H	—Cl	T010	—H	103–105
164		—CN	—F	—H	—Cl	H002	—H	128–131
165		—CN	—F	—H	—Cl			145–147
166		—CN	—F	—H	—Cl			99–100
167		—CN	—F	—H	—Cl			145–147
168		—CN	—F	—H	—Cl			Óleo viscoso
169		—CN	—F	—H	—Br	X208	—H	$20_{,}2$°C 1.5553
170		—CN	—F	—H	—Br	T003	—H	83–85
171		—CN	—F	—H			—H	153–157
172		—CN	—F	—H			—H	231–234
173		—CN	—F	—H			—H	142–144
174		—CN	—F	—H			—Cl	130–132
175		—CN	—CH3	—H	—CH3	—H	—CH3	78–83
176		—CN	—CH3	—H	—Br	—H	—H	58–60
177		—CN	—CH3	—H	—Br	—H	—CH3	118–120
178		—CN	—Cl	—H	—Cl	—H	—H	$20_{,}7$°C 1.6158
179		—CN	—Cl	—H	—Cl	X101	—H	163–165
180		—CN	—Cl	—H	—Cl	X112	—H	104–106

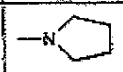
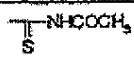
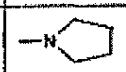
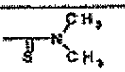
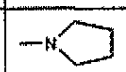
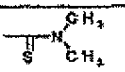
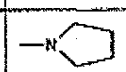
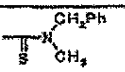
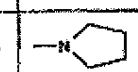
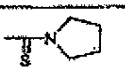
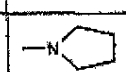
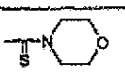
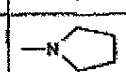
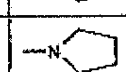
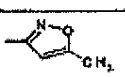
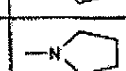
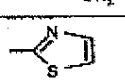
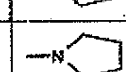
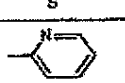
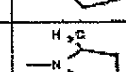
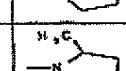
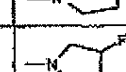
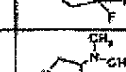
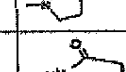
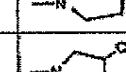
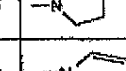
[Tabela 30]

No.	G	Q	X1	X2	X3	X4	X5	Cons.
161		—CN	—F	—H	—Cl	S006	—H	151-153
162		—CN	—F	—H	—Cl	S007	—H	113-114
163		—CN	—F	—H	—Cl	T010	—H	103-105
164		—CN	—F	—H	—Cl	H002	—H	128-131
165		—CN	—F	—H	—Cl			145-147
166		—CN	—F	—H	—Cl			99-100
167		—CN	—F	—H	—Cl			145-147
168		—CN	—F	—H	—Cl			Oleo viscoso
169		—CN	—F	—H	—Br	X208	—H	20.2℃ t.5553
170		—CN	—F	—H	—Br	T003	—H	83-85
171		—CN	—F	—H			—H	153-157
172		—CN	—F	—H			—H	231-234
173		—CN	—F	—H			—H	142-144
174		—CN	—F	—H			—Cl	130-132
175		—CN	—CH3	—H	—CH3	—H	—CH3	78-83
176		—CN	—CH3	—H	—Br	—H	—H	58-60
177		—CN	—CH3	—H	—Br	—H	—CH3	118-120
178		—CN	—Cl	—H	—Cl	—H	—H	20.7℃ 1.6158
179		—CN	—Cl	—H	—Cl	X101	—H	163-165
180		—CN	—Cl	—H	—Cl	X112	—H	104-106

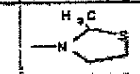
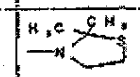
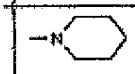
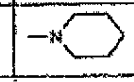
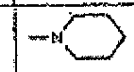
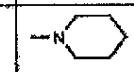
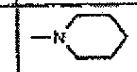
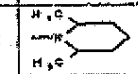
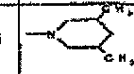
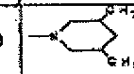
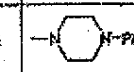
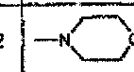
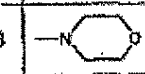
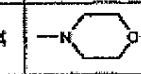
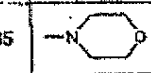
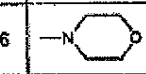
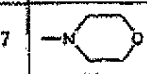
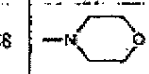
[Tabela 31]

No.	G	Q	X1	X2	X3	X4	X5	Cons.
181		—CN	—Cl	—H	—Cl	X126	—H	156–158
182		—CN	—Cl	—H	—Cl	X136	—H	84–86
183		—CN	—Cl	—H	—Cl	X208	—H	22°C 1.551
184		—CN	—Cl	—H	—Cl	T003	—H	Oleo viscoso
185		—CN	—Cl	—H	—Cl	T010	—H	79–81
186		—CN	—Cl	—H	—Cl	—NO2	—H	101–104
187		—CN	—Cl	—H	—Cl	N005	—H	Amorfo
188		—CN	H001	—H	—Cl	S006	—H	Amorfo
189		—CH=NOH	—F	—H	—Cl	—OC3H7	—H	150–154
190		—CH=NOCH$_3$	—F	—H	—Cl	T003	—H	73–75
191		—CH=NOC$_2$H$_5$	—F	—H	—Cl	T003	—H	22, 4°C 1.5796
192		—CH=NOCH$_2$Ph	—F	—H	—Cl	—OH	—H	Amorfo
193		—CH=NOCH$_2$Ph	—F	—H	—Cl	—OC3H7	—H	20. 6°C 1.5922
194		—CH=NOCH$_2$Ph	—F	—H	—Cl	T003	—H	58–62
195		—CH=NOCH$_2$Ph	—F	—H	—Cl	T004	—H	20, 2°C 1.609
196		—CH=NOCH$_2$CH=CH$_2$	—F	—H	—Cl	T003	—H	22, 6°C 1.5852
197		—CH=NOCH$_2$CH=CHCl	—F	—H	—Cl	T003	—H	26, 6°C 1.5862
198			—F	—H	—Cl	T003	—H	186–188
199			—F	—H	—Cl	T003	—H	Amorfo
200			—F	—H	—Cl	X208	—H	147–150

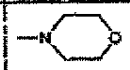
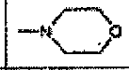
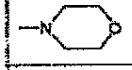
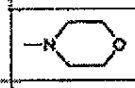
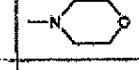
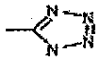
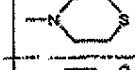
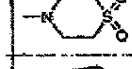
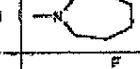
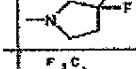
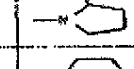
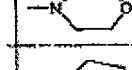
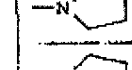
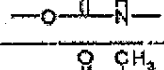
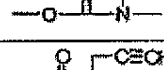
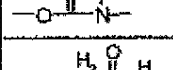
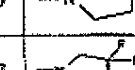
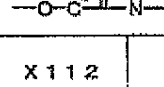
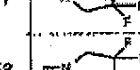
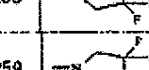
[Tabela 32]

No.	G	Q	X1	X2	X3	X4	X5	Cons.
201			-F	-H	-Cl	X208	-H	Amorfo
202			-F	-H	-Cl	X208	-H	20,5°C 1.558
203			-F	-H	-Cl	T003	-H	20,5°C 1.584
204			-F	-H	-Cl	X208	-H	Amorfo
205			-F	-H	-Cl	T003	-H	Amorfo
206			-F	-H	-Cl	T003	-H	143-146
207			-F	-H	-Cl	T003	-H	79-81
208			-F	-H	-Cl	T003	-H	Amorfo
209			-F	-H	-Cl	T003	-H	Amorfo
210			-F	-H	-Cl	T003	-H	Amorfo
211		-CN	-F	-H	-Cl	T003	-H	20,5°C 1.5805
212		-CN	-Cl	-H	-Cl	-H	-H	22°C 1.5825
213		-CN	-F	-H	-Cl	T003	-H	20,5°C 1.5636
214		-CN	-F	-H	-Cl	T003	-H	80-83
215		-CN	-Cl	-H	-Cl	-H	-H	21,4°C 1.5927
216		-CN	-F	-H	-Cl	T003	-H	129-132
217		-CN	-F	-H	-Cl	T003	-H	20,6°C 1.5475
218		-CN	-F	-H	-Cl	T003	-H	20,6°C 1.5739
219		-CN	-F	-H	-Cl	T003	-H	107-108
220		-CN	-F	-H	-Cl	T003	-H	117-120

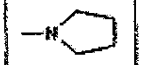
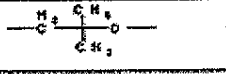
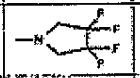
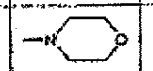
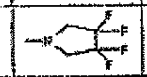
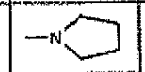
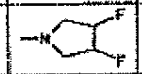
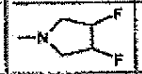
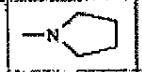
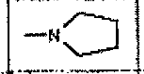
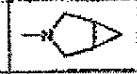
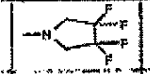
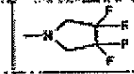
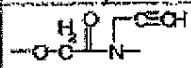
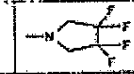
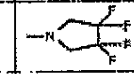
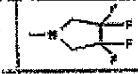
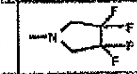
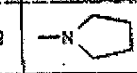
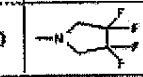
[Tabela 33]

No.	G	Q	X1	X2	X3	X4	X5	Cons.
221		—CN	—F	—H	—Cl	T003	—H	20, 4℃ 1.5972
222		—CN	—F	—H	—Cl	T003	—H	20, 3℃ 1.5926
223		—CN	—H	—H	—NO2	—H	—H	113-115
224		—CN	—H	—H	—Cl	X102	—H	20, 6℃ 1.5957
225		—CN	—F	—H	—Cl	—H	—H	20, 5℃ 1.5882
226		—CN	—F	—H	—Cl	T003	—H	19, 7℃ 1.5673
227		—CN	—Cl	—H	—Cl	—H	—H	20, 6℃ 1.6045
228		—CN	—F	—H	—Cl	T003	—H	20℃ 1.5545
229		—CN	—F	—H	—Cl	T003	—H	21, 2℃ 1.5542
230		—CN	—F	—H	—Cl	T003	—H	19, 5℃ 1.556
231		—CN	—Cl	—H	—Cl	—H	—H	149-151
232		—CN	—H	—H	—CN	X112	—H	100-102
233		—CN	—H	—H	—CN	X226	—H	23℃ 1.5497
234		—CN	—H	—H	T045	—H	—H	68-70
235		—CN	—H	—H	—OPh	—H	—H	114-117
236		—CN	—H	—Cl	—Cl	—Cl	—H	110-112
237		—CN	—F	—H	—Cl	X101	—H	190-193
238		—CN	—F	—H	—Cl	X112	—H	68-71
239		—CN	—F	—H	—Cl	X206	—H	22, 7℃ 1.5421
240		—CN	—F	—H	—Cl	X208	—H	22, 4℃ 1.5385

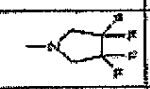
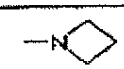
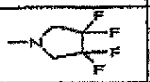
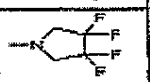
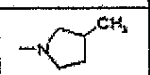
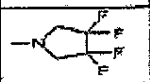
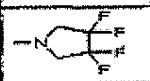
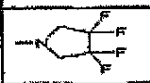
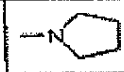
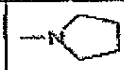
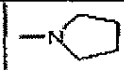
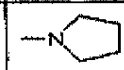
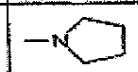
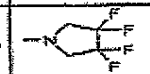
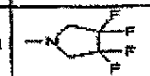
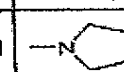
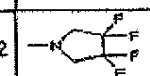
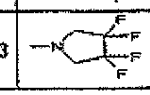
[Tabela 34]

No.	G	Q	X1	X2	X3	X4	X5	Cons.
241		—CN	—F	—H	—Cl	X217	—H	22.9°C 1.5449
242		—CN	—F	—H	—Cl	X226	—H	23.3°C 1.5585
243		—CN	—F	—H	—Cl	T003	—H	114-117
244		—CN	—Cl	—H	—Cl	—H	—H	121-122
245		—CH=NOCH$_2$CH=CHCl	—F	—H	—Cl	T003	—H	20.5°C 1.5809
246			—Cl	—H	—Cl	—H	—H	235-236.5
247		—CN	—Cl	—H	—Cl	—H	—H	22.2°C 1.637
248		—CN	—Cl	—H	—Cl	—H	—H	130-134
249		—CN	—F	—H	—Cl	T003	—H	19.8°C 1.5853
250		—CN	—F	—H	—Cl	T003	—H	20.6°C 1.5372
251		—CN	—F	—H	—Cl	T003	—H	20.6°C 1.5311
252		—CN	—F	—H	—Cl	H003	—H	Amorfo
253		—CN	—F	—H	—Cl			212-214
254		—CN	—F	—H	—Cl			194-195
255		—CN	—F	—H	—Cl			147-149
256		—CN	—F	—H	—Cl			204-205
257		—CN	T008	—H	—Cl	X112	—H	112-113
258		—CN	—F	—H	—Cl	X214	—H	Amorfo
259		—CN	—F	—H	—Cl	X211	—H	20.6°C 1.4914
260		—CN	—F	—H	—Cl	X148	—H	167-170

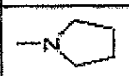
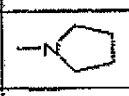
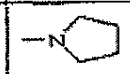
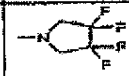
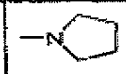
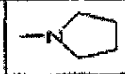
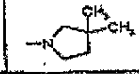
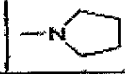
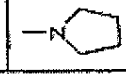
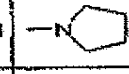
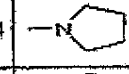
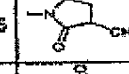
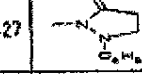
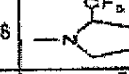
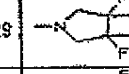
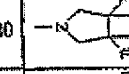
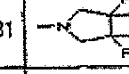
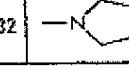
[Tabela 35]

No.	G	Q	X1	X2	X3	X4	X5	Cons.
261		—CN	—F	—H	—Cl			22°C 1.564
262		—CN	—F	—H	—Cl	T003	—H	127-129
263		—CN	—F	—H	—Cl	X130	—H	20.6°C 1.5077
264		—CN	—F	—H	—Cl	X214	—H	Óleo viscoso
265		—CN	—F	—H	—Cl	X147	—H	123-126
266		—CN	—F	—H	—Cl	X147	—H	91-92
267		—CN	—F	—H	—Cl	T003	—H	Óleo viscoso
268		—CN	—F	—H	—Cl	T003	—H	Óleo viscoso
269		—CN	—F	—H	—Cl		—H	22°C 1.5689
270		—CN	—F	—H	—Cl	X201	—H	22°C 1.52
271		—CN	—F	—H	—Cl	T003	—H	20.6°C 1.5958
272		—CN	—Cl	—H	—Cl	—H	—H	79-81
273		—CN	—F	—H	—Cl	T045	—H	142-144
274		—CN	—F	—H			—H	147-149
275		—CN	—F	—H	—Cl	—H	—H	20.6°C 1.526
276		—CN	—F	—H	—Cl	—NO2	—H	115-117
277		—CN	—F	—H	—Cl	—NH2	—H	99-102
278		—CN	—F	—H	—Cl	S008	—H	67-70
279		—CN	—F	—H	—Cl	S008	—H	20.4°C 1.6263
280		—CN	—F	—H	—Cl	—OH	—H	92-95

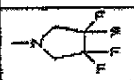
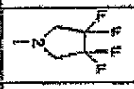
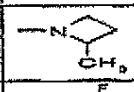
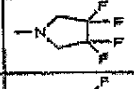
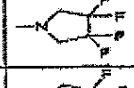
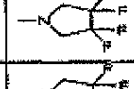
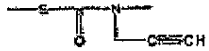
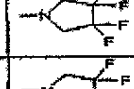
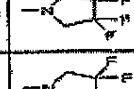
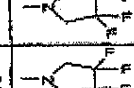
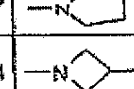
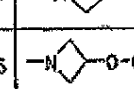
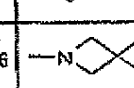
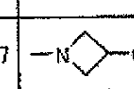
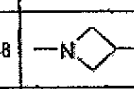
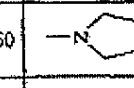
[Tabela 36]

No.	G	Q	X1	X2	X3	X4	X5	Cons.
295		—CN	—F	—H	—Cl	T020	—H	50–53
296		—CN	—Cl	—H	—Cl	—H	—H	Óleo viscoso
297		—CN	—F	—H	—Cl	T002	—H	92–95
298		—CN	—F	—H	—Cl	T021	—H	88–90
299		—CN	—F	—H	—Cl	T003	—H	20.5℃ 1.5845
300		—CN	—F	—H	—Cl	X125	—H	126–128
301		—CN	—F	—H	—Cl	T022	—H	93–95
302		—CN	—F	—H	—Cl	N001	—H	Óleo viscoso
303		—CN	—F	—H	—Cl	X262	—H	Amorfo
304		—CN	—F	—H	—Cl	X263	—H	118–120
305		—CN	—F	—H	—Cl	H008	—H	20.6℃ 1.5799
306		—CN	—F	—H	—Cl	X264	—H	Amorfo
307		—CN	—F	—H	—Cl	H009	—H	20.4℃ 1.5698
308		—CN	—F	—H	—Cl	T023	—H	96–98
309		—CN	—F	—H	—Cl	T001	—H	79–81
310		—CN	—F	—H	—Cl	T024	—H	58–59
311		—CN	—F	—H	—Cl	H010	—H	Amorfo
312		—CN	—F	—H	—Cl	T025	—H	20.5℃ 1.5155
313		—CN	—F	—H	—Cl	T026	—H	62–64

[Tabela 37]

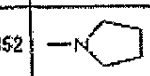
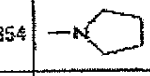
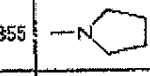
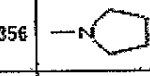
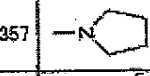
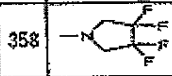
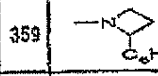
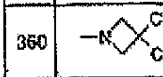
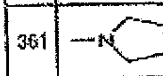
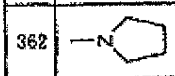
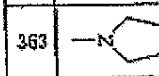
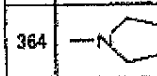
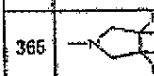
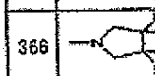
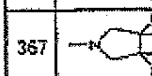
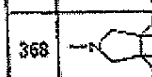
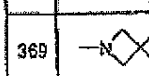
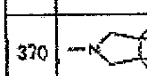
No.	G	Q	X1	X2	X3	X4	X5	Cons.
314		—CN	—F	—H	—Cl	H011	—H	Amorfo
315		—CN	—F	—H	—Cl	C003	—H	143-145
316		—CN	—F	—H	—Cl	H012	—H	77-79
317		—CN	—F	—H	—Cl	T027	—H	69-71
318		—CN	—F	—H	—Cl	H018	—H	Amorfo
319		—CN	—F	—H	—Cl	H013	—H	196-201
320		—CN	—F	—H	—Cl	T003	—H	20.6°C 1.5705
321		—CN	—F	—H	—Cl	H014	—H	Óleo viscoso
322		—CN	—F	—H	—Cl	H015	—H	20.6°C 1,5884
323		—CN	—F	—H	—Cl	H016	—H	136-140
324		—CN	—F	—H	—Cl	H017	—H	20.7°C 1.5786
325		—CN	—F	—H	—Cl	T003	—H	Amorfo
326		—CN	—F	—H	—Cl	T003	—H	109-112
327		—CN	—F	—H	—Cl	T003	—H	Óleo viscoso
328		—CN	—H	$-CF_3$	—H	$-CF_3$	—H	20.7°C 1,4608
329		—CN	—F	—H	—Cl	X112	—H	94-96
330		—CN	—F	—H	—Cl	X101	—H	155-159
331		—CN	—F	—H	—Cl	X149	—H	112-116
332		—CN	—F	—H	—Cl	C002	—H	21.3°C 1,5840

[Tabela 38]

No.	G	Q	X1	X2	X3	X4	X5	Cons.
333		—CN	—F	—H	—Cl	X103	—H	93-96
334		—CN	—F	—H	—Cl	X151	—H	**Amorfo**
335		—CN	—F	—H	—Cl	T003	—H	21, 0°C 1, 5793
336		—CN	—F	—H	—Cl	H005	—H	**Amorfo**
337		—CN	—F	—H	—Cl	H007	—H	**Amorfo**
338		—CN	—F	—H			—H	127-129
339		—CN	—F	—H	—Cl	T014	—H	**Amorfo**
340		—CN	—F	—H	—Cl	T028	—H	20, 7°C 1, 5342
341		—CN	—F	—H	—Cl	T029	—H	20, 9°C 1, 5523
342		—CN	—H	—H	—Cl	—OCH_3	—H	136-139
343		—CN	—H	—H	—CF_3	—H	—H	94-96
344		—CN	—F	—H	—Cl	T003	—H	94-96
345		—CN	—F	—H	—Cl	T003	—H	95-97
346		—CN	—F	—H	—Cl	T003	—H	20, 7°C 1, 5569
347		—CN	—F	—H	—Cl	T003	—H	121-124
348		—CN	—F	—H	—Cl	T003	—H	22°C 1, 5920
349		—CN	—F	—H	—Cl	T003	—H	22, 8°C 1, 5783
350		—CN	—F	—H			—H	102-105
351		—CN	—F	—H	—Cl	T003	—H	98-101

81

[Tabela 39]

