

(74)

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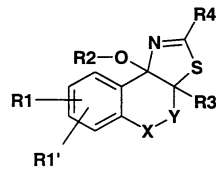
(54)

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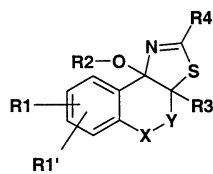
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가 가

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Y , -CH₂- -CH₂-CH₂- ,

X CH₂, CH(CH₃), CH(C₂H₅), CH(CH₃H₇) CH(C₆H₅) ,

R1 R1' H, F, Cl, Br, I, CF₃, NO₂, CN, COOH, COO(C₁-C₆) , CONH₂, CONH(C₁-C₆)
 , CON[(C₁-C₆)]₂, (C₁-C₆)- , (C₂-C₆)- , (C₂-C₆)- , O-(C₁-C₆)- (,
 가 , 가 OH, OC(O)CH₃, O
 C(O)H, O-CH₂-Ph, NH₂, NH-CO-CH₃ N(COOCH₂Ph)₂ , SO₂-NH₂, SO₂NH(C₁-
 -C₆)- , SO₂N[(C₁-C₆)-]₂, S-(C₁-C₆)- , S-(CH₂)_n- , SO-(C₁-C₆)- , SO-(CH₂)_n
 - , SO₂-(C₁-C₆)- , SO₂-(CH₂)_n- (, n 0 6 , F, Cl, Br, OH,
 CF₃, NO₂, CN, OCF₃, O-(C₁-C₆)- , (C₁-C₆)- NH₂ 2 , NH₂, NH
 -(C₁-C₆)- , N((C₁-C₆)-)₂, NH(C₁-C₇)- , , O-(CH₂)_n- (, n 0
 6) , 1- 2- , 2- , 3- 4- , 2- 3- , 2- 3- (, , ,
 F, Cl, Br, I, OH, CF₃, NO₂, CN, OCF₃, O-(C₁-C₆)- ,
 (C₁-C₆)- , NH₂, NH(C₁-C₆)- , N((C₁-C₆)-)₂, SO₂-CH₃, COOH, COO-(C₁-C₆)-
 CONH₂ 3) , 1,2,3- -5- (, 1,
 2 3) -5- (, 1 2
) ,

R2 H, (C₁-C₆)- , (C₃-C₆)- , (CH₂)_n- , (CH₂)_n- , (CH₂)_n- , (CH₂)_n-
 , C(O)-(C₁-C₆)- , C(O)-(C₃-C₆)- , C(O)-(CH₂)_n- , C(O)-(CH₂)_n- , C(O)
 -(CH₂)_n- C(O)-(CH₂)_n- (, n 0 5 , , ,)
 Cl, F, CN, CF₃, (C₁-C₃)- , OH O-(C₁-C₆)- 2) ,

R3 H, (C₁-C₆)- , F, CN, N₃, O-(C₁-C₆)- , (CH₂)_n- , (CH₂)_n- , (CH₂)_n- , (CH
 2)_n- (, n 0 5 , , , Cl, F, CN, CF₃, (C₁-C₃)- ,
 OH O-(C₁-C₆)- 2) , (C₂-C₆)- , (C₂-C₆)- , C(O)OCH₃,
 C(O)OCH₂CH₃, C(O)OH, C(O)NH₂, C(O)NHCH₃, C(O)N(CH₃)₂ OC(O)CH₃ ,

R4 NR6R7[, R6 R7 H, (C₁-C₆)- , (C₃-C₆)- , (,
 Cl, F, CN, CF₃, (C₁-C₃)- , OH O-(C₁-C₆)- 2) , CO-(C₁-C₆)
 - , CHO, CO- , -NH₂, -N=C(CH₃)₂, -(-1-) , -(-1-) , -(-4-) , -
 (-1-) -(4- -1-) , NR6R7 , , , , 4-
 -1- , 4- -1-] .

Y가 ,

X가 CH₂ ,

R1 R1'가 H, F, Cl, CF₃, NO₂, CN, COOH, COO(C₁-C₆), CONH₂, CONH(C₁-C₆), CON[(C₁-C₆)₂], (C₁-C₆)-, (C₂-C₆)-, (C₂-C₆)-, O-(C₁-C₆)- (가 OH, OC(O)CH₃, OC(O)H, O-CH₂-Ph, NH₂, NH-CO-CH₃ N(COOCH₂Ph)₂), SO₂-NH₂, SO₂NH(C₁-C₆)-, SO₂N[(C₁-C₆)₂], SO₂-(C₁-C₆)-, SO₂-(CH₂)_n- (n 0 6), F, Cl, Br, OH, CF₃, NO₂, CN, OCF₃, O-(C₁-C₆)-, (C₁-C₆)-NH₂), NH₂, NH-(C₁-C₆)-, N((C₁-C₆)-)₂, NH(C₁-C₇)-, O-(CH₂)_n- (n 0 6), 1-2-, 2-, 3-4-, 2-3-, 2-3- (F, Cl, Br, I, OH, CF₃, NO₂, CN, OCF₃, O-(C₁-C₆)-, (C₁-C₆)-, NH₂, NH(C₁-C₆)-, N((C₁-C₆)-)₂, SO₂-CH₃, COOH, COO-(C₁-C₆)-CONH₂ 1 2), 1,2,3-5- (1, 2 3) 5- (1 2)

R2가 H, (C₁-C₆)-, (C₃-C₆)-, (CH₂)_n-, (CH₂)_n-, (CH₂)_n-, (CH₂)_n-, C(O)-(C₁-C₆)-, C(O)-(C₃-C₆)-, C(O)-(CH₂)_n-, C(O)-(CH₂)_n-, C(O)- (n 0 5), Cl, F, CN, CF₃, (C₁-C₃)-, OH O-(C₁-C₆)- 2)

R3 H, (C₁-C₆)-, F, (CH₂)_n-, (CH₂)_n-, (CH₂)_n-, (CH₂)_n- (n 0 5), Cl, F, CN, CF₃, (C₁-C₃)-, OH O-(C₁-C₆)- 2), (C₂-C₆)-, (C₂-C₆)-, C(O)OCH₃, C(O)OCH₂CH₃, C(O)OH, C(O)NH₂, C(O)NHCH₃, C(O)N(CH₃)₂ OC(O)CH₃

R4가 NR6R7[R6 R7 H, (C₁-C₆)-, (C₃-C₆)-, (C₁-C₆)-, (C₃-C₆)-, (C₁-C₆)-, (C₃-C₆)-, Cl, F, CN, CF₃, (C₁-C₃)-, OH O-(C₁-C₆)- 2), CO-(C₁-C₆)-, CHO, CO-, -NH₂, -N=C(CH₃)₂, -(-1-), -(-1-), -(-4-), -(-1-) -(4- -1-) , NR6R7 , , , , 4- -1- , 4- -1-] I , 가 .

Y가 ,

X가 CH₂ ,

R1 R1'가 H, F, Cl, CF₃, CN, COOH, COO(C₁-C₆), CONH₂, CONH(C₁-C₆), CON[(C₁-C₆)₂], (C₁-C₆)-, (C₂-C₆)-, (C₂-C₆)-, O-(C₁-C₆)- (가 OH, OC(O)CH₃, OC(O)H, O-CH₂-Ph, NH₂, NH-CO-CH₃ N(COOCH₂Ph)₂), SO₂-(C₁-C₆)-, SO₂-(CH₂)_n- (n 0 3), F, Cl, OH, CF₃, CN, OCF₃, O-(C₁-C₆)-, (C₁-C₆)-NH₂), NH₂, NH-(C₁-C₆)-, N((C₁-C₆)-)₂, NH(C₁-C₇)-, O-(CH₂)_n- (n 0 6), 1-2-, 2-, 3-4-, 2-3-, 2-3- (F, Cl, O H, CF₃, CN, OCF₃, O-(C₁-C₄)-, (C₁-C₄)-, NH₂, NH(C₁-C₄)-, N((C₁-C₄)-)₂, SO₂-CH₃, COOH, COO-(C₁-C₄)-CONH₂ 1 2), 1,2,3-5- (1, 2 3) 5- (1 2)