No.	G	Q	X1	X2	X3	X4	X5	Cons.
352		—CN	—F	—H	—Cl	T021	—H	84-86
353		—CN	—F	—H	—Cl	T030	—H	20.8°C n_j 5609
354		—CN	—F	—H	—Cl	$-OCH_2C_2F_5$	—H	62-65
355		—CN	—F	—H	—Cl	X150	—H	17.1°C n_j 5221
356		—CN	—F	—H	—Cl	X152	—H	22.5°C n_j 5235
357		—CN	—F	—H	—Cl	X153	—H	71-74
358		—CN	—H	—H	—H	T003	—H	23.4°C n_j 5208
359		—CN	—F	—H	—Cl	T003	—H	20.5°C n_j 6050
360		—CN	—F	—H	—Cl	T003	—H	20.5°C n_j 5700
361		—CN	—F	—H	—Cl	X265	—H	20.7°C n_j 4995
362		—CN	—F	—H	—Cl	X266	—H	86-88
363		—CN	—F	—H	—Cl	X267	—H	20.5°C n_j 5228
364		—CN	—F	—H	—Cl	X268	—H	106-108
365		—CN	—F	—H	—Cl	T031	—H	20.6°C n_j 5035
366		—CN	—F	—H	—Cl	T032	—H	111-113
367		—CN	—F	—H	—Cl	T033	—H	20.7°C n_j 5452
368		—CN	—F	—H	—Cl	T034	—H	82-85
369		—CN	—F	—H	—Cl	T003	—H	21°C n_j 5268
370		—CN	—F	—H	—Cl	T035	—H	101-103

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9

[Tabela 40]

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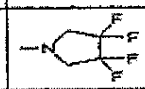
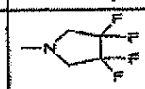
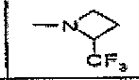
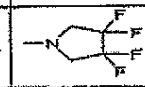
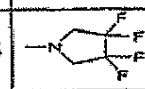
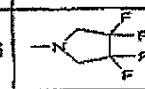
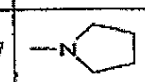
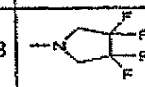
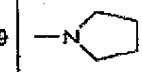
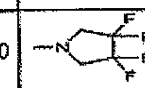
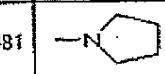
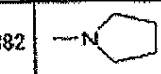
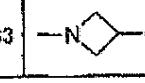
No.	G	Q	X1	X2	X3	X4	X5	Cons.
371		—CN	—F	—H	—Cl	T036	—H	20.6℃ I_1 5510
372		—CN	—F	—H	—Cl	T037	—H	20.5℃ I_1 5128
373		—CN	—F	—H	—Cl	T003	—H	20.2℃ I_1 5418
374		—CN	—F	—H	—Cl	T038	—H	89-91
375		—CN	—F	—H	—Cl	T039	—H	77-80
376		—CN	—F	—H	—Cl	T040	—H	20.5℃ I_1 5383
377		—CN	—F	—H	—Cl	T040	—H	20.4℃ I_1 5913
378		—CN	—F	—H	—Cl	T041	—H	20.4℃ I_1 5353
379		—CN	—F	—H	—Cl	T041	—H	20.4℃ I_1 5874
380		—CN	—F	—H	—Cl	T042	—H	144-148
381		—CN	—F	—H	—Cl	C001	—H	20.4℃ I_7 5587
382		—CN	—F	—H	—Cl	—CHO	—H	85-88
383		—CN	—F	—H	—Cl	T003	—H	166-168

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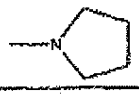
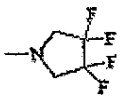
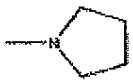
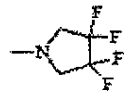
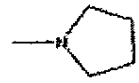
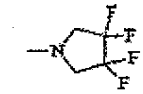
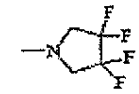
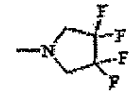
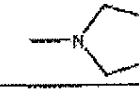
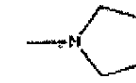
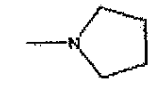
[Tabela 41]

NO.	Q	G	X1	X2	X3	X4	X5	Cons.
384		—CN	F	H	F	T003	H	20.5℃ 1.5528
385		—CN	F	H	F	T043	H	20.7℃ 1.5192
386		—CN	F	H	Cl		H	130-132
387		—CN	F	H	Br	T003	H	81-84
388		—CN	F	H	Cl	X303	H	20.6℃ 1.5514
389		—CN	F	H	Cl	T044	H	20.5℃ 1.5744
390		—CN	F	H	Cl	T045		156-158
391		—CN	F	H	Cl	T045	-NH2	201-204
392		—CN	F	H	Cl	X304	H	148-150
393		—CN	F	H	Cl	X304	H	20.7℃ 1.5612
394		—CN	F	H	Cl	T046	H	40-42
395		—CN	F	H	Cl	T047	H	55-57
396		—CN	F	H	Cl	T048	H	20.4℃ 1.5704

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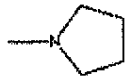
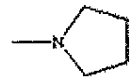
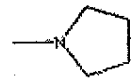
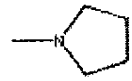
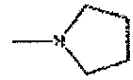
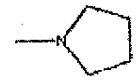
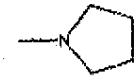
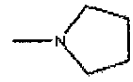
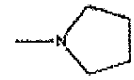
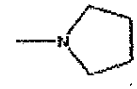
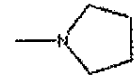
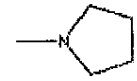
[Tabela 42]

NO.	G	Q	X1	X2	X3	X4	X5	Cons.
397		—CN	F	H	Cl	T049	H	55-57
398		—CN	F	H	Cl		H	Óleo viscoso
399		—CN	F	H	Cl	T050	H	114-116
400		—CN	F	H	Cl	T051	H	123-125
401		—CN	F	H	Cl	T052	H	20,5°C 1,5506
402		—CN	F	H	Cl	T053	H	20,7°C 1,5308
403		—CN	F	H	Cl	T054	H	94-96
404		—CN	F	H	Cl	X305	H	55-57
405		—CN	F	H	Cl	T055	H	20,3°C 1,5543
406		—CN	F	H	Cl	X306	H	Óleo viscoso
407		—CN	F	H	Cl	X307	H	62-64
408		—CN	F	H	Cl	X308	H	Óleo viscoso
409		—CN	F	H	Cl	X309	H	64-66
410		—CN	F	H	Cl	X310	H	59-61

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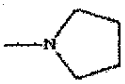
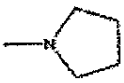
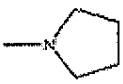
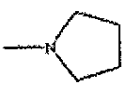
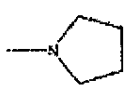
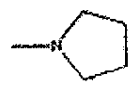
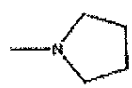
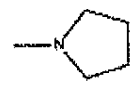
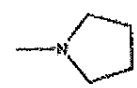
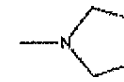
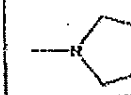
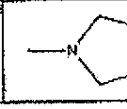
[Tabela 43]

NO.	G	Q	X1	X2	X3	X4	X5	Cons.
411		—CN	F	H	Cl	T056	H	20,4°C 1,5434
412		—CN	F	H	Cl	T057	H	89-93
413		—CN	F	H	Cl	T058	H	60-62
414		—CN	F	H	Cl	T059	H	104-105
415		—CN	F	H	Cl	T060	H	Amorfo
416		—CN	F	H	Cl	X311	H	113-115
417		—CN	F	H	Cl	X312	H	Amorfo
418		—CN	F	H	Cl	X313	H	99-101
419		—CN	F	H	Cl	T061	H	119-121
420		—CN	F	H	Cl	T062	H	123-125
421		—CN	F	H	Cl	T063	H	20,2°C 1,5425
422		—CN	F	H	Cl	T064	H	93-96
423		—CN	F	H	Cl	X314	H	Óleo viscoso
424		—CN	F	H	Cl	X315	H	103-105

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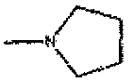
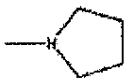
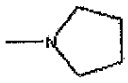
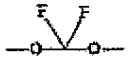
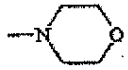
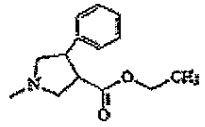
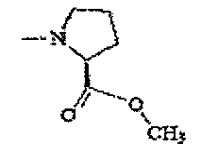
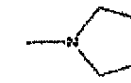
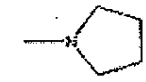
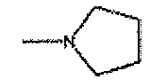
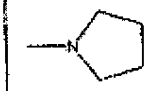
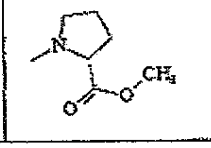
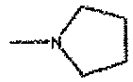
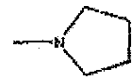
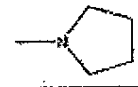
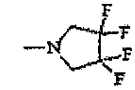
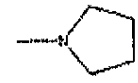
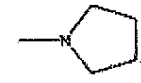
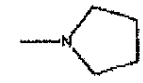
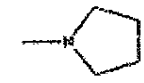
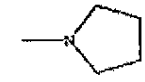
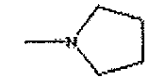
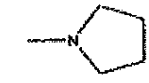
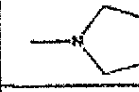
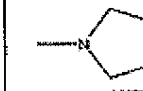
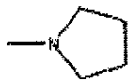
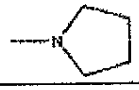
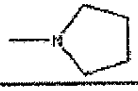
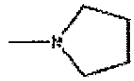
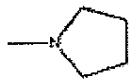
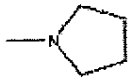
[Tabela 44]

NO.	G	Q	X1	X2	X3	X4	X5	Cons.
425		—CN	F	H	Cl	X316	H	88–90
426		—CN	F	H	Cl	T065	H	115–117
427		—CN	F	H			H	20.5℃ 1.5338
428		—CN	F	H			H	115–117
429		—CN	F	H	Cl	T066	H	Óleo viscoso
430		—CN	F	H	Cl	T003	H	Amorfo
431		—CN	F	H	Cl	T003	H	20.4°C 1.5502
432		—CN	F	H	Cl	X317	H	Óleo viscoso
433		—CN	F	H	Cl	X318	H	79–81
434		—CN	F	H	Cl	X319	H	Óleo viscoso
435		—CN	F	H	Cl	T067	H	94–97
436		—CN	F	H	Cl	T003	H	Óleo viscoso

[Tabela 45]

NO.	G	Q	X1	X2	X3	X4	X5	Cons.
437		—CN	F	H	Cl	X320	H	**Óleo viscoso**
438		—CN	F	H	Cl	T068	H	109–111
439		—CN	F	H	Cl	T069	H	50–52
440		—CN	F	H	Cl	T070	H	**Óleo viscoso**
441		—CN	F	H	Cl	T070	H	99–100
442		—CN	F	H	Cl	T071	H	**Óleo viscoso**
443		—CN	F	H	Cl	X321	H	**Óleo viscoso**
444		—CN	F	H	Cl	T072	H	102–104
445		—CN	F	H	Cl	T073	H	19.9°C 1,5564
446		—CN	F	H		F	H	20.5°C 1.5142
447		—CN	F	H	Cl	T074	H	62–65
448		—CN	F	H	Cl	T075	H	66–69
449		—CN	F	H	Cl	T076	H	97–99
450		—CN	F	H	Cl	T077	H	20.9°C 1.5753

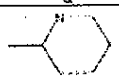
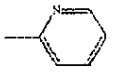
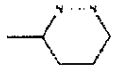
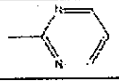
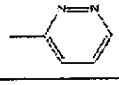
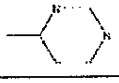
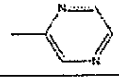
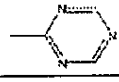
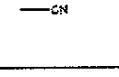
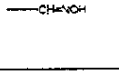
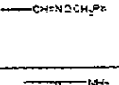
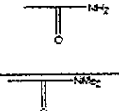
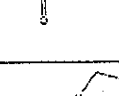
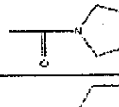
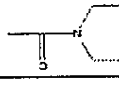
[Tabela 46]

NO.	G	Q	X1	X2	X3	X4	X5	Cons.
451		—CN	F	H	Cl	X322	H	Amorfo
452		—CN	F	H	Cl	T078	H	135-137
453		—CN	F	H	Cl	T079	H	20,7°C 1,4856
454		—CN	F	H	Cl	T080	H	20,7°C 1,5276
455		—CN	F	H	Cl	X323	H	Óleo viscoso
456		—CN	F	H	Cl	X324	H	111-113

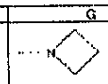
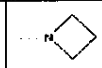
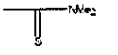
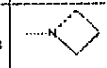
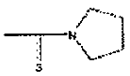
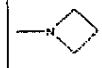
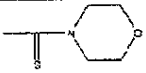
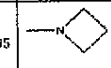
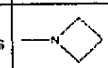
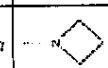
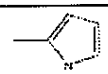
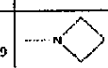
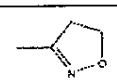
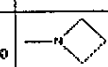
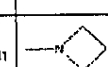
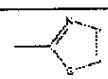
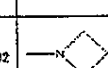
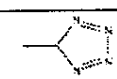
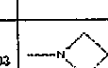
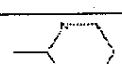
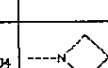
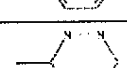
[Tabela 47]

No.	G	Q	X1	X2	X3	X4	X5
457			F	H	CO2Et	N001	H
458			Cl	H	SMe	N002	H
459			Br	H	Br	N003	H
460			NEt2	SPh	H	N007	H
461			OMe	H	H	S001	H
462			Bn	H	Cl	S002	H
463			SH	H	NEt2	S003	H
464			SMe	H	H	S004	H
465			Me	H	H	S005	H
466			CH=CH2	OCF3	H	S006	H
467				Me	H	S007	H
468			Ac	NO2	H	S008	H
469			CO2Et	H	H	S009	H
470			COPh	H	H	H001	H
471			H	CN	H	H002	H
472			CONH2	H	H	H003	H
473			T001	CF3	H	Br	H
474			T002	OiPr	H	H	H
475			T003	OCCNH		H	H

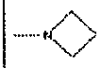
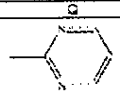
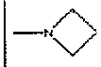
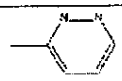
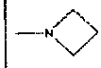
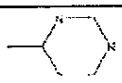
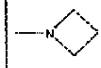
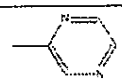
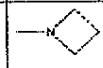
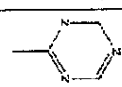
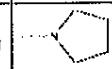
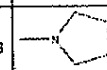
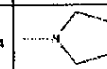
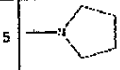
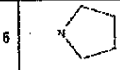
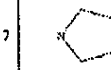
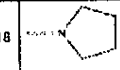
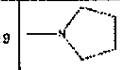
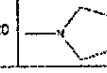
[Tabela 48]

No.	G	Q	X1	X2	X3	X4	X5
476			T004	Bn	H	H	H
477			T005	NEt2	H	H	H
478			T006	OH	H	H	H
479			T007	Br	H	H	H
480			T008	Cl	H	H	H
481			T009	F	H	H	H
482			Me	T010	F	H	CO2Et
483			F	T011	Cl	H	SMe
484			Cl	T012	Br	H	Br
485			Br	T013	CN	H	Me
486			CN	T014	NO2	H	Et
487			CF3	T018	Bn	H	Cl
488			CO2Me	T019	SH	H	NEt2
489			F	H004	SMe	H	H
490			Cl	H005	Me	H	H

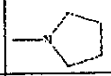
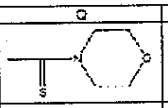
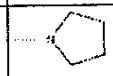
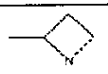
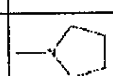
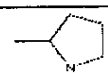
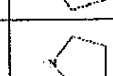
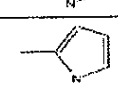
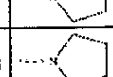
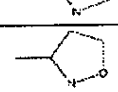
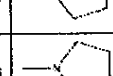
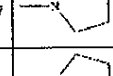
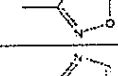
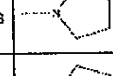
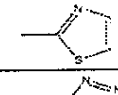
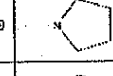
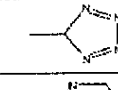
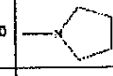
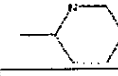
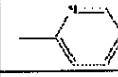
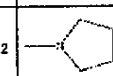
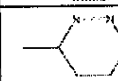
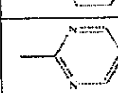
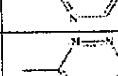
[Tabela 49]

No.	G	Q	X1	X2	X3	X4	X5
491			H	H006	CH=CH2	OCF3	H
492			H	H007		Me	H
493			H	X101	Ac	NO2	H
494			CO2Et	X102	CO2Et	H	H
495			Et	X103	COPh	H	H
496			iPr	X104	H	CN	H
497			Me	X105	CONH2	H	H
498			Bn	X106	Cl	Me	Bn
499			SH	X107	NEt2	F	NEt2
500			SMe	X108	H	Cl	OH
501			Me	X109	H	Br	Br
502			CH=CH2	X110	H	CN	Cl
503				X111	H	H	F
504			Ac	X112	H	Me	SH
505			CO2Et	X113	H	F	SMe

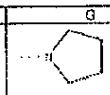
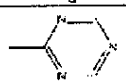
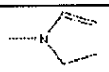
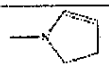
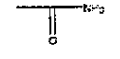
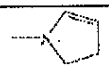
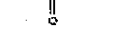
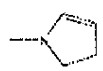
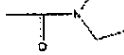
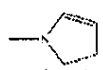
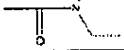
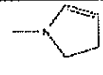
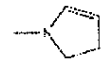
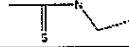
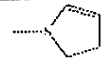
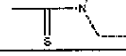
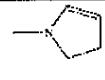
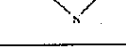
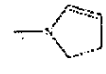
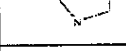
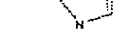
[Tabela 50]

No.	G	Q	X1	X2	X3	X4	X5
506			COPh	X114	H	CF3	Me
507			H	X115	H	CO2Me	CH=CH2
508			CONH2	X116	H	F	
509			H	Ac	X117	Cl	H
510			H	CO2Et	X118	H	H
511			Cl	COPh	X119	H	H
512			NEt2	H	X120	H	H
513			H	CONH2	X121	CO2Et	H
514			H	H	X125	Me	Me
515			H	H	X126	F	F
516			H	H	X127	CF3	Cl
517			H	H	X128	CO2Me	Br
518			H	H	X129	F	CN
519			H	H	X130	Cl	H
520			H	H	X131	H	Me

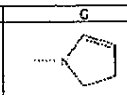
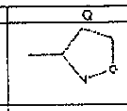
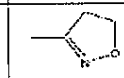
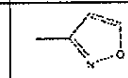
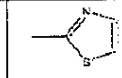
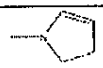
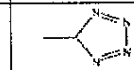
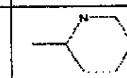
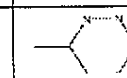
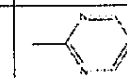
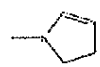
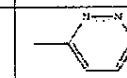
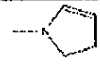
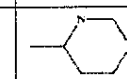
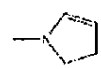
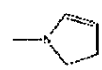
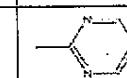
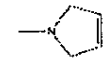
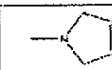
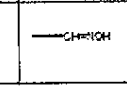
[Tabela 51]

No.	G	Q	X1	X2	X3	X4	X5
521			H	H	X132	H	F
522			H	H	X133	H	CF3
523			H	H	X134	CO2Et	CO2Me
524			H	H	X135	Et	H
525			H	H	X136	iPr	H
526			H	H	X137	Me	H
527			H	H	X138	Me	H
528			H	H	X139	F	H
529			H	H	X140	CF3	H
530			H	H	X141	CO2Me	H
531			Br	F	X142	H	H
532			H	Cl	X143	H	H
533			H	Br	X144	H	H
534			H	CN	X145	H	H
535			H	NO2	X146	H	H
536			H	OH	X147	H	F

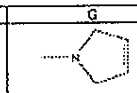
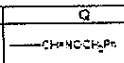
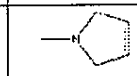
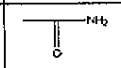
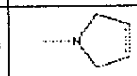
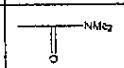
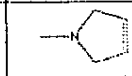
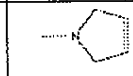
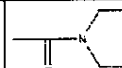
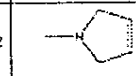
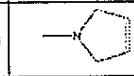
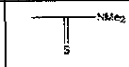
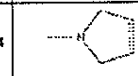
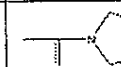
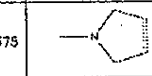
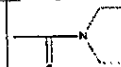
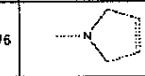
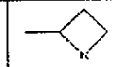
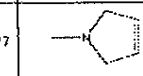
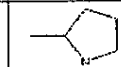
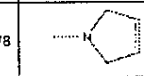
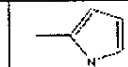
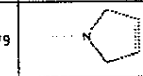
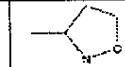
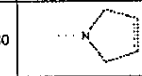
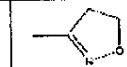
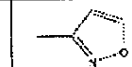
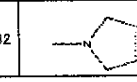
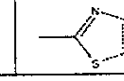
[Tabela 52]

No.	G	G	X1	X2	X3	X4	X5
537			H	NEt2	X148	H	Cl
538			H	OMe	H	X201	Br
539			H	Bn	H	X202	CN
540			H	SH	H	X203	OH
541			H		H	X207	SH
542			Me	Ac	H	X208	F
543			SPh	CO2Et	H	X209	Cl
544			H	COPh	H	X210	Br
545			H	H	Me	X211	CN
546			H	CONH2	H	X212	NO2
547			H	H	H	X213	OH
548			H	H	H	X214	NEt2
549			OCF3	H	H	X215	OMe
550			Me	H	H	X216	Bn
551			NO2	H	H	X217	SH

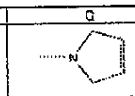
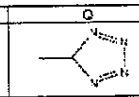
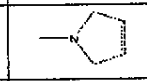
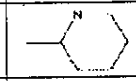
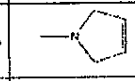
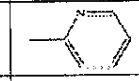
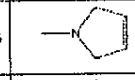
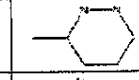
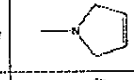
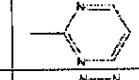
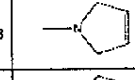
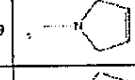
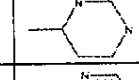
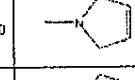
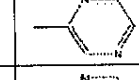
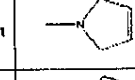
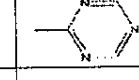
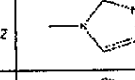
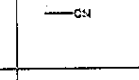
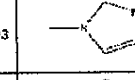
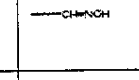
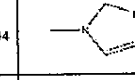
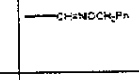
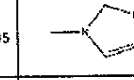
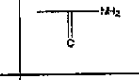
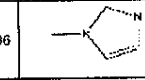
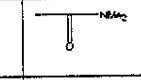
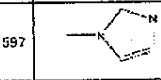
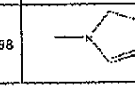
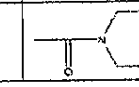
[Tabela 53]

No.	G	Q	X1	X2	X3	X4	X5
552			H	H	H	X218	SMe
553			H	H	H	X219	OMe
554			CN	H	H	X220	Bn
555			H	H	H	X221	SH
556			H	H	H	X222	SMe
557			H	H	H	X223	Me
558			OCF3	H	H	X224	CH=CH2
559			Me	H	H	X225	
560			NO2	H	H	X226	Ac
561			H	H	H	X227	CO2Et
562			H	H	H	X228	COPh
563			CN	H	H	X229	H
564			NO2	CONEt2	H	X230	H
565			CONH2	F	H	CO2Et	X231
566			H	Cl	H	SMe	X232

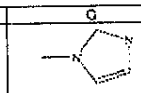
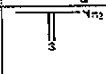
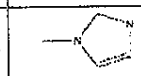
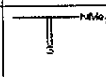
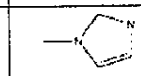
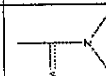
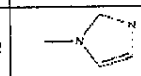
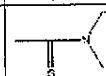
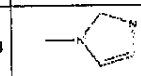
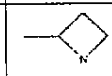
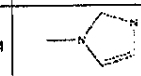
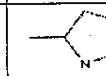
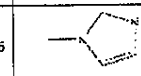
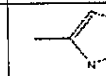
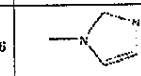
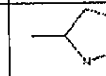
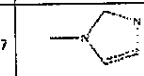
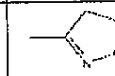
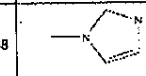
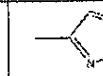
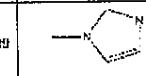
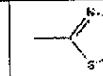
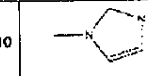
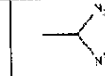
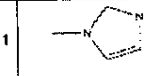
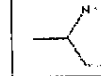
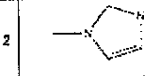
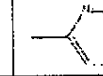
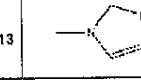
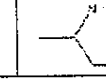
[Tabela 54]

No.	G	Q	X1	X2	X3	X4	X5
567			H	Br	H	Br	X233
568			H	NEt2	SPh	H	X237
569			H	OMe	H	H	X238
570			H	Bn	H	Cl	X239
571			H	SH	H	NEt2	X240
572			H	SMe	H	H	X241
573			H	Me	H	H	X242
574			H	CH=CH2	OCF3	H	X243
575			H		Me	H	X244
576			H	Ac	NO2	H	X245
577			H	CO2Et	H	H	X246
578			H	COPh	H	H	X247
579			H	H	CN	H	X248
580			CONEt2	CONH2	H	H	X249
581			Me	H	CO2Et	H	X250
582			NO2	H	SMe	H	X251

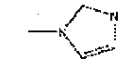
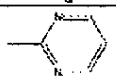
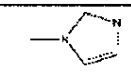
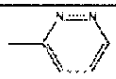
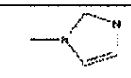
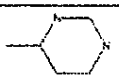
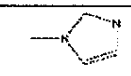
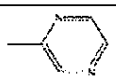
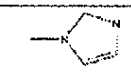
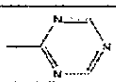
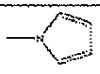
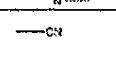
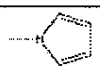
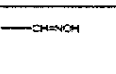
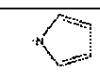
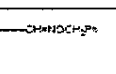
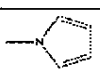
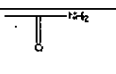
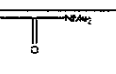
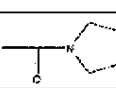
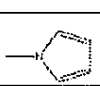
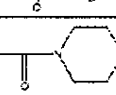
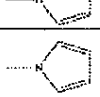
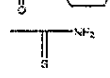
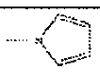
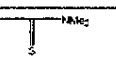
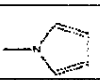
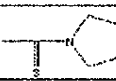
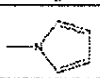
[Tabela 55]

No.	Q	Q	X1	X2	X3	X4	X5
583			H	H	Br	H	X252
584			H	H	Me	H	X253
585			CN	H	Et	H	X254
586			H	Me	Me	H	X255
587			CF3	SPh	H	H	X256
588			CN	H	H	Me	X257
589			NO2	H	Cl	H	X258
590			Br	H	NEt2	H	X259
591			CF3	H	H	H	X260
592			X261	H	H	H	Cl
593			X302	OCF3	H	H	CO2Et
594			F	H	CO2Et	N001	H
595			NO2	H	Et	N005	H
596			OH	Me	Me	N006	H
597			NEt2	SPh	H	N007	H
598			OMe	H	H	S001	H

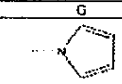
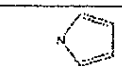
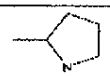
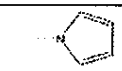
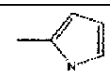
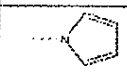
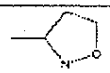
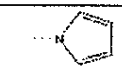
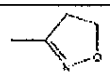
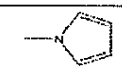
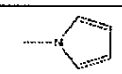
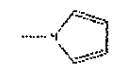
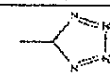
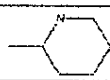
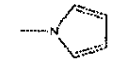
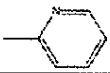
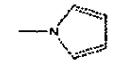
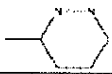
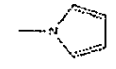
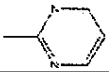
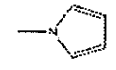
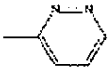
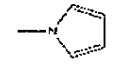
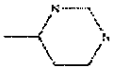
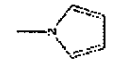
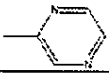
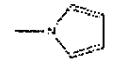
[Tabela 56]

No.	Q	Q	X1	X2	X3	X4	X5
599			Bn	H	Cl	S002	H
600			SH	H	NEt2	S003	H
601			SMe	H	H	S004	H
602			Me	H	H	S005	H
603			CH=CH2	OCF3	H	S006	H
604				Me	H	S007	H
605			Ac	NO2	H	S008	H
606			CO2Et	H	H	S009	H
607			COPh	H	H	H001	H
608			H	CN	H	H002	H
609			CONH2	H	H	H003	H
610			T001	CF3	H	Br	H
611			T002	OiPr	H	H	H
612			T003	OCONH		H	H
613			T004	Bn	H	H	H

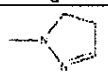
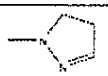
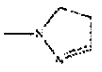
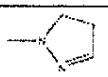
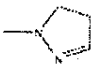
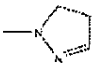
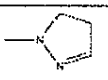
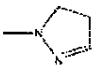
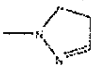
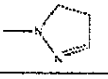
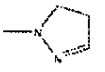
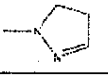
[Tabela 57]

No.	G	Q	X1	X2	X3	X4	X5
614			T005	NEt2	H	H	H
615			T006	OH	H	H	H
616			T007	Br	H	H	H
617			T008	Cl	H	H	H
618			T009	F	H	H	H
619			Me	T010	F	H	CO2Et
620			F	T011	Cl	H	SMe
621			Cl	T012	Br	H	Br
622			Me	T016	NEt2	SPh	H
623			F	T017	OMe	H	H
624			CF3	T018	Bn	H	Cl
625			CO2Me	T019	SH	H	NEt2
626			F	H004	SMe	H	H
627			Cl	H005	Me	H	H
628			H	H006	CH=CH2	CCF3	H
629			H	H007		Me	H

[Tabela 58]

No.	G	Q	X1	X2	X3	X4	X5
630			H	X101	Ac	NO2	H
631			CO2Et	X102	CO2Et	H	H
632			Et	X103	COPh	H	H
633			iPr	X104	H	CN	H
634			Me	X105	CONH2	H	H
635			Bn	X106	Cl	Me	Bn
636			SH	X107	NEt2	F	NEt2
637			SMe	X108	H	Cl	OH
638			Me	X109	H	Br	Br
639			CH=CH2	X110	H	CN	Cl
640				X111	H	H	F
641			Ac	X112	H	Me	SH
642			CO2Et	X113	H	F	SMe
643			COPh	X114	H	CF3	Me
644			H	X115	H	CO2Me	CH=CH2
645			CONH2	X116	H	F	

[Tabela 59]

No.	G	Q	X1	X2	X3	X4	X5
646			H	Ac	X117	Cl	H
647			H	CO2Et	X118	H	H
648			Cl	COPh	X119	H	H
649			H	H	X123	iPr	H
650			H	H	X124	Me	H
651			H	H	X125	Me	Me
652			H	H	X126	F	F
653			H	H	X127	CF3	Cl
654			H	H	X128	CO2Me	Br
655			H	H	X129	F	CN
656			H	H	X130	Cl	H
657			H	H	X131	H	Me
658			H	H	X132	H	F
659			H	H	X133	H	CF3
660			H	H	X134	CO2Et	CO2Me
661			H	H	X135	Et	H

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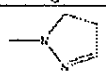
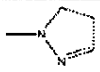
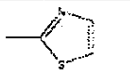
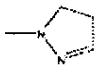
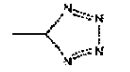
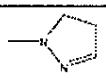
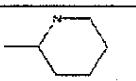
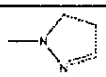
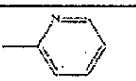
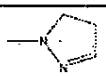
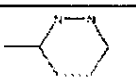
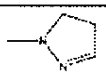
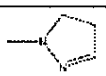
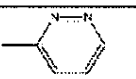
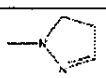
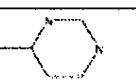
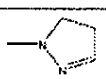
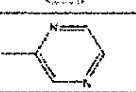
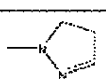
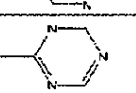
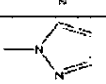
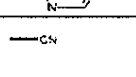
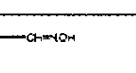
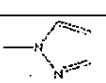
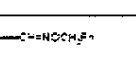
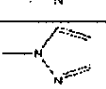
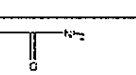
[Tabela 60]

No.	G	Q	X1	X2	X3	X4	X5
662			H	H	X136	iPr	H
663			H	H	X137	Me	H
664			H	H	X138	Me	H
665			H	H	X139	F	H
666			H	H	X140	CF3	H
667			H	H	X141	CO2Me	H
668			Br	F	X142	H	H
669			H	Cl	X143	H	H
670			H	Br	X144	H	H
671			H	CN	X145	H	H
672			H	NO2	X146	H	H
673			H	OH	X147	H	F
674			H	NEt2	X148	H	Cl
675			H	OMe	H	X201	Br
676			H	Me	H	X205	OMe

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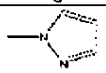
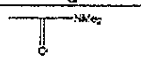
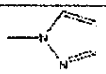
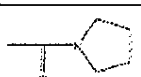
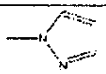
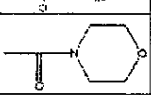
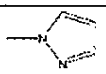
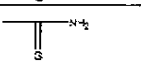
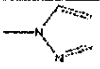
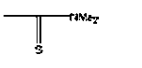
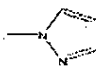
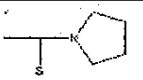
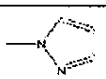
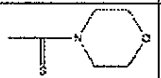
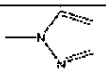
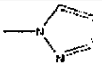
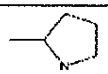
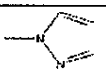
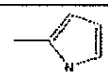
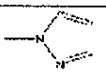
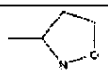
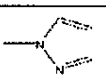
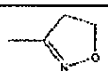
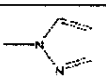
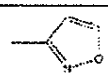
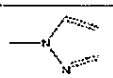
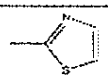
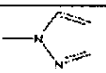
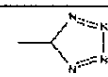
[Tabela 61]

No.	G	Q	X1	X2	X3	X4	X5
677			H	CH=CH2	H	X206	Bn
678			H		H	X207	SH
679			Me	Ac	H	X208	F
680			SPh	CO2Et	H	X209	Cl
681			H	COPh	H	X210	Br
682			H	H	Me	X211	CN
683			H	CONH2	H	X212	NO2
684			H	H	H	X213	OH
685			H	H	H	X214	NEt2
686			OCF3	H	H	X215	OMe
687			Me	H	H	X216	Bn
688			NO2	H	H	X217	SH
689			H	H	H	X218	SMe
690			H	H	H	X219	OMe
691			CN	H	H	X220	Bn

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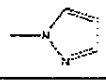
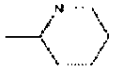
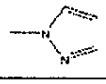
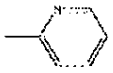
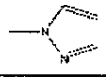
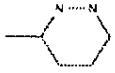
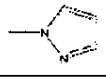
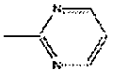
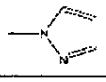
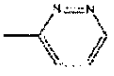
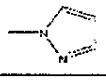
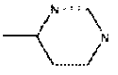
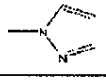
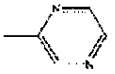
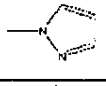
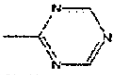
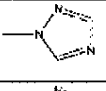
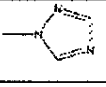
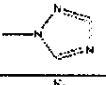
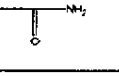
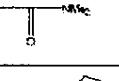
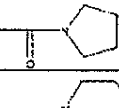
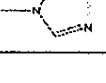
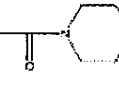
[Tabela 62]

No.	G	Q	X1	X2	X3	X4	X5
692			H	H	H	X221	SH
693			H	H	H	X222	SMe
694			H	H	H	X223	Me
695			OCF3	H	H	X224	CH=CH2
696			Me	H	H	X225	
697			NO2	H	H	X226	Ac
698			H	H	H	X227	CO2Et
699			H	H	H	X228	COPh
700			CN	H	H	X229	H
701			NO2	CONEt2	H	X230	H
702			CONH2	F	H	CO2Et	X231
703			H	NO2	H	Et	X235
704			H	OH	Me	Me	X236
705			H	NEt2	SPh	H	X237
706			H	OMe	H	H	X238

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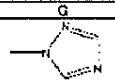
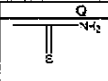
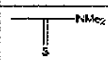
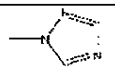
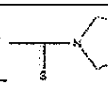
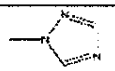
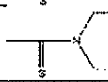
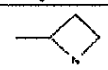
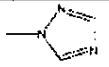
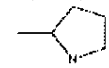
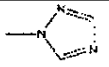
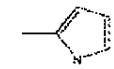
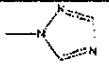
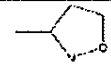
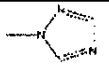
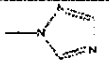
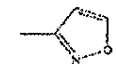
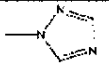
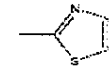
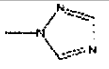
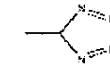
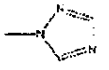
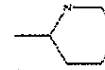
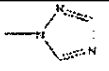
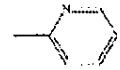
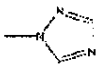
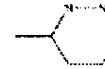
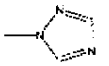
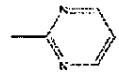
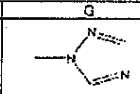
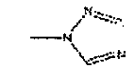
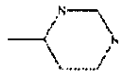
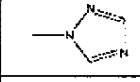
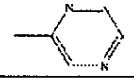
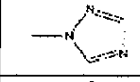
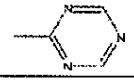
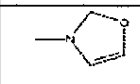
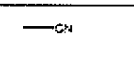
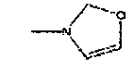
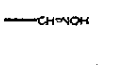
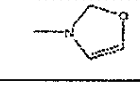
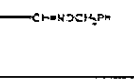
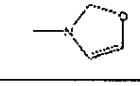
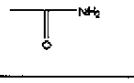
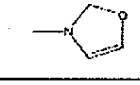
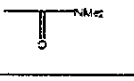
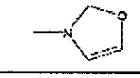
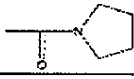
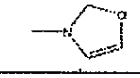
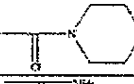
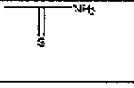
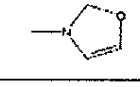
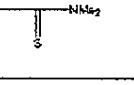
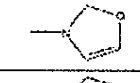
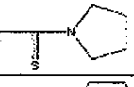
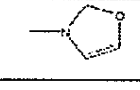
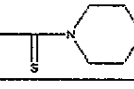
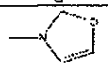
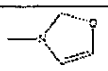
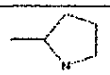
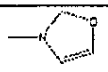
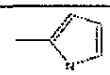
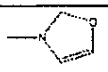
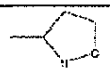
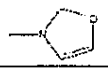
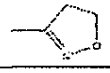
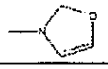
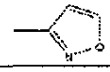
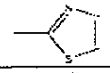
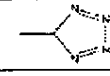
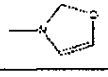
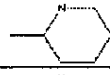
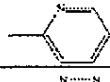
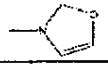
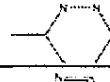
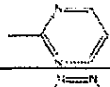
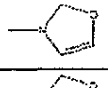
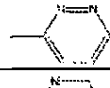
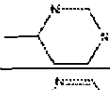
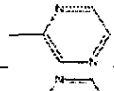
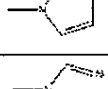
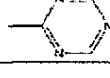
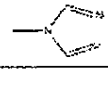
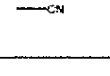
[Tabela 63]

No.	G	Q	X1	X2	X3	X4	X5
707			H	Bn	H	Cl	X239
708			H	SH	H	NEt2	X240
709			H	SMe	H	H	X241
710			H	Me	H	H	X242
711			H	CH=CH2	OCF3	H	X243
712			H		Me	H	X244
713			H	Ac	NO2	H	X245
714			H	CO2Et	H	H	X246
715			H	COPh	H	H	X247
716			H	H	CN	H	X248
717			CONEt2	CONH2	H	H	X249
718			Me	H	CO2Et	H	X250
719			NO2	H	SMe	H	X251
720			H	H	Br	H	X252
721			H	H	Me	H	X253
722			CN	H	Et	H	X254

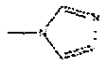
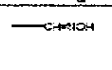
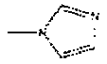
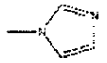
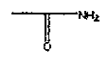
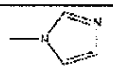
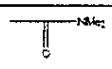
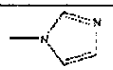
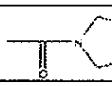
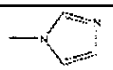
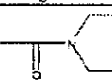
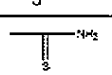
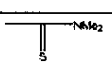
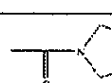
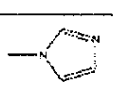
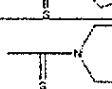
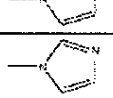
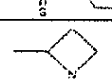
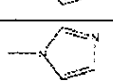
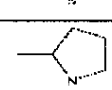
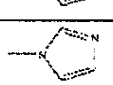
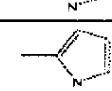
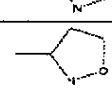
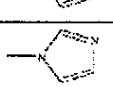
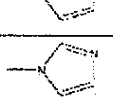
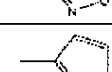
[Tabela 64]

No.	G	Q	X1	X2	X3	X4	X5
723			H	Me	Me	H	X255
724			CF3	SPh	H	H	X256
725			CN	H	H	Me	X257
726			NO2	H	Cl	H	X258
727			Br	H	NEt2	H	X259
728			CF3	H	H	H	X260
729			X261	H	H	H	Cl
730			Br	H	Br	N003	H
731			CN	H	Me	N004	H
732			NO2	H	Et	N005	H
733			OH	Me	Me	N006	H
734			NEt2	SPh	H	N007	H
735			OMe	H	H	S001	H
736			Bn	H	Cl	S002	H
737			SH	H	NEt2	S003	H

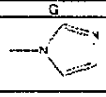
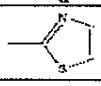
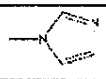
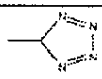
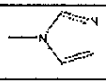
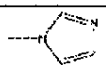
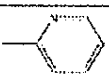
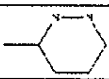
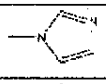
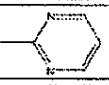
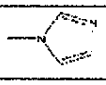
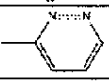
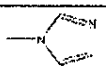
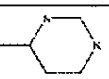
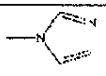
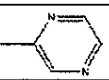
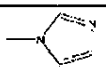
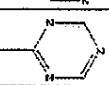
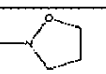
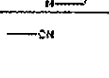
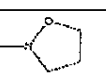
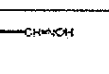
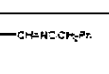
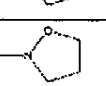
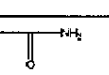
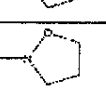
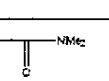
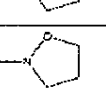
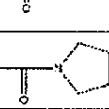
[Tabela 65]