R2가 H, (C₁-C₆)-, (CH₂)_n-, (CH₂)_n-, (CH₂)_n-, (CH₂)_n- (n 0 5), Cl, F, CN, CF₃, (C₁-C₃)-, OH O-(C₁-C₆)- 2)

R3 H, F (C₁ - C₄) - ,

R4가 NR6R7[, R6 R7 H, (C₁ - C₆) - , (C₃ - C₆) - , (,
 Cl, F, CN, CF₃, (C₁ - C₃) - , OH O - (C₁ - C₆) - 2), CO - (C₁ - C₆)
 - , CHO, CO - , -NH₂, -N=C(CH₃)₂, - (-1-), - (-1-), - (-4-), -
 (-1-) - (4- -1-) , NR6R7 , , , , 4-
 -1- , 4- -1-] |

R1, R1', R2, R3, R4, R6 R7 ,

가 가

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50mg)

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10mg,

1ng

10mg

kg

0.3

, 0.3 - 1.0

1mg

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100mg

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1000mg,

10

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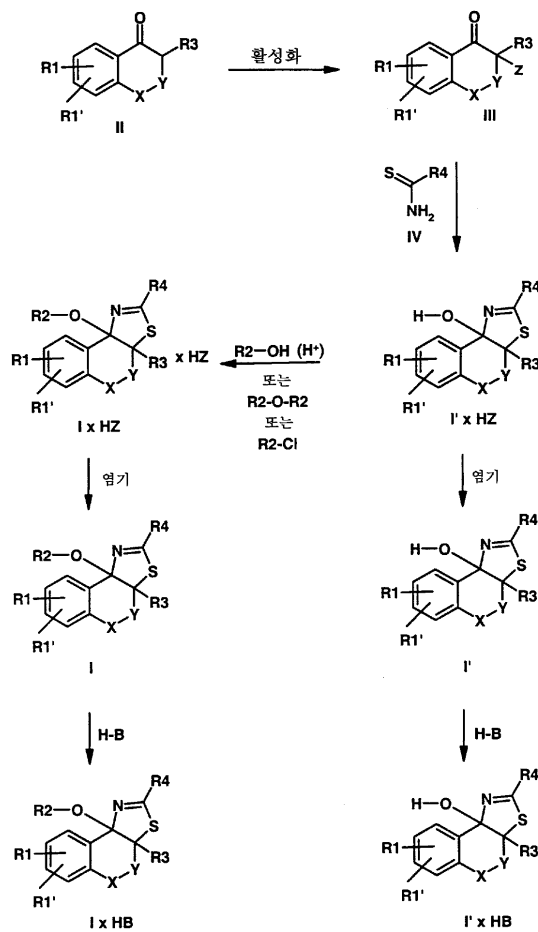
, 0.5 2 %

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가 .

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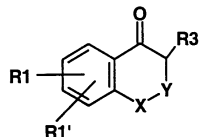
1 35%,
[: Pharmaceutical Research, 2(6): 318 (



II

III

II



R1, R1', R3, X Y

Z

III

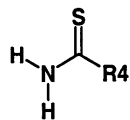
IV
H - B

가
I' x HZ

I' x HZ
I'
I' x HB

가

IV



R4

, p-
, L-
-3(2H)-, 6- -1,2,3- -4(3H)- 2,2- , 1,2-

III

IV

1:1

1:1.5

, N- -2-

, 2-

3 -

1,2-

가

가
20 50

.0 40 가

, - 10 150 ,

2 3

5 48

I' x HZ
가

가

n-

, -n-

3 -

가

I' x HZ

가 .