No.	G	Q	X1	X2	X3	X4	X5
738			SMe	H	H	S004	H
739			Me	H	H	S005	H
740			CH=CH2	OCF3	H	S006	H
741				Me	H	S007	H
742			Ac	NO2	H	S008	H
743			CO2Et	H	H	S009	H
744			COPh	H	H	H001	H
745			H	CN	H	H002	H
746			CONH2	H	H	H003	H
747			T001	CF3	H	Br	H
748			T002	OiPr	H	H	H
749			T003	OCONH		H	H
750			T004	Bn	H	H	H
751			T005	NEt2	H	H	H
752			T006	OH	H	H	H
753			T007	Br	H	H	H
754			T008	Cl	H	H	H

[Tabela 66]

No.	G	Q	X1	X2	X3	X4	X5
755			T009	F	H	H	H
756			Me	T010	F	H	CO2Et
757			CN	T014	NO2	H	Et
758			H	T015	OH	Me	Me
759			Me	T016	NEt2	SPh	H
760			F	T017	OMe	H	H
761			CF3	T018	Bn	H	Cl
762			CO2Me	T019	SH	H	NEt2
763			F	H004	SMe	H	H
764			Cl	H005	Me	H	H
765			H	H006	CH=CH2	OCF3	H
766			H	H007		Me	H
767			H	X101	Ac	NO2	H
768			CO2Et	X102	CO2Et	H	H
769			Et	X103	COPh	H	H
770			iPr	X104	H	CN	H

[Tabela 67]

No.	G	Q	X1	X2	X3	X4	X5
771			Me	X105	CONH2	H	H
772			Bn	X106	Cl	Me	Bn
773			SH	X107	NEt2	F	NEt2
774			SMe	X108	H	Cl	OH
775			Me	X109	H	Br	Br
776			CH=CH2	X110	H	CN	Cl
777				X111	H	H	F
778			Ac	X112	H	Me	SH
779			CO2Et	X113	H	F	SMe
780			COPh	X114	H	CF3	Me
781			H	X115	H	CO2Me	CH=CH2
782			CONH2	X116	H	F	
783			H	Ac	X117	Cl	H
784			H	CONH2	X121	CO2Et	H
785			H	H	X122	Et	H
786			H	H	X123	iPr	H

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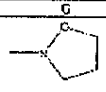
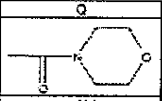
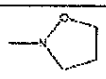
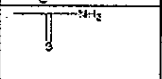
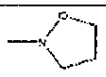
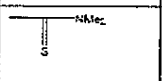
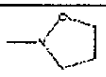
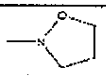
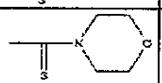
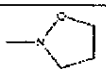
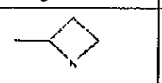
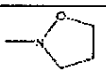
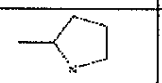
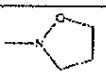
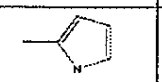
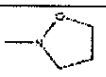
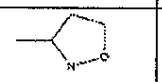
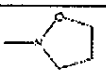
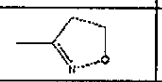
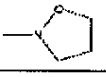
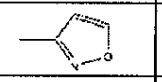
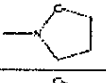
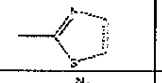
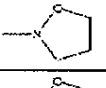
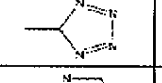
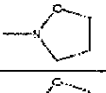
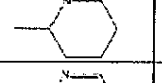
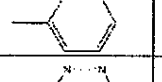
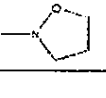
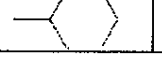
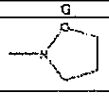
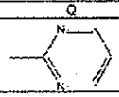
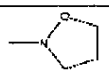
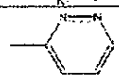
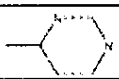
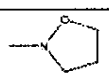
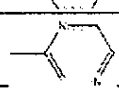
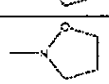
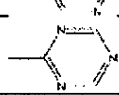
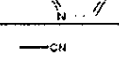
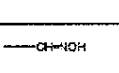
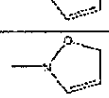
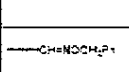
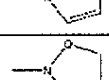
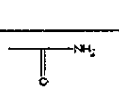
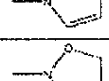
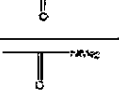
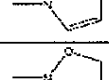
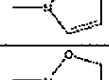
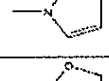
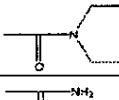
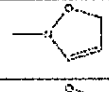
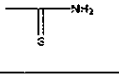
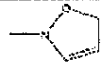
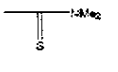
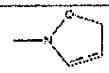
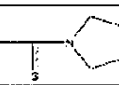
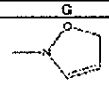
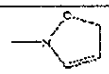
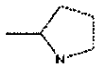
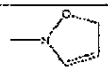
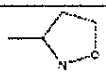
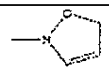
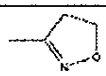
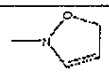
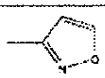
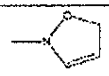
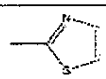
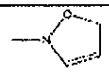
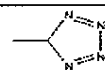
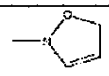
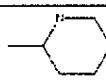
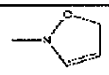
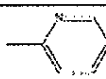
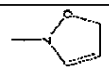
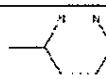
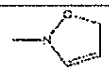
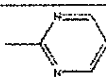
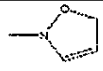
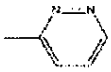
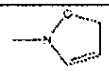
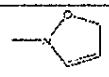
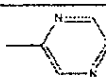
[Tabela 68]

No.	G	Q	X1	X2	X3	X4	X5
787			H	H	X124	Me	H
788			H	H	X125	Me	Me
789			H	H	X126	F	F
790			H	H	X127	CF3	Cl
791			H	H	X128	CO2Me	Br
792			H	H	X129	F	CN
793			H	H	X130	Cl	H
794			H	H	X131	H	Me
795			H	H	X132	H	F
796			H	H	X133	H	CF3
797			H	H	X134	CO2Et	CO2Me
798			H	H	X135	Et	H
799			H	H	X136	iPr	H
800			H	H	X137	Me	H
801			H	H	X138	Me	H
802			H	H	X139	F	H

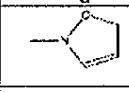
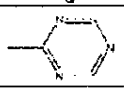
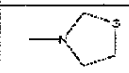
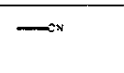
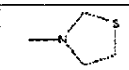
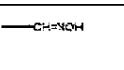
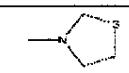
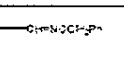
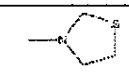
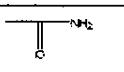
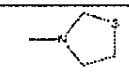
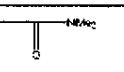
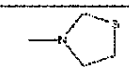
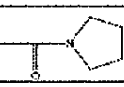
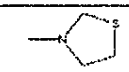
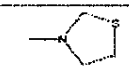
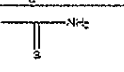
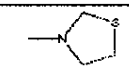
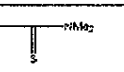
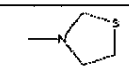
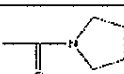
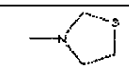
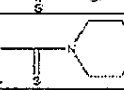
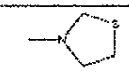
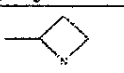
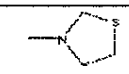
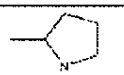
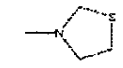
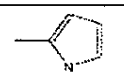
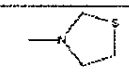
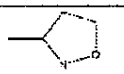
[Tabela 69]

No.	G	Q	X1	X2	X3	X4	X5
803			H	H	X140	CF3	H
804			H	H	X141	CO2Me	H
805			Br	F	X142	H	H
806			H	Cl	X143	H	H
807			H	Br	X144	H	H
808			H	CN	X145	H	H
809			H	NO2	X146	H	H
810			H	OH	X147	H	F
811			H	SH	H	X203	OH
812			H	SMe	H	X204	NEt2
813			H	Me	H	X205	OMe
814			H	CH=CH2	H	X206	Bn
815			H		H	X207	SH
816			Me	Ac	H	X208	F
817			SPh	CO2Et	H	X209	Cl
818			H	COPh	H	X210	Br

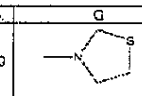
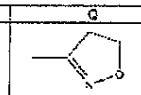
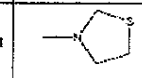
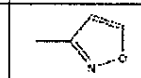
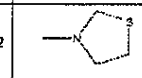
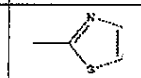
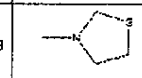
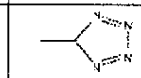
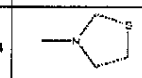
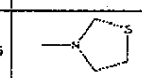
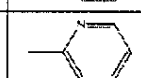
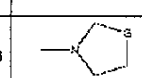
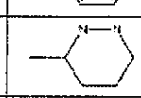
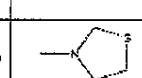
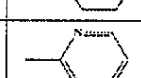
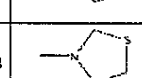
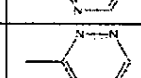
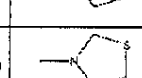
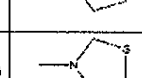
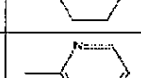
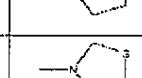
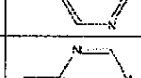
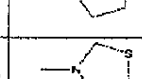
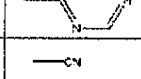
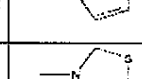
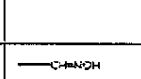
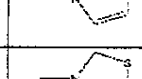
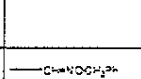
[Tabela 70]

No.	G	Q	X1	X2	X3	X4	X5
819			H	H	Me	X211	CN
820			H	CONH2	H	X212	NO2
821			H	H	H	X213	OH
822			H	H	H	X214	NEt2
823			OCF3	H	H	X215	OMe
824			Me	H	H	X216	Bn
825			NO2	H	H	X217	SH
826			H	H	H	X218	SMe
827			H	H	H	X219	OMe
828			CN	H	H	X220	Bn
829			H	H	H	X221	SH
830			H	H	H	X222	SMe
831			H	H	H	X223	Me
832			OCF3	H	H	X224	CH=CH2
833			Me	H	H	X225	≡

[Tabela 71]

No.	G	Q	X1	X2	X3	X4	X5
834			NO2	H	H	X226	Ac
835			H	H	H	X227	CO2Et
836			H	H	H	X228	COPh
837			CN	H	H	X229	H
838			H	Br	H	Br	X233
839			H	CN	H	Me	X234
840			H	NO2	H	Et	X235
841			H	OH	Me	Me	X236
842			H	NEt2	SPh	H	X237
843			H	OMe	H	H	X238
844			H	Bn	H	Cl	X239
845			H	SH	H	NEt2	X240
846			H	SMe	H	H	X241
847			H	Me	H	H	X242
848			H	CH=CH2	OCF3	H	X243
849			H		Me	H	X244

[Tabela 72]

No.	G	Q	X1	X2	X3	X4	X5
850			H	Ac	NO2	H	X245
851			H	CO2Et	H	H	X246
852			H	COPh	H	H	X247
853			H	H	CN	H	X248
854			CONEt2	CONH2	H	H	X249
855			Me	H	CO2Et	H	X250
856			NO2	H	SMe	H	X251
857			H	H	Br	H	X252
858			H	H	Me	H	X253
859			CN	H	Et	H	X254
860			H	Me	Me	H	X255
861			CF3	SPh	H	H	X256
862			CN	H	H	Me	X257
863			NO2	H	Cl	H	X258
864			Br	H	NEt2	H	X259

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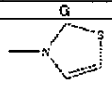
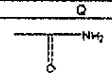
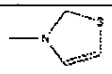
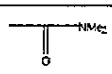
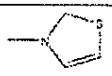
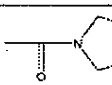
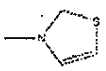
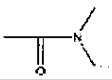
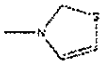
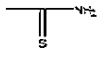
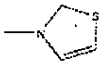
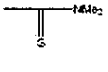
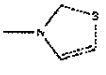
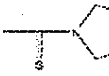
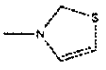
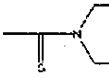
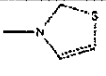
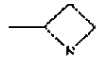
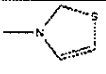
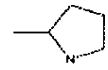
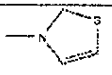
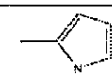
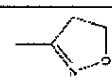
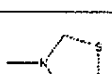
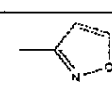
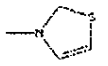
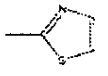
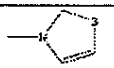
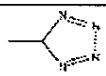
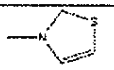
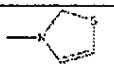
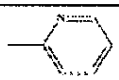
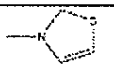
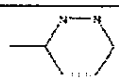
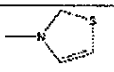
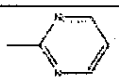
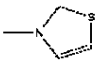
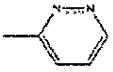
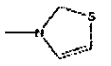
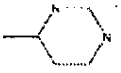
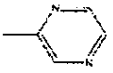
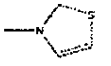
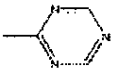
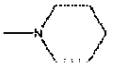
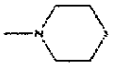
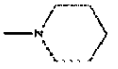
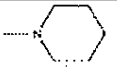
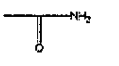
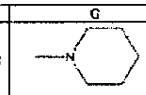
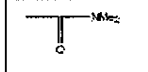
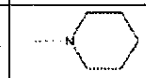
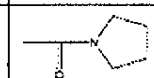
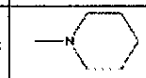
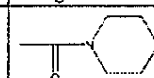
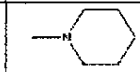
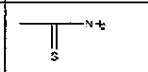
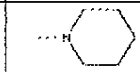
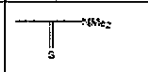
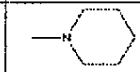
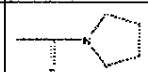
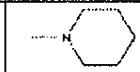
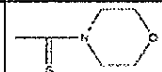
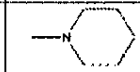
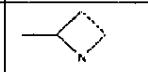
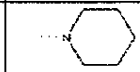
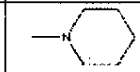
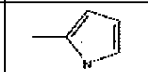
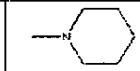
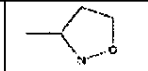
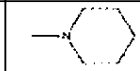
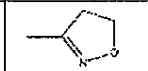
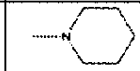
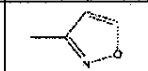
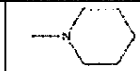
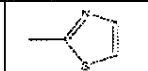
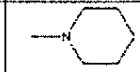
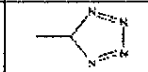
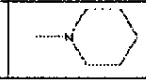
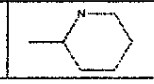
[Tabela 73]

No	G	Q	X1	X2	X3	X4	X5
865			F	H	CO2Et	N001	H
866			Cl	H	SMe	N002	H
867			Br	H	Br	N003	H
868			CN	H	Me	N004	H
869			NO2	H	Et	N005	H
870			OH	Me	Me	N006	H
871			NEt2	SPh	H	N007	H
872			OMe	H	H	S001	H
873			Bn	H	Cl	S002	H
874			SH	H	NEt2	S003	H
875			SMe	H	H	S004	H
876			Me	H	H	S005	H
877			CH=CH2	OCF3	H	S006	H
878				Me	H	S007	H

[Tabela 74]

No.	G	Q	X1	X2	X3	X4	X5
879			Ac	NO2	H	S008	H
880			CO2Et	H	H	S009	H
881			COPh	H	H	H001	H
882			H	CN	H	H002	H
883			CONH2	H	H	H003	H
884			T001	CF3	H	Br	H
885			T002	CiPr	H	H	H
886			T003	OCONH		H	H
887			T004	Bn	H	H	H
888			T005	NEt2	H	H	H
889			T006	OH	H	H	H
890			T007	Br	H	H	H
891			T008	Cl	H	H	H
892			Cl	T012	Br	H	Br

[Tabela 75]

No.	G	Q	X1	X2	X3	X4	X5
893			Br	T013	CN	H	Me
894			CN	T014	NO2	H	Et
895			H	T015	OH	Me	Me
896			Me	T016	NEt2	SPh	H
897			F	T017	OMe	H	H
898			CF3	T018	Bn	H	Cl
899			CO2Me	T019	SH	H	NEt2
900			F	H004	SMe	H	H
901			Cl	H005	Me	H	H
902			H	H006	CH=CH2	OCF3	H
903			H	H007		Me	H
904			H	X101	Ac	NO2	H
905			CO2Et	X102	CO2Et	H	H
906			Et	X103	COPh	H	H
907			iPr	X104	H	CN	H
908			Me	X105	CONH2	H	H

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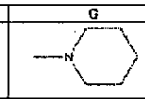
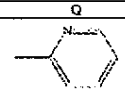
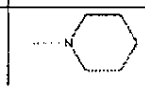
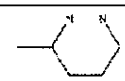
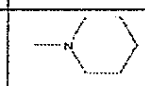
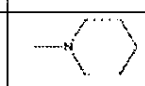
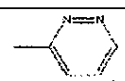
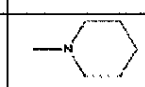
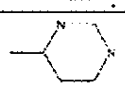
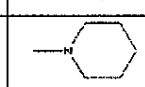
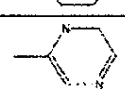
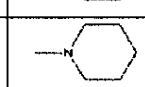
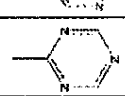
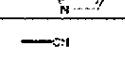
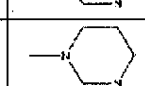
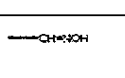
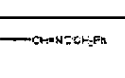
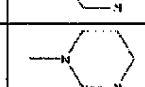
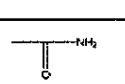
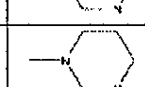
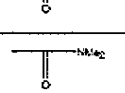
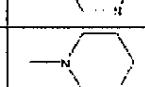
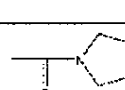
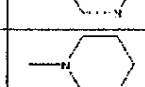
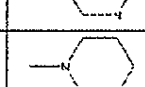
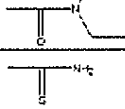
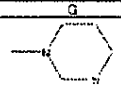
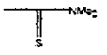
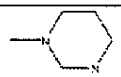
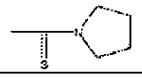
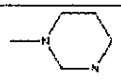
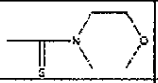
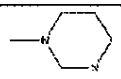
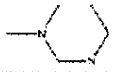
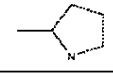
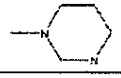
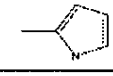
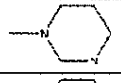
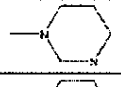
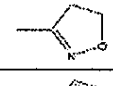
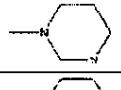
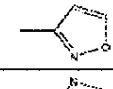
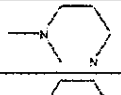
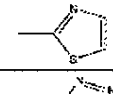
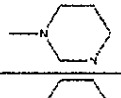
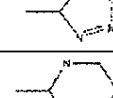
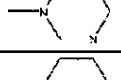
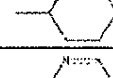
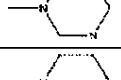
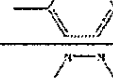
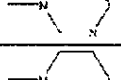
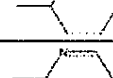
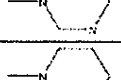
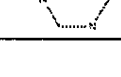
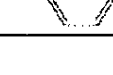
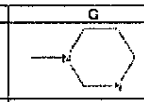
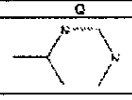
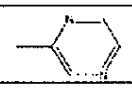
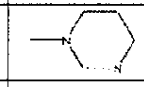
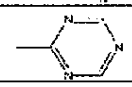
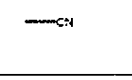
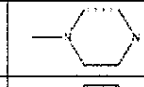
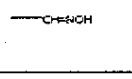
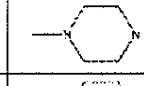
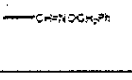
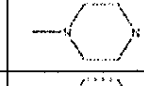
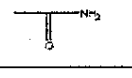
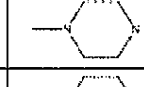
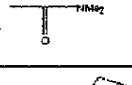
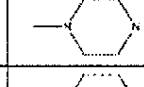
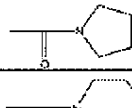
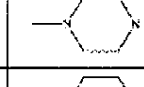
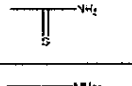
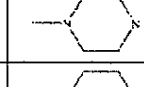
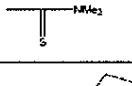
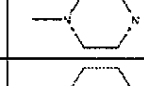
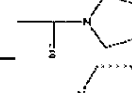
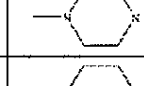
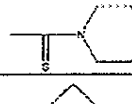
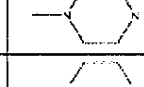
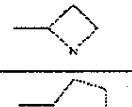
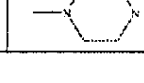
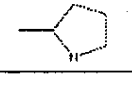
[Tabela 76]

No.	G	Q	X1	X2	X3	X4	X5
909			Bn	X106	Cl	Me	Bn
910			SH	X107	NEt2	F	NEt2
911			SMe	X108	H	Cl	OH
912			Me	X109	H	Br	Br
913			CH=CH2	X110	H	CN	Cl
914				X111	H	H	F
915			Ac	X112	H	Me	SH
916			CO2Et	X113	H	F	SMe
917			COPh	X114	H	CF3	Me
918			H	X115	H	CO2Me	CH=CH2
919			Cl	COPh	X119	H	H
920			NEt2	H	X120	H	H
921			H	CONH2	X121	CO2Et	H
922			H	H	X122	Et	H
923			H	H	X123	iPr	H

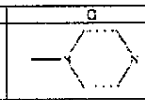
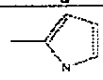
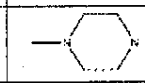
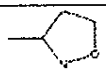
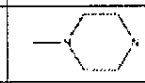
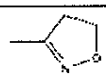
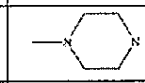
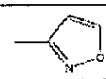
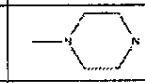
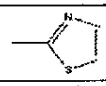
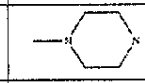
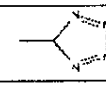
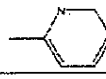
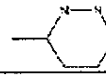
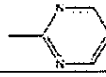
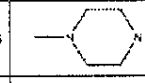
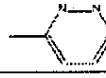
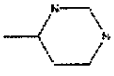
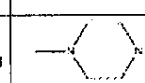
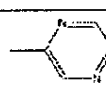
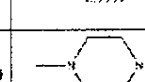
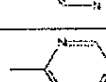
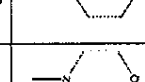
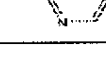
[Tabela 77]

No.	G	Q	X1	X2	X3	X4	X5
924			H	H	X124	Me	H
925			H	H	X125	Me	Me
926			H	H	X126	F	F
927			H	H	X127	CF3	Cl
928			H	H	X128	CO2Me	Br
929			H	H	X129	F	CN
930			H	H	X130	Cl	H
931			H	H	X131	H	Me
932			H	H	X132	H	F
933			H	H	X133	H	CF3
934			H	H	X134	CO2Et	CO2Me
935			H	H	X135	Et	H
936			H	H	X136	iPr	H
937			H	H	X137	Me	H
938			H	H	X138	Me	H
939			H	H	X139	F	H

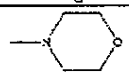
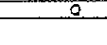
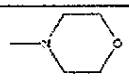
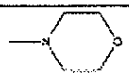
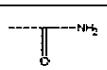
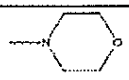
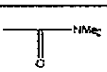
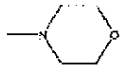
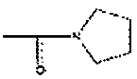
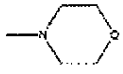
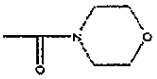
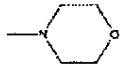
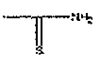
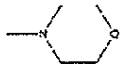
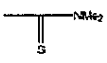
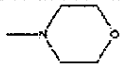
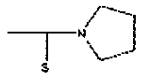
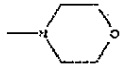
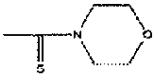
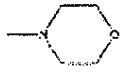
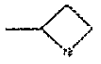
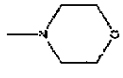
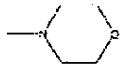
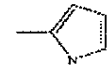
[Tabela 78]

No.	G	Q	X1	X2	X3	X4	X5
940			H	H	X140	CF3	H
941			H	H	X141	CO2Me	H
942			Br	F	X142	H	H
943			H	Cl	X143	H	H
944			H	Br	X144	H	H
945			H	CN	X145	H	H
946			H	OMe	H	X201	Br
947			H	Bn	H	X202	CN
948			H	SH	H	X203	OH
949			H	SMe	H	X204	NEt2
950			H	Me	H	X205	OMe
951			H	CH=CH2	H	X206	Bn
952			H		H	X207	SH
953			Me	Ac	H	X208	F
954			SPh	CO2Et	H	X209	Cl
955			H	COPh	H	X210	Br

[Tabela 79]

No.	G	Q	X1	X2	X3	X4	X5
956			H	H	Me	X211	CN
957			H	CONH2	H	X212	NO2
958			H	H	H	X213	OH
959			H	H	H	X214	NEt2
960			OCF3	H	H	X215	OMe
961			Me	H	H	X216	Bn
962			NO2	H	H	X217	SH
963			H	H	H	X218	SMe
964			H	H	H	X219	OMe
965			CN	H	H	X220	Bn
966			H	H	H	X221	SH
967			H	H	H	X222	SMe
968			H	H	H	X223	Me
969			OCF3	H	H	X224	CH=CH2
970			Me	H	H	X225	

[Tabela 80]

No.	G	Q	X1	X2	X3	X4	X5
971			NO2	H	H	X226	Ac
972			H	H	H	X227	CO2Et
973			CONH2	F	H	CO2Et	X231
974			H	Cl	H	SMe	X232
975			H	Br	H	Br	X233
976			H	CN	H	Me	X234
977			H	NO2	H	Et	X235
978			H	OH	Me	Me	X236
979			H	NEt2	SPh	H	X237
980			H	OMe	H	H	X238
981			H	Bn	H	Cl	X239
982			H	SH	H	NEt2	X240
983			H	SMe	H	H	X241

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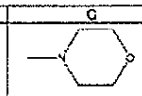
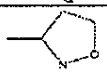
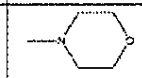
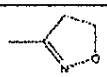
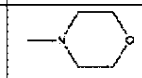
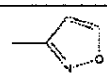
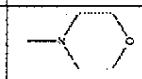
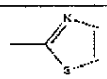
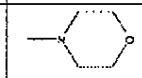
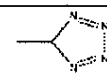
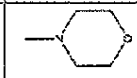
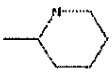
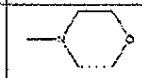
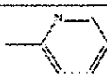
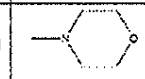
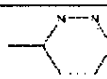
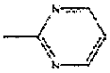
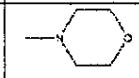
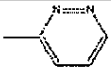
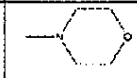
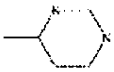
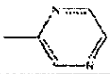
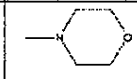
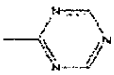
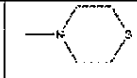
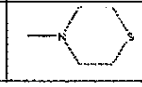
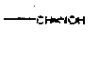
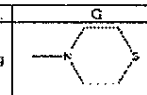
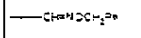
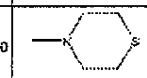
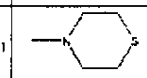
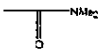
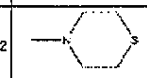
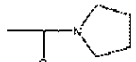
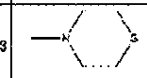
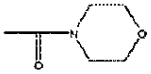
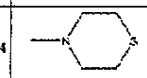
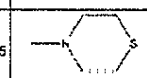
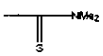
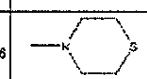
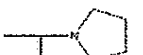
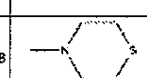
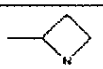
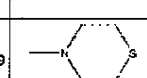
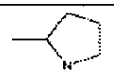
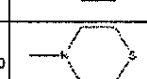
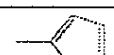
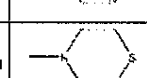
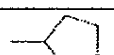
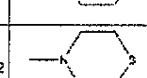
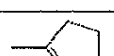
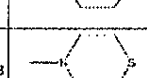
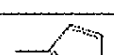
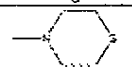
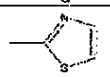
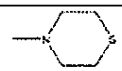
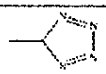
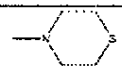
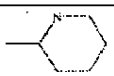
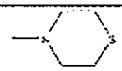
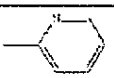
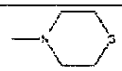
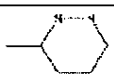
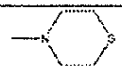
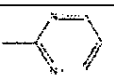
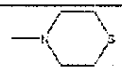
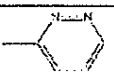
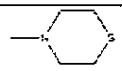
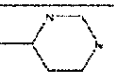
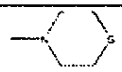
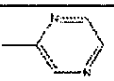
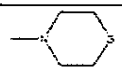
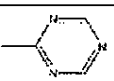
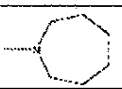
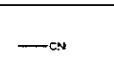
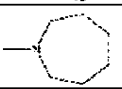
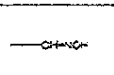
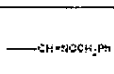
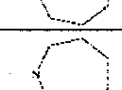
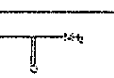
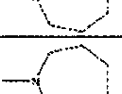
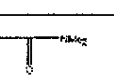
[Tabela 81]

No.	G	Q	X1	X2	X3	X4	X5
984			H	Me	H	H	X242
985			H	CH=CH2	OCF3	H	X243
986			H		Me	H	X244
987			H	Ac	NO2	H	X245
988			H	CO2Et	H	H	X246
989			H	COPh	H	H	X247
990			H	H	CN	H	X248
991			CONEt2	CONH2	H	H	X249
992			Me	H	CO2Et	H	X250
993			NO2	H	SMe	H	X251
994			H	H	Br	H	X252
995			H	H	Me	H	X253
996			CN	H	Et	H	X254
997			H	Me	Me	H	X255
998			CF3	SPh	H	H	X256

[Tabela 82]

No.	G	Q	X1	X2	X3	X4	X5
999			CN	H	H	Me	X257
1000			X261	H	H	H	Cl
1001			X302	OCF3	H	H	CO2Et
1002			F	H	CO2Et	N001	H
1003			Cl	H	SMe	N002	H
1004			Br	H	Br	N003	H
1005			CN	H	Me	N004	H
1006			NC2	H	Et	N005	H
1007			OH	Me	Me	N006	H
1008			NEt2	SPh	H	N007	H
1009			OMe	H	H	S001	H
1010			Bn	H	Cl	S002	H
1011			SH	H	NEt2	S003	H
1012			SMe	H	H	S004	H
1013			Me	H	H	S005	H

[Tabela 83]

No.	Q	Q	X1	X2	X3	X4	X5
1014			CH=CH2	OCF3	H	S006	H
1015				Me	H	S007	H
1016			Ac	NO2	H	S008	H
1017			CO2Et	H	H	S009	H
1018			COPh	H	H	H001	H
1019			H	CN	H	H002	H
1020			CONH2	H	H	H003	H
1021			T001	CF3	H	Br	H
1022			T002	OiPr	H	H	H
1023			T003	OCONH		H	H
1024			T004	Br	H	H	H
1025			T005	NEt2	H	H	H
1026			T006	OH	H	H	H
1027			Me	T010	F	H	CO2Et
1028			F	T011	Cl	H	SMe

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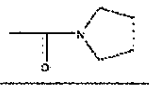
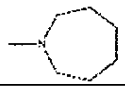
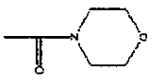
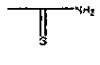
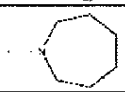
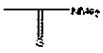
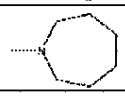
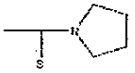
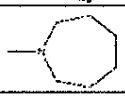
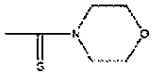
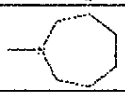
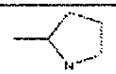
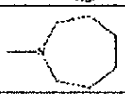
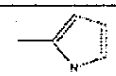
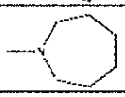
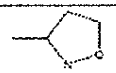
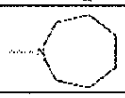
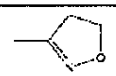
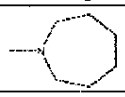
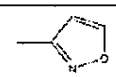
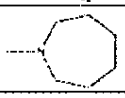
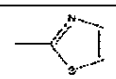
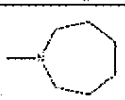
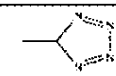
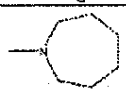
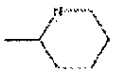
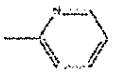
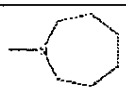
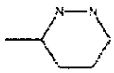
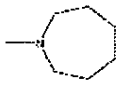
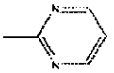
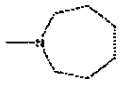
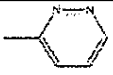
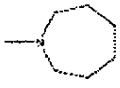
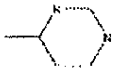
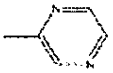
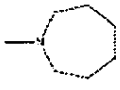
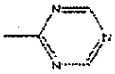
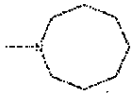
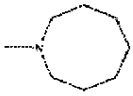
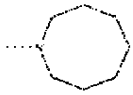
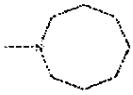
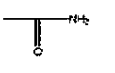
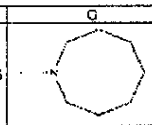
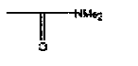
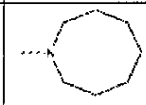
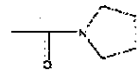
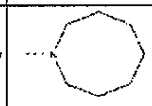
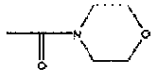
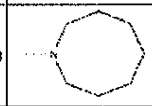
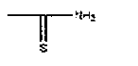
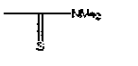
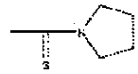
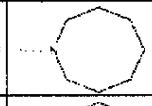
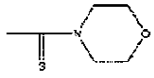
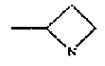
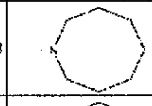
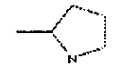
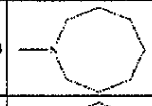
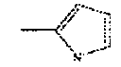
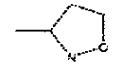
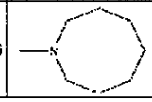
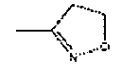
[Tabela 84]

No.	G	Q	X1	X2	X3	X4	X5
1029			Cl	T012	Br	H	Br
1030			Br	T013	CN	H	Me
1031			CN	T014	NO2	H	Et
1032			H	T015	OH	Me	Me
1033			Me	T016	NEt2	SPh	H
1034			F	T017	OMe	H	H
1035			CF3	T018	Bn	H	Cl
1036			CO2Me	T019	SH	H	NEt2
1037			F	H004	SMe	H	H
1038			Cl	H005	Me	H	H
1039			H	H006	CH=CH2	OCF3	H
1040			H	H007		Me	H
1041			H	X101	Ac	NO2	H
1042			CO2Et	X102	CO2Et	H	H

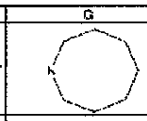
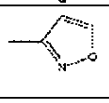
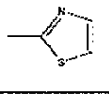
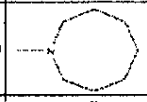
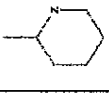
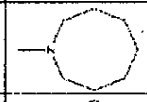
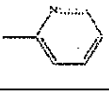
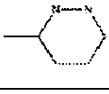
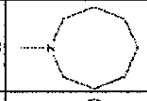
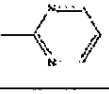
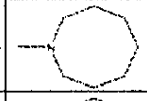
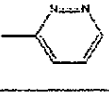
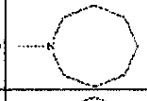
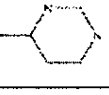
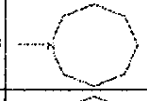
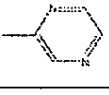
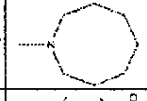
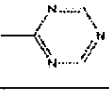
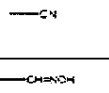
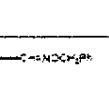
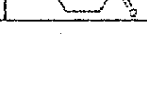
[Tabela 85]

No.	G	Q	X1	X2	X3	X4	X5
1043			Et	X103	COPh	H	H
1044			iPr	X104	H	CN	H
1045			Me	X105	CONH2	H	H
1046			Bn	X106	Cl	Me	Bn
1047			SH	X107	NEt2	F	NEt2
1048			SMe	X108	H	Cl	OH
1049			Me	X109	H	Br	Br
1050			CH=CH2	X110	H	CN	Cl
1051				X111	H	H	F
1052			Ac	X112	H	Me	SH
1053			CO2Et	X113	H	F	SMe
1054			H	Ac	X117	Cl	H

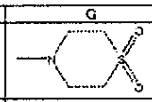
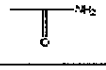
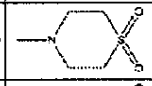
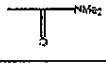
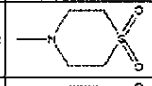
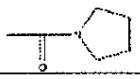
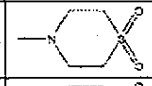
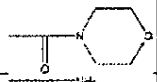
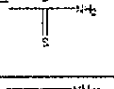
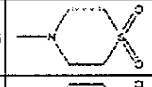
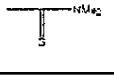
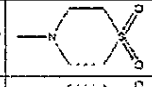
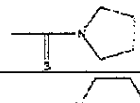
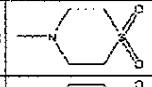
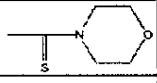
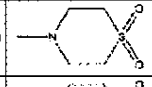
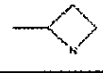
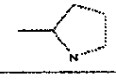
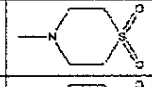
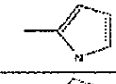
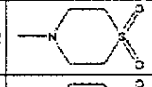
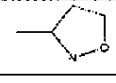
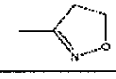
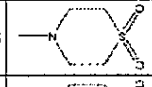
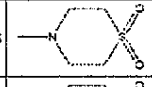
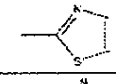
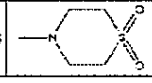
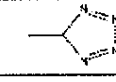
[Tabela 86]

No.	Q	Q	X1	X2	X3	X4	X5
1055			H	CO2Et	X118	H	H
1056			Cl	COPh	X119	H	H
1057			NEt2	H	X120	H	H
1058			H	CONH2	X121	CO2Et	H
1059			H	H	X122	Et	H
1060			H	H	X123	iPr	H
1061			H	H	X124	Me	H
1062			H	H	X125	Me	Me
1063			H	H	X126	F	F
1064			H	H	X127	CF3	Cl
1065			H	H	X128	CO2Me	Br
1066			H	H	X129	F	CN

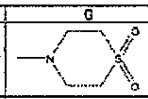
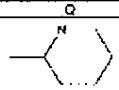
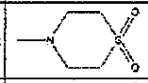
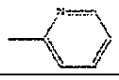
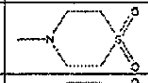
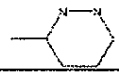
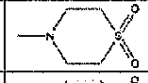
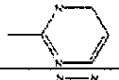
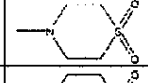
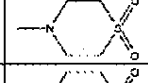
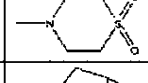
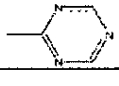
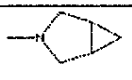
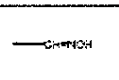
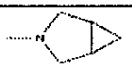
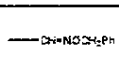
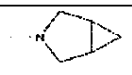
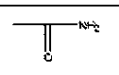
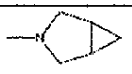
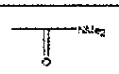
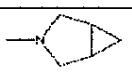
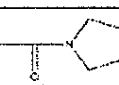
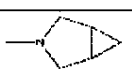
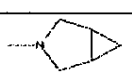
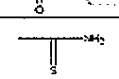
[Tabela 87]

No.	G	Q	X1	X2	X3	X4	X5
1067			H	H	X130	Cl	H
1068			H	H	X131	H	Me
1069			H	H	X132	H	F
1070			H	H	X133	H	CF3
1071			H	H	X134	CO2Et	CO2Me
1072			H	H	X135	Et	H
1073			H	H	X136	iPr	H
1074			H	H	X137	Me	H
1075			H	H	X138	Me	H
1076			H	H	X139	F	H
1077			H	H	X140	CF3	H
1078			H	H	X141	CO2Me	H
1079			Br	F	X142	H	H
1080			H	Cl	X143	H	H

[Tabela 88]

No.	G	Q	X1	X2	X3	X4	X5
1081			H	OH	X147	H	F
1082			H	NEt2	X148	H	Cl
1083			H	OMe	H	X201	Br
1084			H	Bn	H	X202	CN
1085			H	SH	H	X203	OH
1086			H	SMe	H	X204	NEt2
1087			H	Me	H	X205	OMe
1088			H	CH=CH2	H	X206	Bn
1089			H		H	X207	SH
1090			Me	Ac	H	X208	F
1091			SPh	CO2Et	H	X209	Cl
1092			H	COPh	H	XZ10	Br
1093			H	H	Me	X211	CN
1094			H	CONH2	H	X212	NO2
1095			H	H	H	X213	OH
1096			H	H	H	X214	NEt2

[Tabela 89]

No.	G	Q	X1	X2	X3	X4	X5
1097			OCF3	H	H	X215	OMe
1098			Me	H	H	X216	Bn
1099			NO2	H	H	X217	SH
1100			H	H	H	X218	SMe
1101			H	H	H	X219	OMe
1102			CN	H	H	X220	Bn
1103			H	H	H	X221	SH
1104			H	H	H	X222	SMe
1105			H	H	H	X223	Me
1106			OCF3	H	H	X224	CH=CH2
1107			Me	H	H	X225	
1108			CN	H	H	X229	H
1109			NO2	CONEt2	H	X230	H
1110			CONH2	F	H	CO2Et	X231
1111			H	Cl	H	SMe	X232
1112			H	Br	H	Br	X233