III

IV

1,8 -

[5.4.0]

- 7 -

가

, 3 -

- 2 -

I' x H - B

가

가

I'

I'

- 2 -

III

IV

I'

I' x H - B

가

가

Cl, Br, I, O - C(O) - (C₆H₄) - 4 - NO₂, O - SO₂ - CH₃, O - SO₂ - CF₃, O - SO₂ - (C₆H₄) - 4 - CH₃, O - SO₂ - C₆H₄
 가 II Z

I' x HZ

I x HZ

가

I'

IV

가

R2가 (C₁ - C₆) - , (C₃ - C₆) - , (CH₂)_n - , (CH₂)_n - , (CH₂)_n - (CH₂)_n -
 , n 0 5 I x HZ I , ,

aa) I' x HZ 가 R2 - OH(, R2) - 20
 100 , - 5 50 2 4 , 4 2 ,

ab) I' R2 - OH(, R2) 가
 - 20 100 , - 5 50 2 4 , 4 2

ac) 1 5 , 1,5 2 R2 - OH 가 , aa) ab)
 , , , 1,2 - , , , , 3
 - , , - 2 - , , ,

ad) I' , , N - - 2 - , , , , KOH I' , R2 - W(, W , O - C(O) - CH₃, O - C(O) - CF₃, O - C(O) - C₆H₄ - 4 - NO₂, O - SO₂ - CH₃, O - SO₂ - CF₃, O - SO₂ - C₆H₄ - 4 - CH₃ O - SO₂ - C₆H₄ - 4 - NO₂) 가 - 20 150 , - 15 50 10 2 , 20 12 .

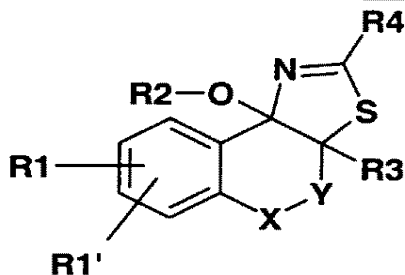
R2가 C(O) - (C₁ - C₆) - , C(O) - (C₃ - C₆) - , C(O) - (CH₂)_n - , C(O) - (CH₂)_n - , C(O) - (CH₂)_n - C(O) - (CH₂)_n - (, n 0 5) I x HZ I ,

ba) R2 - OH 1 2 , 1.5 R2 - OH , aa) ac) 가 가 aa) ac)

bb) I' [: O. Mitsunobu, Synthesis 1981, 1] R2 - OH , I ,

bc) R2 - Cl R2 - O - R2 [: Houb en - Weyl, Methoden der Organischen Chemie, Georg Thieme Verlag Stuttgart, Volume E5, pp. 656 - 715] I' .

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화학식 I

실시예	R1; R1'	R2	R3	R4	Y	X	염	m.p. [°C]
A01	5-NO ₂	H	H	NH ₂	-	CH ₂	-	>260
A02	5-NO ₂	H	H	NH(CH ₃)	-	CH ₂	-	>260
A03	6-Cl	H	H	NH ₂	-	CH ₂	HCl	241
A04	6-Cl	H	H	NH(CH ₃)	-	CH ₂	HCl	249
A05	5-SO ₂ CH ₃	H	H	NH ₂	-	CH ₂	-	>230
A06	5-SO ₂ CH ₃	H	H	NH(CH ₃)	-	CH ₂	-	>230
A07	5-SO ₂ CH ₃ ; 6-Cl	H	H	NH(C ₆ H ₅)	-	CH ₂	-	130
A08	7-Cl	H	H	NH(CH ₃)	-	CH ₂	-	180
A09	5-Cl	H	H	NH(CH ₃)	-	CH ₂	-	207
A10	6-F	H	H	NH(CH ₃)	-	CH ₂	-	206
A12	6-C ₆ H ₅	H	H	NH(CH ₃)	-	CH ₂	HBr	265
A13	6-(C ₆ H ₄ -3-CF ₃)	H	H	NH(CH ₃)	-	CH ₂	HBr	199
A14	6-CN	H	H	NH(CH ₃)	-	CH ₂	HBr	287
A15	6-(티엔-3-yl)	H	H	NH(CH ₃)	-	CH ₂	HBr	180
A16	6-(C ₆ H ₄ -3-F)	H	H	NH(CH ₃)	-	CH ₂	HBr	228
A17	6-Cl	H	H	NH ₂	-	CH ₂	HBr	292
A18	6-(C ₆ H ₄ -4-CH ₃)	H	H	NH(CH ₃)	-	CH ₂	HBr	196
A19	6-Cl	H	H	NH ₂	-	CH ₂	HCl	251
A20	6-(C ₆ H ₄ -4-CF ₃)	H	H	NH(CH ₃)	-	CH ₂	HBr	195
A21	6-(C ₆ H ₃ -3,5-디- CF ₃)	H	H	NH(CH ₃)		CH ₂	HBr	266
A22	6-(C ₆ H ₄ -3-Cl)	H	H	NH(CH ₃)	-	CH ₂	HBr	203
A23	6-(C ₆ H ₄ -3-OCF ₃)	H	H	NH(CH ₃)	-	CH ₂	HBr	236
A24	6-(C ₆ H ₄ -4-Cl)	H	H	NH(CH ₃)	-	CH ₂	HBr	186
A25	5-C(CH ₃) ₃	H	H	NH(CH ₃)	-	CH ₂	HBr	273
A26	6-(C ₆ H ₄ -2-CF ₃)	H	H	NH(CH ₃)	-	CH ₂	HBr	196