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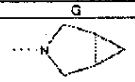
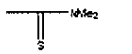
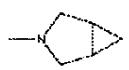
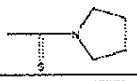
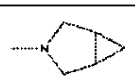
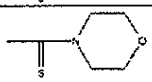
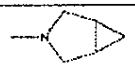
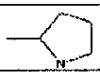
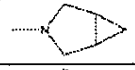
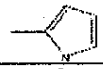
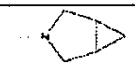
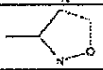
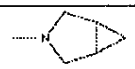
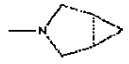
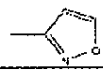
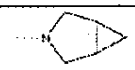
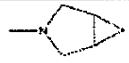
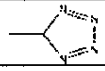
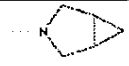
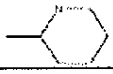
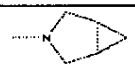
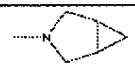
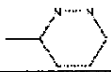
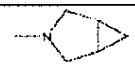
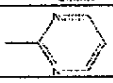
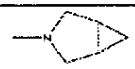
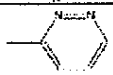
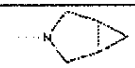
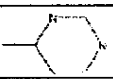
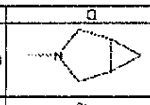
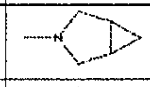
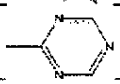
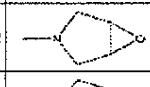
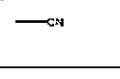
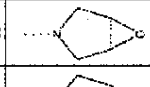
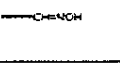
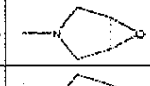
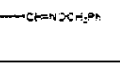
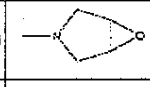
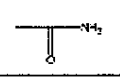
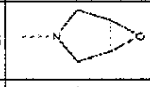
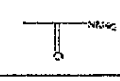
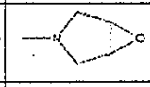
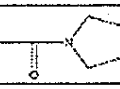
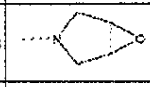
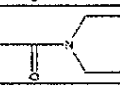
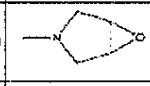
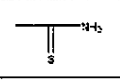
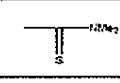
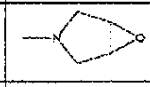
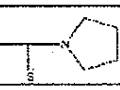
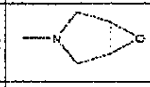
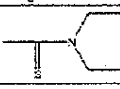
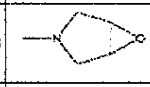
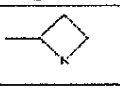
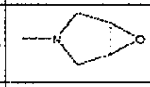
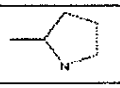
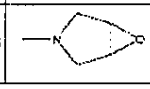
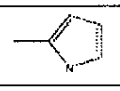
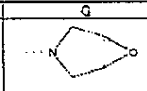
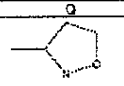
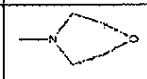
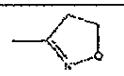
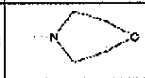
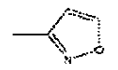
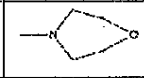
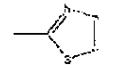
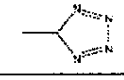
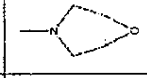
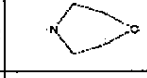
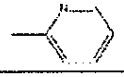
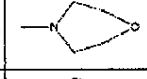
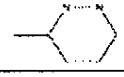
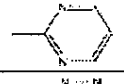
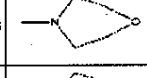
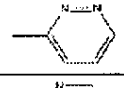
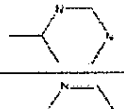
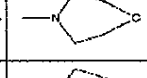
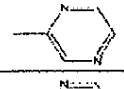
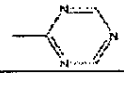
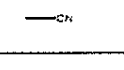
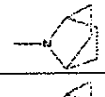
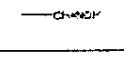
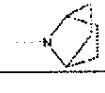
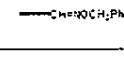
[Tabela 90]

No.	G	Q	X1	X2	X3	X4	X5
1113			H	CN	H	Me	X234
1114			H	NO2	H	Et	X235
1115			H	OH	Me	Me	X236
1116			H	NEt2	SPh	H	X237
1117			H	OMe	H	H	X238
1118			H	Bn	H	Cl	X239
1119			H	SH	H	NEt2	X240
1120			H	SMe	H	H	X241
1121			H	Me	H	H	X242
1122			H	CH=CH2	OCF3	H	X243
1123			H		Me	H	X244
1124			H	Ac	NO2	H	X245
1125			H	CO2Et	H	H	X246
1126			H	COPh	H	H	X247
1127			H	H	CN	H	X248
1128			CONEt2	CONH2	H	H	X249
1129			Me	H	CO2Et	H	X250

[Tabela 91]

No.	Q	Q	X1	X2	X3	X4	X5
1130			NO2	H	SMe	H	X251
1131			H	H	Br	H	X252
1132			H	H	Me	H	X253
1133			CN	H	Et	H	X254
1134			H	Me	Me	H	X255
1135			Br	H	NEt2	H	X259
1136			CF3	H	H	H	X260
1137			X261	H	H	H	Cl
1138			X302	OCF3	H	H	CO2Et
1139			F	H	CO2Et	N001	H
1140			Cl	H	SMe	N002	H
1141			Br	H	Br	N003	H
1142			CN	H	Me	N004	H
1143			NO2	H	Et	N005	H
1144			OH	Me	Me	N006	H
1145			NEt2	SPh	H	N007	H

[Tabela 92]

No.	G	Q	X1	X2	X3	X4	X5
1146			OMe	H	H	S001	H
1147			Bn	H	Cl	S002	H
1148			SH	H	NEt2	S003	H
1149			SMe	H	H	S004	H
1150			Me	H	H	S005	H
1151			CH=CH2	OCF3	H	S006	H
1152				Me	H	S007	H
1153			Ac	NO2	H	S008	H
1154			CO2Et	H	H	S009	H
1155			COPh	H	H	H001	H
1156			H	CN	H	H002	H
1157			CONH2	H	H	H003	H
1158			T001	CF3	H	Br	H
1159			T002	OiPr	H	H	H
1160			T003	OCONH		H	H
1161			T004	Bn	H	H	H

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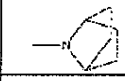
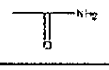
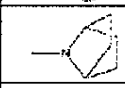
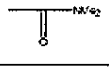
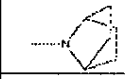
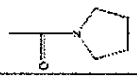
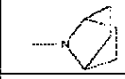
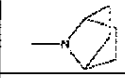
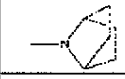
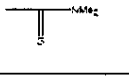
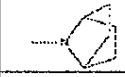
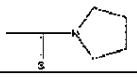
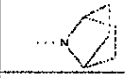
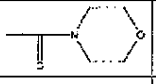
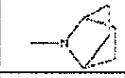
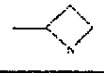
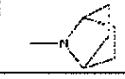
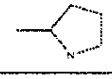
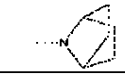
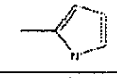
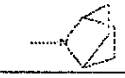
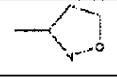
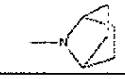
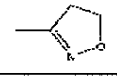
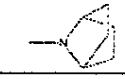
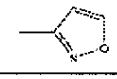
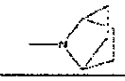
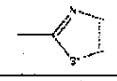
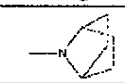
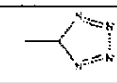
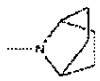
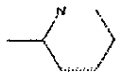
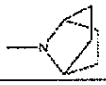
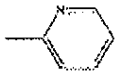
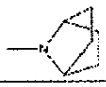
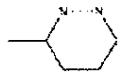
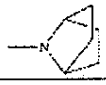
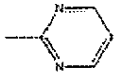
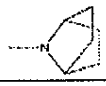
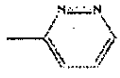
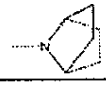
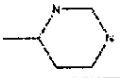
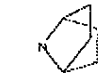
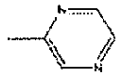
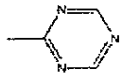
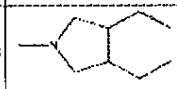
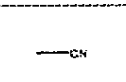
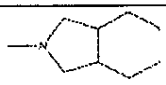
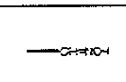
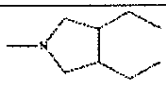
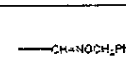
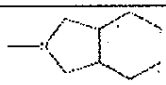
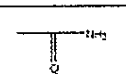
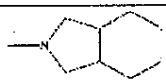
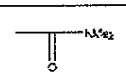
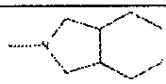
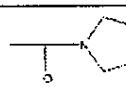
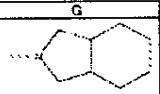
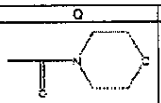
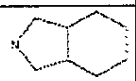
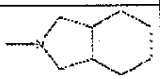
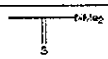
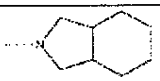
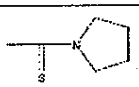
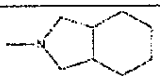
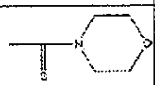
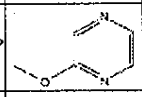
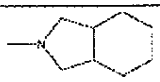
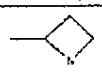
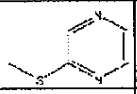
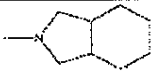
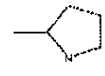
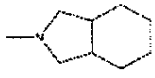
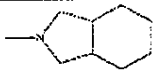
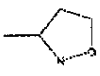
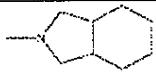
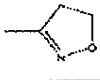
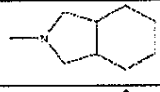
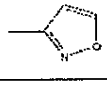
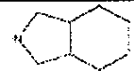
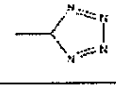
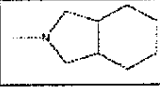
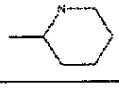
[Tabela 93]

No.	G	Q	X1	X2	X3	X4	X5
1162			T008	Cl	H	H	H
1163			T009	F	H	H	H
1164			Me	T010	F	H	CO2Et
1165			F	T011	Cl	H	SMe
1166			Cl	T012	Br	H	Br
1167			Br	T013	CN	H	Me
1168			CN	T014	NO2	H	Et
1169			H	T015	OH	Me	Me
1170			Me	T016	NEt2	SPh	H
1171			F	T017	OMe	H	H
1172			CF3	T018	Bn	H	Cl
1173			CO2Me	T019	SH	H	NEt2
1174			F	H004	SMe	H	H
1175			Cl	H005	Me	H	H
1176			H	H006	CH=CH2	OCF3	H
1177			H	H007		Me	H

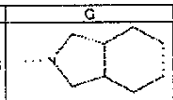
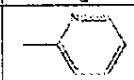
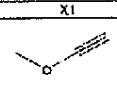
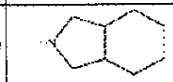
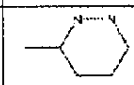
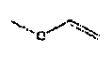
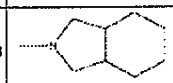
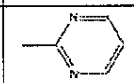
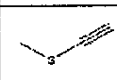
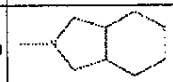
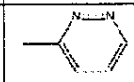
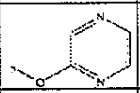
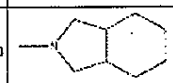
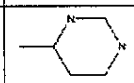
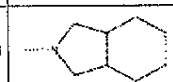
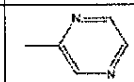
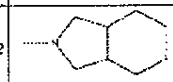
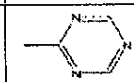
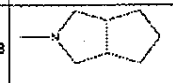
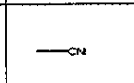
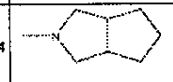
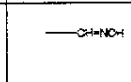
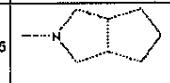
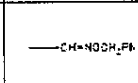
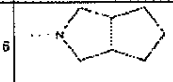
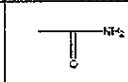
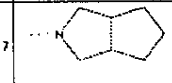
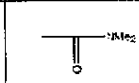
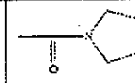
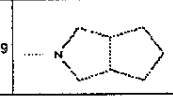
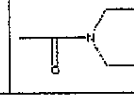
[Tabela 94]

No.	G	Q	X1	X2	X3	X4	X5
1178			H	X101	Ac	NO2	H
1179			CO2Et	X102	CO2Et	H	H
1180			Et	X103	COPh	H	H
1181			iPr	X104	H	CN	H
1182			Me	X105	CONH2	H	H
1183			Bn	X106	Cl	Me	Bn
1184			SH	X107	NEt2	F	NEt2
1185			SMe	X108	H	Cl	OH
1186			Me	X109	H	Br	Br
1187			CH=CH2	X110	H	CN	Cl
1188				X111	H	H	F
1189			H	X115	H	CO2Me	CH=CH2
1190			CONH2	X116	H	F	
1191			H	Ac	X117	Cl	H

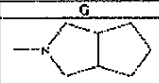
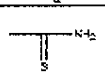
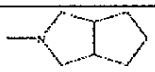
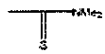
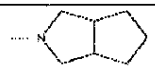
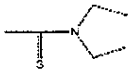
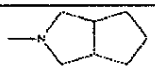
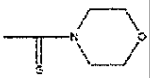
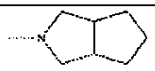
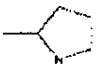
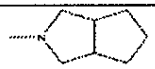
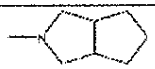
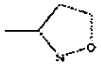
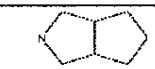
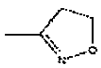
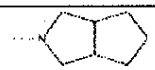
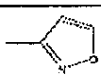
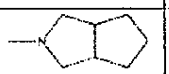
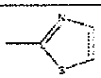
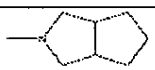
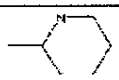
[Tabela 95]

No.	G	Q	X1	X2	X3	X4	X5
1192			H	CO2Et	X118	H	H
1193			Cl	COPh	X119	H	H
1194			NEt2	H	X120	H	H
1195			H	CONH2	X121	CO2Et	H
1196				H	X122	Et	H
1197			H		X123	iPr	H
1198			H	H	X124	Me	H
1199			H		X125	Me	Me
1200			H	H	X126	F	F
1201			H	H	X127	CF3	Cl
1202			H	H	X128	CO2Me	Br
1203			H	H	X129	F	CN
1204			OPh	H	X130	Cl	H
1205			Pyridin-2-yl	H	X131	H	Me

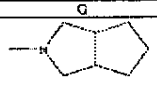
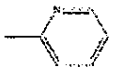
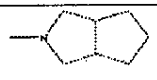
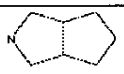
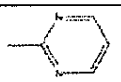
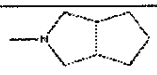
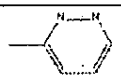
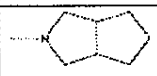
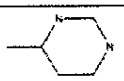
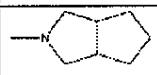
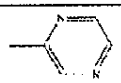
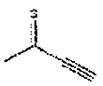
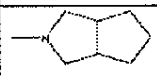
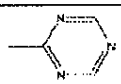
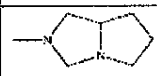
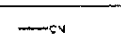
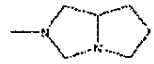
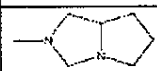
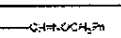
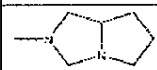
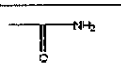
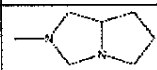
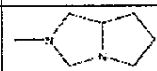
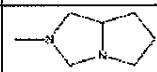
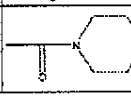
[Tabela 96]

No.	G	Q	X1	X2	X3	X4	X5
1206				H	X132	H	F
1207				H	X133	H	CF3
1208				H	X134	CO2Et	CO2Me
1209				H	X135	Et	H
1210			H	H	X136	iPr	H
1211			H	H	X137	Me	SPh
1212			H	H	X138	Me	SOPh
1213			H	H	X139	F	SO2Ph
1214			H	H	X140	CF3	SOMe
1215			H	H	X141	CO2Me	SO2Et
1216			H	CN	X145	H	H
1217			H	NO2	X146	H	H
1218			H	OH	X147	H	F
1219			H	NEt2	X148	H	Cl

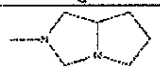
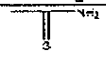
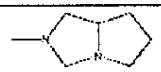
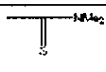
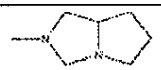
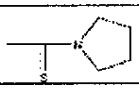
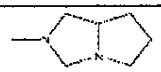
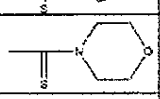
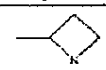
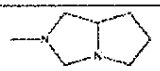
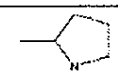
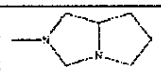
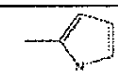
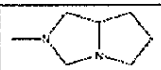
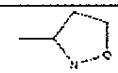
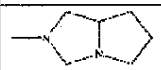
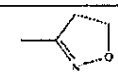
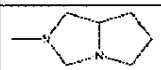
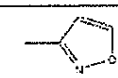
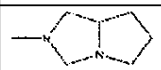
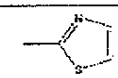
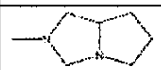
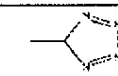
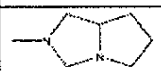
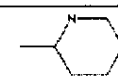
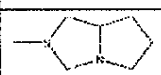
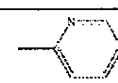
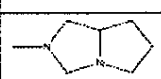
[Tabela 97]

No.	G	Q	X1	X2	X3	X4	X5
1220			H	OMe	H	X201	Br
1221			H	Bn	H	X202	CN
1222			H	SH	H	X203	OH
1223			H	SMe	H	X204	NEt2
1224			H	Me	H	X205	OMe
1225			H	CH=CH2	H	X206	Bn
1226			H		H	X207	SH
1227			Me	Ac	H	X208	F
1228			SPh	CO2Et	H	X209	Cl
1229			H	COPh	H	X210	Br
1230			H	H	Me	X211	CN
1231			H	CONH2	H	X212	NO2
1232			SMe	H	H	X213	OH

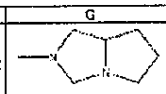
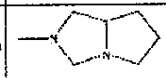
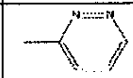
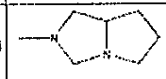
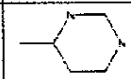
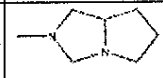
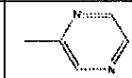
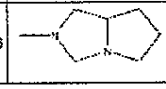
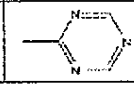
[Tabela 98]

No.	Q	Q	X1	X2	X3	X4	X5
1233			H	SH	H	X214	NEt2
1234			OCF3	H	H	X215	OMe
1235			Me	H	H	X216	Bn
1236			NO2	H	H	X217	SH
1237			H	H	CSPh	X218	SMe
1238			H		H	X219	OMe
1239			CN	H	H	X220	Bn
1240			H	H	CSCH=CH2	X221	SH
1241			COPh	H	H	X222	SMe
1242			H	CSMe	H	X223	Me
1243			H	H	H	X227	CO2Et
1244			H	H	H	X228	COPh
1245			CN	H	H	X229	H
1246			NO2	CONEt2	H	X230	H

[Tabela 99]

No.	G	Q	X1	X2	X3	X4	X5
1247			CONH2	F	H	CO2Et	X231
1248			H	Cl	H	SMe	X232
1249			H	Br	H	Br	X233
1250			H	CN	H	Me	X234
1251			H	NO2	H	Et	X235
1252			H	OH	Me	Me	X236
1253			H	NEt2	SPh	H	X237
1254			H	OMe	H	H	X238
1255			H	Br	H	Cl	X239
1256			H	SH	H	NEt2	X240
1257			H	SMe	H	H	X241
1258			COCH=CH2	Me	H	H	X242
1259			H	CH=CH2	OCF3	H	X243
1260			H		Me	H	X244
1261			H	Ac	NO2	H	X245

[Tabela 100]

No.	G	Q	X1	X2	X3	X4	X5
1262			H	CO2Et	H	H	X246
1263			H	COPh	H	H	X247
1264			H	4-Cl-Ph	CN	H	X248
1265			CONEt2	Et	H	H	X249
1266			Me	H	CO2Et	H	X250

Na tabela 3, compostos com números dos compostos 229 e 230 são isômeros cis-trans baseados na configuração do grupo 3,5-dimetila no grupo 3,5-dimetilpiperidina-1-ila de G na fórmula (1) mencionada anteriormente, e compostos com números dos compostos 267 e 268 são isômeros cis-trans baseados na configuração do grupo 3,4-diflúor no grupo 3,4-difluoropirrolidina-1-ila. Além disso, dados de RMN 1H em diversos compostos na tabela 3 são apresentados na tabela 4 a seguir. Observe que os números dos compostos na tabela 4 correspondem aos da tabela 3.

[Tabela 101]

Comp. N.	
12	^{1}H-NMR ($CDCl_3$, δ ppm) : 1.79 (s, 6H), 2.04-2.09 (m, 4H), 2.90-3.15 (m, 6H), 3.61 (br s, 2H), 3.80 (br s, 2H), 7.52 (d, 1H), 7.78 (d, 1H)
40	^{1}H-NMR ($CDCl_3$, δ ppm) : 1.96-2.12 (m, 4H), 2.89 (s, 3H), 3.12 (s, 3H), 3.58 (br s, 2H), 3.76 (br s, 2H), 6.90 (d, 1H), 7.18 (s, 1H)
46	^{1}H-NMR ($CDCl_3$, δ ppm) : 1.36 (s, 9H), 2.02-2.08 (m, 4H), 2.22 (s, 1H), 3.60 (br s, 2H), 3.76 (br s, 2H), 4.04 (d, 1H), 4.71 (d, 1H), 7.00 (d, 1H), 7.21 (d, 1H)
57	^{1}H-NMR ($CDCl_3$, δ ppm) : 1.57 (s, 6H), 2.02-2.08 (m, 4H), 3.60 (br s, 2H), 3.71 (br s, 2H), 6.72 (d, 1H), 7.13 (d, 1H)
71	^{1}H-NMR ($CDCl_3$, δ ppm) : 1.24 (t, 3H), 2.02-2.08 (m, 4H), 3.60 (bs, 2H), 3.78 (bs, 2H), 4.22 (q, 2H), 6.14 (s, 1H), 7.25 (d, 1H), 7.41 (m, 3H), 7.57 (d, 2H), 7.70 (d, 1H)
72	^{1}H-NMR ($CDCl_3$, δ ppm) : 1.73 (s, 6H), 2.03-2.08 (m, 4H), 3.60 (br s, 2H), 3.80 (br s, 2H), 7.23 (d, 1H), 7.57 (d, 1H)
76	^{1}H-NMR ($CDCl_3$, δ ppm) : 1.82 (s, 6H), 2.04-2.09 (m, 4H), 3.60 (br s, 2H), 3.78 (br s, 2H), 5.49 (br s, 1H), 6.35 (br s, 1H), 7.23 (d, 1H), 7.50 (d, 1H)
80	^{1}H-NMR ($CDCl_3$, δ ppm) : 1.16 (t, 3H), 1.80 (s, 6H), 2.05-2.09 (m, 4H), 3.34 (dq, 2H), 3.60 (bs, 1H), 3.78 (bs, 1H), 6.48 (bt, 1H), 7.23 (d, 1H), 7.49 (d, 1H)
86	^{1}H-NMR ($CDCl_3$, δ ppm) : 1.83 (s, 6H), 2.04-2.08 (m, 4H), 3.59 (br s, 2H), 3.74 (br s, 2H), 4.49 (d, 2H), 6.78 (br t, 1H), 7.18 (d, 1H), 7.26-7.36 (m, 5H), 7.47 (d, 1H)
88	^{1}H-NMR ($CDCl_3$, δ ppm) : 1.91 (s, 6H), 2.05-20.9 (m, 4H), 3.60 (bs, 2H), 3.78 (bs, 2H), 6.65 (s, 1H), 7.23-7.37 (m, 5H), 7.52-7.60 (m, 2H)
89	^{1}H-NMR ($CDCl_3$, δ ppm) : 1.80 (s, 1H), 2.02-2.08 (m, 4H), 3.58 (bs, 2H), 3.74 (bs, 2H), 7.19 (d, 1H), 7.61-7.69 (m, 3H), 7.90 (t, 1H), 8.63 (d, 2H)
90	^{1}H-NMR ($CDCl_3$, δ ppm) : 1.83 (s, 6H), 2.05-2.10 (m, 4H), 3.60 (br s, 2H), 3.73-3.80 (m, 5H), 7.24 (d, 1H), 7.49 (d, 1H), 9.03 (s, 1H)
92	^{1}H-NMR ($CDCl_3$, δ ppm) : 1.73 (s, 6H), 2.05-2.10 (m, 4H), 2.96-3.09 (m, 6H), 3.60 (br s, 2H), 3.78 (br s, 2H), 7.24 (d, 1H), 7.55 (d, 1H)
97	^{1}H-NMR ($CDCl_3$, δ ppm) : 1.74 (s, 6H), 2.05-2.09 (m, 4H), 3.18 (s, 3H), 3.60 (bs, 2H), 3.79 (bs, 2H), 4.36 (s, 2H), 7.25 (d, 1H), 7.55 (d, 1H)
109	^{1}H-NMR ($CDCl_3$, δ ppm) : 1.30 (t, 3H), 1.73 (s, 6H), 2.07 (m, 4H), 3.60 (br, 2H), 3.77 (br, 2H), 4.24 (q, 2H), 7.21 (d, 1H), 7.51 (d, 1H), 7.62 (br, 1H), 7.86 (br, 1H)
110	^{1}H-NMR ($CDCl_3$, δ ppm) : 1.37-1.48 (m, 2H), 1.67-1.78 (m, 2H), 1.95-2.11 (m, 4H), 3.59 (br s, 2H), 3.77 (br s, 2H), 4.26 (br s, 1H) 7.23 (d, 1H), 7.61 (d, 1H)
115	^{1}H-NMR ($CDCl_3$, δ ppm) : 1.97 (s, 3H), 2.07 (m, 4H), 3.67 (br, 2H), 3.79 (br, 2H), 7.26 (d, 1H), 7.62 (d, 1H)
116	^{1}H-NMR ($CDCl_3$, δ ppm) : 1.14 (t, 3H), 1.98 (s, 3H), 2.08 (m, 4H), 3.36 (m, 2H), 3.61 (br S, 2H), 3.79 (br s, 2H), 6.04 (br s, 1H), 7.26 (d, 1H), 7.57 (d, 1H)
117	^{1}H-NMR ($CDCl_3$, δ ppm) : 1.99 (s, 3H), 2.08 (m, 4H), 3.05 (br, 6H), 3.61 (br, 2H), 3.79 (br, 2H), 7.28 (d, 1H), 7.60 (d, 1H)
118	^{1}H-NMR ($CDCl_3$, δ ppm) : 1.04 (t, 3H), 1.72 (s, 3H), 1.93-2.22 (m, 6H), 3.60 (br s, 2H), 3.77 (br s, 2H), 5.30 (br s, 1H), 7.22 (d, 1H), 7.56 (d, 1H)
122	^{1}H-NMR ($CDCl_3$, δ ppm) : 0.96 (t, 6H), 1.96-2.33 (m, 8H), 3.60 (br s, 2H), 3.77 (br s, 2H), 5.41 (br s, 1H), 7.22 (d, 1H), 7.58 (d, 1H)
144	^{1}H-NMR ($CDCl_3$, δ ppm) : 2.05 (br, 4H), 2.59 (s, 1H), 3.52 (br, 2H), 3.78 (br, 2H), 4.80 (s, 2H), 7.32 (d, 1H)

Comp. N.	
168	1H-NMR (CDCl3, δ ppm): 1.52 (s, 6H), 2.05 (m, 4H), 2.96 (s, 2H), 3.58 (br, 2H), 3.72 (br, 2H), 6.94 (d, 1H)
184	^{1}H-NMR (CDCl$_3$, δ ppm): 2.05-2.09 (m, 4H), 2.56 (t, 1H), 3.60-3.75 (m, 4H), 4.75 (d, 2H), 6.69 (s, 1H), 7.42 (s, 1H)
187	^{1}H-NMR (CDCl$_3$, δ ppm): 2.02-2.07 (m, 8H), 3.62 (br s, 4H), 3.72 (br s, 4H), 6.57 (s, 1H), 7.45 (s, 1H)
188	^{1}H-NMR (CDCl$_3$, δ ppm): 1.81-1.87 (m, 4H), 2.03-2.09 (m, 4H), 3.36-3.42 (m, 4H), 3.57 (br s, 2H), 3.80 (br s, 2H), 3.81-3.85 (m, 2H), 4.90-4.92 (m, 1H), 5.20-5.32 (m, 2H), 6.85-5.98 (m, 1H), 6.60 (s, 1H), 7.49 (s, 1H)
192	^{1}H-NMR (CDCl$_3$, δ ppm): 1.88-1.93 (m, 4H), 3.54 (br s, 4H), 5.10 (s, 2H), 6.50 (d, 1H), 6.95 (d, 1H), 7.24-7.39 (m, 5H), 7.60 (s, 1H)
199	^{1}H-NMR (CDCl$_3$, δ ppm): 2.00 (br m, 4H), 2.52 (t, 1H), 2.79 (s, 3H), 2.85 (s, 3H), 3.10-3.30 (br m, 1H), 3.50-3.80 (br m, 3H), 4.66 (d, 2H), 6.70 (d, 1H), 7.04 (d, 1H)
201	^{1}H-NMR (CDCl$_3$, δ ppm): 1.24 (t, 3H), 1.64 (s, 6H), 1.97 (br s, 4H), 2.17 (s, 3H), 3.20-3.73 (br m, 4H), 4.20 (q, 2H), 7.05 (d, 1H), 7.26 (d, 1H), 9.62 (br s, 1H)
204	^{1}H-NMR (CDCl$_3$, δ ppm): 1.24 (t, 3H), 1.66 (s, 6H), 1.75-2.25 (br m, 4H), 3.07 (s, 3H), 3.07-3.85 (br m, 4H), 4.17 (q, 2H), 4.34 (d, 1H), 5.72 (d, 1H), 6.89 (dd, 2H), 6.94 (d, 1H), 7.24 (m, 3H), 7.80 (d, 1H)
205	^{1}H-NMR (CDCl$_3$, δ ppm): 1.60-2.05 (br m, 8H), 2.52 (t, 1H), 3-3.8 (br m, 8H), 4.67 (d, 2H), 7.00 (d, 1H), 7.03 (d, 1H)
208	^{1}H-NMR (CDCl$_3$, δ ppm): 1.70-2.05 (m, 4H), 2.35 (d, 3H), 2.50 (t, 1H), 3.37 (br s, 2H), 3.68 (br s, 2H), 4.58 (d, 2H), 5.71 (s, 1H), 6.48 (d, 1H), 6.94 (d, 1H)
209	^{1}H-NMR (CDCl$_3$, δ ppm): 1.92-2.03 (m, 4H), 2.47 (t, 1H), 3.56 (br s, 4H), 4.53 (d, 2H), 6.44 (d, 1H), 6.93 (d, 1H), 7.38 (d, 1H), 7.82 (d, 1H)
210	^{1}H-NMR (CDCl$_3$, δ ppm): 1.90-2.07 (br m, 4H), 2.45 (t, 1H), 3.23, 3.74 (br s, 4H), 4.48 (d, 2H), 6.38 (d, 1H), 6.87 (d, 1H), 7.08 (d, 1H), 7.20 (m, 1H), 7.54 (t, 1H), 8.61 (m, 1H)
252	^{1}H-NMR (CDCl$_3$, δ ppm): 1.60 (s, 9H), 3.73-3.84 (m, 8H), 7.30 (d, 1H), 7.42 (d, 1H)
258	^{1}H-NMR (CDCl$_3$, δ ppm): 1.16 (t, 3H), 1.80 (s, 6H), 3.35 (m, 2H), 4.18 (br m, 4H), 6.39 (br s, 1H), 7.28 (d, 1H), 7.51 (d, 1H)
264	^{1}H-NMR (CDCl$_3$, δ ppm): 1.16 (t, 3H), 1.80 (s, 6H), 3.34 (dq, 2H), 3.70-3.83 (m, 8H), 6.47 (bt, 1H), 7.24 (d, 1H), 7.48 (d, 1H)
267	^{1}H-NMR (CDCl$_3$, δ ppm): 2.57 (t, 1H), 4.08 (br m, 4H), 4.74 (d, 2H), 5.20-5.40 (m, 2H), 6.74 (d, 1H), 7.19 (d, 1H)
268	^{1}H-NMR (CDCl$_3$, δ ppm): 2.57 (t, 1H), 4.01 (br m, 4H), 4.73 (d, 2H), 5.15-5.37 (m, 2H), 6.72 (d, 1H), 7.19 (d, 1H)
284	^{1}H-NMR (CDCl$_3$, δ ppm): 2.05 (m, 4H), 3.58 (br, 2H), 3.77 (br, 2H), 3.81 (s, 3H), 6.79 (br, 1H), 7.22 (d, 1H), 7.40 (d, 1H), 7.94 (br, 1H)
285	^{1}H-NMR (CDCl$_3$, δ ppm): 2.08 (m, 4H), 3.60 (br, 2H), 3.79 (br, 2H), 7.30 (d, 1H), 7.46 (d, 1H), 8.99 (br, 1H)
292	^{1}H-NMR (CDCl$_3$, δ ppm): 2.07 (m, 4H), 3.15 (s, 6H), 3.60 (br, 2H), 3.78 (br, 2H), 7.30 (d, 1H), 7.79 (d, 1H)

Comp. N.	
296	^{1}H-NMR ($CDCl_3$, δ ppm) :2.51 (tt, 2H), 4.28 (t, 4H), 6.86 (d, 1H), 7.19 (dd, 1H), 7.41 (d, 1H)
302	^{1}H-NMR ($CDCl_3$, δ ppm) :2.26 (t, 1H), 3.96 (d, 2H), 4.12 (m, 4H), 4.42 (brs, 1H), 6.36 (d, 1H), 7.13 (d, 1H)
303	^{1}H-NMR ($CDCl_3$, δ ppm) :2.04 (m, 4H), 3.58 (br, 2H), 3.76 (br, 2H), 3.82 (s, 3H), 4.06 (m, 2H), 4.85 (m, 1H), 7.21 (d, 1H), 7.30 (br, 1H), 7.42 (d, 1H)
306	^{1}H-NMR (CDCl3, δ ppm) :2.06 (m, 4H), 2.31 (t, 1H), 3.58 (br, 2H), 3.76 (br, 2H), 4.08 (m, 2H), 4.91 (m, 1H), 5.26 (s, 2H), 7.20 (d, 1H), 7.32 (m, 5H), 7.40 (d, 1H)
311	^{1}H-NMR ($CDCl_3$, δ ppm) :2.05 (m, 4H), 3.57 (m, 2H), 3.75 (br, 2H), 4.61 (m, 2H), 4.99 (dd, 1H), 5.25 (s, 2H), 7.22 (d, 1H), 7.35 (m, 5H), 7.51 (d, 1H)
314	^{1}H-NMR ($CDCl_3$, δ ppm) :1.28 (t, 3H), 2.04 (m, 4H), 3.59 (br, 2H), 3.76 (br, 2H), 4.30 (q, 2H), 7.15 (d, 1H), 7.29 (d, 1H), 7.97 (s, 1H)
318	^{1}H-NMR ($CDCl_3$, δ ppm) :2.06 (m, 4H), 3.58 (br, 2H), 3.76 (br, 2H), 5.40 (s, 2H), 7.27 (d, 1H), 7.38 (m, 5H), 7.73 (d, 1H), 8.33 (s, 1H)
321	^{1}H-NMR ($CDCl_3$, δ ppm) :1.25 (t, 3H), 2.03 (m, 4H), 3.49 (m, 3H), 3.58 (br, 2H), 3.75 (br, 2H), 4.12 (q, 2H), 6.18 (br, 1H), 7.17 (d, 1H), 7.33 (d, 1H)
325	^{1}H-NMR ($CDCl_3$, δ ppm) :2.12-2.22 (m, 2H), 2.56 (t, 1H), 3.63 (brt, 2H), 3.87 (brs, 2H), 4.74 (d, 2H), 6.54 (d, 1H), 7.05 (m, 3H), 7.15 (d, 1H), 7.33 (m, 2H)
326	^{1}H-NMR ($CDCl_3$, δ ppm) :2.53 (t, 1H), 2.82 (t, 2H), 4.10 (t, 2H), 4.69 (t, 2H), 6.68 (d, 1H), 7.01-7.42 (m, 6H)
334	^{1}H-NMR ($CDCl_3$, δ ppm) :1.25 (m, 3H), 3.50 (m, 2H), 4.15 (brs, 4H), 6.22 (brs, 1H), 7.22 (d, 1H), 7.38 (d, 1H)
336	^{1}H-NMR ($CDCl_3$, δ ppm) :1.47 (t, 3H), 4.16 (br, 4H), 4.54 (q, 2H), 7.36 (d, 1H), 7.53 (d, 1H)
337	^{1}H-NMR ($CDCl_3$, δ ppm) :3.15 (s, 6H), 4.18 (br, 4H), 7.36 (d, 1H), 7.52 (d, 1H)
339	^{1}H-NMR ($CDCl_3$, δ ppm) :4.08 (br m, 4H), 5.07 (s, 2H), 6.41 (d, 1H), 6.93-7.15 (m, 4H), 7.25-7.32 (m, 6H)

Comp. N.	
398	^{1}H-NMR ($CDCl_3$): δ 0.90(t, 3H), 1.68(m, 2H), 2.06(m, 4H), 2.52(t, 2H), 3.77(br, 2H), 3.85(br, 2H), 6.99(d, 1H), 7.27(d, 1H), 7.89(s, 1H)
406	^{1}H-NMR ($CDCl_3$): δ 1.99(s, 6H), 2.07(m, 4H), 3.59(br, 2H), 3.77(br, 2H), 7.22(d, 1H), 7.54(d, 1H), 8.36(s, 1H)
408	^{1}H-NMR ($CDCl_3$): δ 1.91(s, 6H), 2.06(m, 4H), 3.59(br, 2H), 3.77(br, 2H), 7.21 (d, 1H), 7.24-7.46(m, 5H), 7.53(d, 1H)
415	^{1}H-NMR ($CDCl_3$): δ 1.72(d, 3H), 2.03(m, 4H), 3.54(br, 2H), 3.72(br, 2H), 5.29(s, 2H), 5.52(q, 1H), 6.62(d, 1H), 6.79(s, 1H), 6.99-7.02(m, 3H), 7.10(d, 1H), 7.26-29(m, 3H)
417	^{1}H-NMR ($CDCl_3$): δ 1.75(s, 6H), 2.08(m, 4H), 3.16(s, 3H), 3.60(br, 2H), 3.78(br, 2H), 4.05(q, 2H), 7.24 (d, 1H), 7.55(d, 1H)
423	^{1}H-NMR ($CDCl_3$): δ 1.91(s, 6H), 2.07(m, 4H), 2.40(s, 3H), 3.59(br, 2H), 3.77(br, 2H), 6.02 (s, 1H), 7.21(d, 1H), 7.51(d, 1H)
429	^{1}H-NMR ($CDCl_3$): δ 1.47(d, 3H), 1.60(m, 3H), 2.06(m, 4H), 3.60(br, 2H), 3.75(br, 2H), 5.07 (m, 1H), 6.52(d, 1H), 7.14(d, 1H)
430	^{1}H-NMR ($CDCl_3$): δ 1.18(t, 3H), 2.57(t, 1H), 3.34(q, 1H), 3.66-3.85(br, 2H), 4.09-4.28(br, 5H), 4.73(d, 2H), 6.74(d, 1H), 7.18(d, 1H), 7.29(m, 5H)
432	^{1}H-NMR ($CDCl_3$): δ 1.92(s, 6H), 2.06(m, 4H), 3.59(br, 2H), 3.76(br, 2H), 7.19(d, 1H), 7.52(d, 1H), 7.70(s, 1H), 7.83(s, 1H)
434	^{1}H-NMR ($CDCl_3$): δ 1.92(s, 6H), 2.07(m, 4H), 2.29(s, 3H), 3.60(br, 2H), 3.77(br, 2H), 6.09(s, 1H), 7.21(d, 1H), 7.52(d, 1H)
436	^{1}H-NMR ($CDCl_3$): δ 2.08-2.43(m, 4H), 2.56(t, 1H), 3.76(s, 3H), 3.60-3.95(m, 2H), 4.54(br, 1H), 4.72(d, 2H), 6.68(d, 1H), 7.15(d, 1H)
437	^{1}H-NMR ($CDCl_3$): δ 1.79(s, 6H), 2.07(m, 4H), 3.37(s, 6H), 3.44(d, 2H), 3.60(br, 2H), 3.78(br, 2H), 4.39(t, 1H), 6.59(br, 1H), 7.23(d, 1H), 7.52(d, 1H)
440	^{1}H-NMR ($CDCl_3$): δ 0.37(m, 2H), 0.63(m, 2H), 1.28(m, 1H), 2.05(m, 4H), 3.58(br, 2H), 3.74(br, 2H), 3.84(d, 2H), 6.56(d, 1H), 7.15(d, 1H)
442	^{1}H-NMR ($CDCl_3$): δ 1.74(s, 6H), 2.03(m, 4H), 2.31(s, 3H), 3.54(br, 2H), 3.71(br, 2H), 6.10(s, 1H), 6.28(d, 1H), 7.13(d, 1H)
443	^{1}H-NMR ($CDCl_3$): δ 1.88(s, 6H), 2.07(m, 4H), 3.60(br, 2H), 3.78(br, 2H), 7.23(d, 1H), 7.31(d, 2H), 7.52(d, 1H), 8.58(d, 2H)
451	^{1}H-NMR ($CDCl_3$): δ 2.03(m, 6H), 2.07(m, 4H), 3.60(br, 2H), 3.78(br, 2H), 7.23(d, 1H), 7.45(dd, 1H), 7.56(d, 1H), 7.64(dd, 1H), 9.10(dd, 1H)
455	^{1}H-NMR ($CDCl_3$): δ 1.90(s, 6H), 2.06(m, 4H), 3.59(br, 2H), 3.77(br, 2H), 7.09(s, 1H), 7.20(d, 1H), 7.47(d, 1H), 7.82(s, 1H)

[Herbicida]

Embora poucos exemplos com relação a herbicidas da presente invenção sejam apresentados a seguir, compostos ingredientes ativos, aditivos, e proporções adicionadas são intercambiáveis em uma ampla faixa sem ser limitado somente aos presentes exemplos. Partes nos exemplos de formulações mostram partes em peso.

Exemplo de formulação 1	Pó umectável
Composto da presente invenção	20 partes
Carbono branco	20 partes

Terra de diatomácea	52 partes
Alquil sulfato de sódio	8 partes

Os componentes anteriores foram misturados homogeneamente e triturados finamente para obter um pó umectável com 20 % de ingrediente ativo.

Exemplo de formulação 2	Emulsão
Composto da presente invenção	5 partes
Dimetilformamida	94 partes
agente tensoativo tipo polioxietileno-sorbitano	1 parte

Os componentes anteriores foram misturados e dissolvidos para obter uma emulsão com 5 % de ingrediente ativo.

Exemplo de formulação 3	Emulsão
Composto da presente invenção	20 partes
Xileno	55 partes
Dimetilformamida	15 partes
Éter polioxietileno fenílico	10 partes

Os componentes anteriores foram misturados e dissolvidos para obter uma emulsão com 20 % de ingrediente ativo.

Exemplo de formulação 4	Grânulos
Composto da presente invenção	5 partes
Talco	40 partes
Argila	38 partes
Betonita	10 partes
Alquil sulfato de sódio	7 partes

Os componentes anteriores foram misturados homogeneamente e, depois de serem triturados finamente, granulados para obter grânulos com um diâmetro de 0,5 a 1,0 mm e 5 % de ingrediente ativo.

Exemplos de teste com relação ao efeito de herbicidas da presente invenção são apresentados a seguir.

Os efeitos herbicidas foram examinados seguindo os critérios de exame a seguir e são representados pelo uso de índice de herbicida.

Critério de exame

Taxa herbicida	Índice de herbicida
0 %	0
20-29 %	2
40-49 %	4
60-69 %	6
80-89 %	8
100 %	10

Adicionalmente, valores numéricos 1, 3, 5, 7, e 9 respectivamente mostram valores intermediários entre 0 e 2, entre 2 e 4, entre 4 e 6, entre 6 e 8, e entre 8 e 10.

[Equação 1]

Taxa herbicida (%) = {(peso recente de disparos em um gráfico não tratado}- { peso recente de disparos em um gráfico tratado} X 100/ peso recente de disparos em um gráfico não tratado

Exemplo de teste 1 – Teste de tratamento foliáceo de cultura em planalto

Um pote de 200-cm^2 foi carregado com solo e respectivas sementes de ervas daninhas, erva rabo de gato, erva bênção de Deus, e erva formigueira foram plantadas na camada superficial deste, e, depois de cobrir ligeiramente com solo, as plantas cresceram em uma estufa. Quando cada erva daninha tinha crescido 5-10 cm na altura, uma diluição em água de concentrado emulsificável apresentado no exemplo de formulação 2 de cada composto em teste foi aplicada nas partes de ervas daninhas por um atomizador pequeno de maneira que o ingrediente ativo alcance uma dose predeterminada, em uma quantidade equivalente à quantidade de aplicação de 1.0001/ha. As plantas cresceram em uma estufa e 2 semanas depois do

tratamento, os efeitos herbicidas nas ervas daninhas foram examinados seguindo o critério de exame.

Os resultados mostraram que os compostos listados a seguir tinham um índice de herbicida de 8 ou mais com qualquer uma das ervas daninhas erva rabo de gato, erva bênção de Deus, e erva formigueira a 1.000 g/ha. Observe que o número dos compostos corresponde aos da tabela 3.

Compostos testados

1-411, 413, 415-418, 420, 422, 431, 433-447, 449-451

Compostos com um índice de herbicida de 8 ou mais

1-18, 20-36, 38-59, 61-143, 145-154, 156-160, 163-173, 175, 176, 178-187, 190-198, 200-202, 207, 208, 211-214, 216-221, 224-226, 233, 237-243, 245, 247-251, 253, 256, 258-282, 284-289, 292, 295-303, 305-320, 322-324, 326, 329-342, 344-357, 360-380, 382, 384, 386-389, 393-399, 401-408, 410-411, 413, 415-418, 420, 422-427, 429, 433-447, 449-451.

Exemplo de teste 2 – Teste de tratamento do solo de cultivo em planalto

Um pote plástico com uma área de 70 cm^2 foi carregado com solo de campo e sementes de erva rabo de gato, erva bênção de Deus, e erva formigueira foram plantadas nele e cobertas com 0,5 cm de solo. Uma diluição em água de concentrado emulsificável apresentada no exemplo de formulação 2 foi aplicada na superfície do solo uniformemente de maneira tal que o ingrediente ativo alcance uma dose predeterminada. As plantas cresceram em uma estufa e 3 semanas depois do tratamento, os efeitos herbicidas nas ervas daninhas foram examinados seguindo o critério de exame.

Os resultados mostraram que os compostos listados a seguir tinham um índice de herbicida de 8 ou mais com qualquer uma das ervas daninhas erva rabo de gato, erva bênção de Deus, e erva formigueira a 1.000 g/ha. Observe que número dos compostos corresponde aos da tabela 3.

Compostos testados

1-397, 399-411, 416-418, 420, 422-431, 433-435, 437-447, 449-451.

Compostos com um índice de herbicida de 8 ou mais

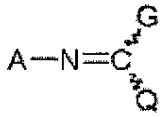
1-17, 19-49, 51-56, 58-142, 145-160, 162-173, 178, 181-185, 189-191, 193, 194, 196-198, 200, 201, 211-214, 217, 218, 220, 221, 224-226, 230, 233, 237-245, 247-252, 254, 258-295, 297-313, 315-317, 319-324, 326, 329-342, 344-357, 360-380, 382, 383-384, 386-390, 392-397, 399-411, 416-418, 420, 422-429, 431, 433-435, 437-441, 443-445, 447, 449-451.

[Aplicabilidade industrial]

De acordo com a presente invenção, são fornecidos compostos inéditos de amidina que são altamente seguros e que podem ser usados como ingredientes ativos em herbicidas que são confiavelmente efetivos em uma dose menor, e herbicidas contendo estes compostos como ingredientes ativos.

REIVINDICAÇÕES

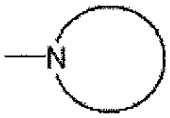
1. Herbicida, caracterizado pelo fato de que compreende pelo menos um tipo de composto de amidina representado pela fórmula (1)



(1)

e sais deste como um ingrediente ativo,

em que G representa um grupo heterocíclico contendo nitrogênio opcionalmente substituído representado pela fórmula (2)



(2)

Q representa ciano, iminoalquila opcionalmente substituído, amida opcionalmente substituído, tioamida opcionalmente substituído, ou grupo heterocíclico contendo nitrogênio opcionalmente substituído representados pela fórmula (3)



(3)

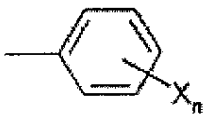
em que uma linha pontilhada representa uma ligação simples ou dupla que conecta átomos de carbono e nitrogênio e em que nitrogênio opcionalmente tem um substituinte onde necessário; e A representa um grupo aromático opcionalmente substituído.

2. Herbicida, de acordo com a reivindicação 1, caracterizado pelo fato de que a fórmula (2) na fórmula (1) é um grupo heterocíclico contendo nitrogênio que tem de 3 a 8 membros, que é saturado ou insaturado, e que é opcionalmente substituído.

3. Herbicida, de acordo com a reivindicação 1 ou 2, caracterizado pelo fato de que a fórmula (2) na fórmula (1) é um grupo azetidina-1-ila opcionalmente substituído ou um grupo pirrolidina-1-ila opcionalmente substituído.

4. Herbicida, de acordo com qualquer uma das reivindicações 1 a 3, caracterizado pelo fato de que na fórmula (1), A é um grupo de hidrocarboneto aromático opcionalmente substituído.

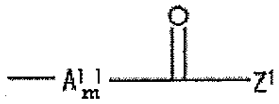
5. Herbicida, de acordo com qualquer uma das reivindicações 1 a 4, caracterizado pelo fato de que na fórmula (1), A é um grupo representado pela fórmula (4)



(4)

em que X representa halogênio, alquila C_{1-6} opcionalmente substituído, alquenila C_{2-6} opcionalmente substituído, alquinila C_{2-6} opcionalmente substituído, arila opcionalmente substituído, alquil C_{1-6} carbonila opcionalmente substituído, alquenil C_{2-6} carbonila opcionalmente substituído, alquinil C_{2-6} carbonila opcionalmente substituído, aril carbonila opcionalmente substituído, alquiltiocarbonila C_{1-6} opcionalmente substituído, alqueniltiocarbonila C_{2-6} opcionalmente substituído, alquiniltiocarbonila C_{2-6} opcionalmente substituído, ariltiocarbonila C_{2-6} opcionalmente substituído, ciano, substituinte representado por X^{11}, amino opcionalmente substituído, opcionalmente substituído alquilimino, acila, nitro, hidroxila, alcóxi C_{1-6} opcionalmente substituído, alquenilóxi C_{2-6} opcionalmente substituído, alquinilóxi C_{2-6} opcionalmente substituído, arilóxi opcionalmente substituído, heteroilóxi opcionalmente substituído, mercapto, alquiltio C_{1-6} opcionalmente substituído, alqueniltio C_{2-6} opcionalmente substituído, alquiniltio C_{2-6} opcionalmente substituído, ariltio opcionalmente substituído, heteroiltio opcionalmente substituído, alquilsulfinila opcionalmente substituído, arilsulfinila opcionalmente substituído, alquilsulfonila opcionalmente substituído, arilsulfonila opcionalmente substituído, ou um grupo heterocíclico opcionalmente substituído, e em que substituintes que estão em posições que são ligáveis umas nas outras podem se ligar para formar anéis, n é um número inteiro de 0 a 5 e cada X pode ser o mesmo ou diferente entre si

quando n é 2 ou mais, X^{11} é um substituinte representado pela fórmula (5)



(5)

em que m^1 representa um número inteiro de 0 a 3;

A^1 representa um átomo selecionado de carbono, nitrogênio, oxigênio, e enxofre, e que pode ser oxidado em uma faixa quimicamente aceitável e que pode ser substituído; e quando m^1 é 2 ou mais, cada A^1 pode ser o mesmo ou diferente um do outro e combinações de cada A^1 estão em uma faixa quimicamente aceitável e cada A^1 pode, em uma faixa quimicamente aceitável de multiplicidade, se ligar uns aos outros; e quando A^1 é carbono e um ou mais A^1 é substituído por dois ou mais substituintes, os substituintes que estão em uma relação de posição que pode ser ligada podem ser ligar para formar um anel;

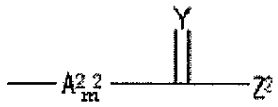
Z representa um grupo representado por $-OR^{11}$ ou $-NR^{12}R^{13}$

R^{11} representa hidrogênio, alquila C_{1-6} opcionalmente substituído, alquenila C_{2-6} opcionalmente substituído, alquinila C_{2-6} opcionalmente substituído, arila opcionalmente substituído, um grupo heterocíclico opcionalmente substituído, ou um grupo representado por X^{12};

R^{12} e R^{13} cada um independentemente representa hidrogênio, alquila C_{1-6} opcionalmente substituído, alquenila C_{2-6} opcionalmente substituído, alquinila C_{2-6} opcionalmente substituído, arila opcionalmente substituído, heterociclo opcionalmente substituído, um grupo representado por X^{12}, hidroxila, alcóxi C_{1-6} opcionalmente substituído, alquenilóxi C_{2-6} opcionalmente substituído, alquinilóxi C_{2-6} opcionalmente substituído, arilóxi opcionalmente substituído, alquilsulfinila opcionalmente substituído, arilsulfinila opcionalmente substituído, alquilsulfonila opcionalmente substituído, arila opcionalmente substituído sulfonila, ou amino opcionalmente substituído; e

R^{12} e R^{13} podem adicionalmente se ligar um no outro para formar um anel;

X^{12} é um substituinte representado pela fórmula (6)



(6)

em que m^2 é um número inteiro de 1 a 3;

A^2 representa carbono opcionalmente substituído e pode ser substituído em uma faixa quimicamente aceitável e quando m^2 é 2 ou mais, cada A^2 pode se ligar um com o outro em uma faixa quimicamente aceitável de multiplicidade; e quando um ou mais A^2 é substituído por dois ou mais substituintes, os substituintes que estão em uma relação de posição que pode ser ligada podem se ligar para formar um anel;

Y representa oxigênio ou nitrogênio opcionalmente substituído;

Z^2 é um grupo representado por $-OR^{21}$ ou $NR^{22}R^{23}$ quando Y é oxigênio e Z^2 representa hidrogênio ou alquila C_{1-6} opcionalmente substituído quando Y é nitrogênio;

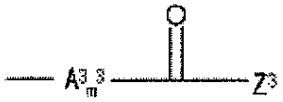
R^{21} representa hidrogênio, alquila C_{1-6} opcionalmente substituído, alquenila C_{2-6} opcionalmente substituído, alquinila C_{2-6} opcionalmente substituído, arila opcionalmente substituído, um grupo heterocíclico opcionalmente substituído, ou um grupo representado por X^{13};

R^{22} e R^{23} cada um independentemente representa hidrogênio, alquila C_{1-6} opcionalmente substituído, alquenila C_{2-6} opcionalmente substituído, alquinila C_{2-6} opcionalmente substituído, arila opcionalmente substituído, um grupo heterocíclico opcionalmente substituído, um grupo representado por X^{13}, alcóxi C_{1-6} opcionalmente substituído, alquenilóxi C_{2-6} opcionalmente substituído, alquinilóxi C_{2-6} opcionalmente substituído, arilóxi opcionalmente substituído, alquilsulfinila opcionalmente substituído, arilsulfinila opcionalmente substituído, alquilsulfonila opcionalmente

substituído, ou arilsulfonila opcionalmente substituído; e

R^{22} e R^{23} podem adicionalmente se ligar para formar um anel quando nenhum for hidrogênio;

X^{13} é um substituinte representado pela fórmula (7)



(7)

em que m^3 é um número inteiro de 1 a 3;

A^3 representa carbono opcionalmente substituído e pode ser substituído em uma faixa quimicamente aceitável e quando m^3 é 2 ou mais, cada A^3 pode se ligar um com o outro em uma faixa quimicamente aceitável de multiplicidade; e quando um ou mais A^3 é substituído por dois ou mais substituintes, os substituintes que estão em uma relação de posição que pode ser ligada podem ser ligar para formar um anel;

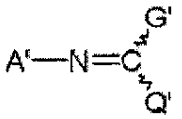
Z^3 é um grupo representado por $-OR^{31}$ ou $-NR^{32}R^{33}$;

R^{31} representa hidrogênio, alquila C_{1-6} opcionalmente substituído, alquenila C_{2-6} opcionalmente substituído, alquinila C_{2-6} opcionalmente substituído, arila opcionalmente substituído, ou um grupo heterocíclico opcionalmente substituído;

R^{32} e R^{33} cada um independentemente representa hidrogênio, alquila C_{1-6} opcionalmente substituído, alquenila C_{2-6} opcionalmente substituído, alquinila C_{2-6} opcionalmente substituído, arila opcionalmente substituído, um grupo heterocíclico opcionalmente substituído, alcóxi C_{1-6} opcionalmente substituído, alqueniloxi C_{2-6} opcionalmente substituído, alquiniloxi C_{2-6} opcionalmente substituído, ariloxi opcionalmente substituído, alquilsulfinila opcionalmente substituído, arilsulfinila opcionalmente substituído, alquilsulfonila opcionalmente substituído, ou arilsulfonila opcionalmente substituído; e

R^{32} e R^{33} podem adicionalmente se ligar para formar um anel quando nenhum for hidrogênio.

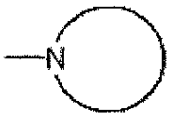
6. Compostos de amidina, caracterizados pelo fato de serem representados pela fórmula (1')



(1')

ou sais deste:

que G' representa um grupo heterocíclico contendo nitrogênio opcionalmente substituído representado pela fórmula (2')



(2')

com a condição de que o número de carbonos que constituem o heterociclo contendo nitrogênio do grupo heterocíclico contendo nitrogênio seja 10 ou menos e que o anel 2H-indazol seja excluído;

Q' representa ciano, iminoalquila opcionalmente substituído, amida opcionalmente substituído, tioamida opcionalmente substituído, ou um opcionalmente substituído e grupo de anel de 5 membros condensado representado pela fórmula (3')



(3')

A' é um grupo representado pela fórmula (4')



(4')

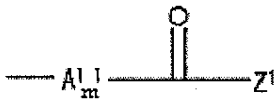
em que X representa halogênio, alquila C_{1-6} opcionalmente substituído, alquenila C_{2-6} opcionalmente substituído, alquinila C_{2-6} opcionalmente substituído, arila opcionalmente substituído, alquil C_{1-6} carbonila opcionalmente substituído, alquenil C_{2-6} carbonila opcionalmente substituído, alquinil C_{2-6} carbonila opcionalmente substituído, aril carbonila opcionalmente substituído, alquiltiocarbonila C_{1-6} opcionalmente substituído,

alqueniltiocarbonila C_{2-6} opcionalmente substituído, alquiniltiocarbonila C_{2-6} opcionalmente substituído, ariltiocarbonila C_{2-6} opcionalmente substituído, ciano, substituinte representado por X^{11}, amino opcionalmente substituído, nitro, hidroxila, alcóxi C_{1-6} opcionalmente substituído, alqueniloxi C_{2-6} opcionalmente substituído, alquiniloxi C_{2-6} opcionalmente substituído, ariloxi opcionalmente substituído, heteroiloxi opcionalmente substituído, mercapto, alquiltio C_{1-6} opcionalmente substituído, alqueniltio C_{2-6} opcionalmente substituído, alquiniltio C_{2-6} opcionalmente substituído, ariltio opcionalmente substituído, heteroiltio opcionalmente substituído, alquilsulfinila opcionalmente substituído, arilsulfinila opcionalmente substituído, alquilsulfonila opcionalmente substituído, arila opcionalmente substituído sulfonila, ou um grupo heterocíclico opcionalmente substituído;

e substituintes que estão em posições que são ligáveis uma com a outra podem se ligar para formar anéis;

n' é um número inteiro de 2 a 5 e cada X pode ser o mesmo ou diferente um do outro;

X^{11} é um substituinte representado pela fórmula (5)



(5)

em que m^1 representa um número inteiro de 0 a 3;

A^1 representa um átomo selecionado de carbono, nitrogênio, oxigênio, e enxofre, e que pode ser oxidado em uma faixa quimicamente aceitável e que pode ser substituído; quando m^1 é 2 ou mais, cada A^1 pode ser o mesmo ou diferente um do outro e combinações de cada A^1 estão em uma faixa quimicamente aceitável e cada A^1 pode, em uma faixa quimicamente aceitável de multiplicidade, se ligar uns aos outros; e

quando A^1 é carbono e um ou mais A^1 é substituído por dois ou mais substituintes, os substituintes que estão em uma relação de posição

que pode ser ligada podem ser ligar para formar um anel;

Z^1 representa um grupo representado por $-OR^{11}$ ou $-NR^{12}R^{13}$;

R^{11} representa hidrogênio, alquila C_{1-6} opcionalmente substituído, alquenila C_{2-6} opcionalmente substituído, alquinila C_{2-6} opcionalmente substituído, arila opcionalmente substituído, um grupo heterocíclico opcionalmente substituído, ou um grupo representado por X^{12};

R^{12} e R^{13} cada um independentemente representa hidrogênio, alquila C_{1-6} opcionalmente substituído, alquenila C_{2-6} opcionalmente substituído, alquinila C_{2-6} opcionalmente substituído, arila opcionalmente substituído, um heterociclo opcionalmente substituído, um grupo representado por X^{12}, hidroxila, alcóxi C_{1-6} opcionalmente substituído, alqueniióxi C_{2-6} opcionalmente substituído, alquiniióxi C_{2-6} opcionalmente substituído, ariióxi opcionalmente substituído, alquilsulfinila opcionalmente substituído, arilsulfinila opcionalmente substituído, alquilsulfonila opcionalmente substituído, arila opcionalmente substituído sulfonila, ou amino opcionalmente substituído; e

R^{12} e R^{13} podem adicionalmente se ligar para formar um anel;

X^{12} é um substituinte representado pelo um grupo (6)



(6)

em que m^2 é um número inteiro de 1 a 3,

A^2 representa carbono opcionalmente substituído e pode ser substituído em uma faixa quimicamente aceitável e quando m^2 é 2 ou mais, cada A^2 pode se ligar um ao outro em uma faixa quimicamente aceitável de multiplicidade; e

quando um ou mais A^2 é substituído por dois ou mais substituintes, os substituintes que estão em uma relação de posição que pode ser ligada podem ser ligar para formar um anel;

Y representa oxigênio ou nitrogênio opcionalmente

substituído;

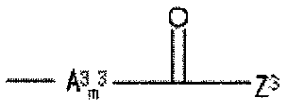
Z^2 é um grupo representado por $-OR^{21}$ ou $-NR^{22}R^{23}$ quando Y é oxigênio e Z^2 representa hidrogênio ou alquila C_{1-6} opcionalmente substituído quando Y é nitrogênio;

R^{21} representa hidrogênio, alquila C_{1-6} opcionalmente substituído, alquenila C_{2-6} opcionalmente substituído, opcionalmente substituído C_{2-6} alquinila, arila opcionalmente substituído, um heterociclo opcionalmente substituído, ou um grupo representado por X^{13};

R^{22} e R^{23} cada um independentemente representam hidrogênio, alquila C_{1-6} opcionalmente substituído, alquenila C_{2-6} opcionalmente substituído, alquinila C_{2-6} opcionalmente substituído, arila opcionalmente substituído, heterociclo opcionalmente substituído, um grupo representado por X^{13}, alcóxi C_{1-6} opcionalmente substituído, alquenilóxi C_{2-6} opcionalmente substituído, alquinilóxi C_{2-6} opcionalmente substituído, arilóxi opcionalmente substituído, alquilsulfinila opcionalmente substituído, arilsulfinila opcionalmente substituído, alquilsulfonila opcionalmente substituído, ou arilsulfonila opcionalmente substituído; e

R^{22} e R^{23} podem ser ligar para formar um anel quando nenhum for hidrogênio;

X^{13} é um substituinte representado pela fórmula (7)



(7)

em que m^3 é um número inteiro de 1 a 3;

A^3 representa carbono opcionalmente substituído e pode ser substituído em uma faixa quimicamente aceitável, e quando m^3 é 2 ou mais, cada A^3 pode se ligar um ao outro em uma faixa quimicamente aceitável de multiplicidade; e

quando um ou mais A^3 é substituído por dois ou mais substituintes, os substituintes que estão em uma relação de posição que pode

ser ligada podem ser ligar para formar um anel;

Z^3 é um grupo representado por $-OR^{31}$ ou $-NR^{32}R^{33}$;

R^{31} representa hidrogênio, alquila C_{1-6} opcionalmente substituído, alquenila C_{2-6} opcionalmente substituído, alquinila C_{2-6} opcionalmente substituído, arila opcionalmente substituído, ou um grupo heterocíclico opcionalmente substituído;

R^{32} e R^{33} cada um independentemente representa hidrogênio, alquila C_{1-6} opcionalmente substituído, alquenila C_{2-6} opcionalmente substituído, alquinila C_{2-6} opcionalmente substituído, arila opcionalmente substituído, heterociclo opcionalmente substituído, alcóxi C_{1-6} opcionalmente substituído, alquenilóxi C_{2-6} opcionalmente substituído, alquinilóxi C_{2-6} opcionalmente substituído, arilóxi opcionalmente substituído, alquilsulfinila opcionalmente substituído, arilsulfinila opcionalmente substituído, alquilsulfonila opcionalmente substituído, ou arilsulfonila opcionalmente substituído; e

R^{32} e R^{33} podem adicionalmente se ligar para formar um anel quando nenhum for hidrogênio.

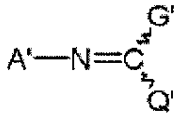
7. Compostos de amidina, de acordo com a reivindicação 6 ou sais destes, caracterizados pelo fato de que na fórmula (1'), G' é um grupo heterocíclico contendo nitrogênio que é de 3 a 8 membros, que é saturado ou insaturado, e que é opcionalmente substituído.

8. Compostos de amidina, de acordo com a reivindicação 6 ou sais destes, caracterizados pelo fato de que na fórmula (1'), G' é um grupo azetidina-1-ila opcionalmente substituído ou um grupo pirrolidina-1-ila opcionalmente substituído.

RESUMO

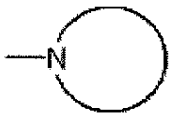
"HERBICIDA, E, COMPOSTOS DE AMIDINA"

São descritos compostos de amidina inéditos que podem ser ingredientes ativos em herbicidas que são confiavelmente eficazes em uma dose menor e altamente seguros, e herbicidas contendo estes compostos como ingredientes ativos. Compostos de amidina representados pela fórmula (1')



(1')

e herbicidas contendo pelo menos um tipo destes compostos como ingredientes ativos, em que G é um grupo heterocíclico contendo nitrogênio opcionalmente substituído representado pela fórmula (2')



(2')

com a condição de que o número de carbonos que constituem o heterociclo contendo nitrogênio do grupo heterocíclico contendo nitrogênio seja 10 ou menos e que anel indazol 2H seja excluído; Q' representa ciano ou similares; e A' representa fenila substituído ou similares.