A27	6-(C ₆ H ₄ -3-OCH ₃)	H	H	NH(CH ₃)	-	CH ₂	HBr	195
A28	6-(나프트 -1-일)	H	H	NH(CH ₃)	-	CH ₂	HBr	211
A29	7-(C ₆ H ₄ -4-CF ₃)	H	H	NH(CH ₃)	-	CH ₂	HBr	191
A30	7-(C ₆ H ₄ -4-CF ₃)	H	H	NH ₂	-	CH ₂	HBr	230
A31	5-(C ₆ H ₄ -4-Cl)	H	H	N(CH ₃) ₂	-	CH ₂	HBr	223
A32	5-(C ₆ H ₄ -4-CF ₃)	H	H	NH ₂	-	CH ₂	HBr	229
A33	6-OCF ₃	H	H	NH(CH ₃)	-	CH ₂	HBr	267
A34	5-C(CH ₃) ₃	H	H	NH ₂	-	CH ₂	HBr	272
A35	6-OCF ₃	H	H	NH ₂	-	CH ₂	HBr	253
A36	6-Cl	H	H	NH- N=C(CH ₃) ₂	-	CH ₂	HBr	237
A37	6-Cl	H	H	NH-NH ₂	-	CH ₂	HBr	146
A38	6-Cl	H	CH ₃	NH ₂	-	CH ₂	HBr	229
A39	6-O-CH ₂ -CF ₂ -CF ₂ - CF ₃	H	H	NH(CH ₃)	-	CH ₂	HCl	239
A40	6-Cl	H	H	NH ₂	-	CH ₂	-	87
A41	6-CCH	H	H	NH ₂	-	CH ₂	HBr	>300
A42	6-O-(C ₆ H ₄ -4-Cl)	H	H	NH ₂	-	CH ₂	HBr	227
43	6-Cl	H	F	NH ₂	-	CH ₂	-	159
44	6-Cl	H	F	NH-CH ₃	-	CH ₂	-	182
45	H	H	F	NH ₂	-	CH ₂	-	160
46	H	H	F	NH-CH ₃	-	CH ₂	-	165
47 (-)	6-Cl	H	F	NH-CH ₃	-	CH ₂	-	105로부터 분해
48 (+)	6-Cl	H	F	NH-CH ₃	-	CH ₂	-	105로부터 분해
49 (-)	6-Cl	H	F	NH-CH ₃	-	CH ₂	HCl	163
50 (+)	6-Cl	H	F	NH-CH ₃	-	CH ₂	HCl	163
51	6-Cl	H	F	NH ₂	-	CH ₂	HCl	225로부터 분해

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I	[mg/kg]	N[ml]	N[ml]	
A04	50	8/0.56	8/3.18	82
A14	50	12/0.68	12/3.87	82
A19	50	5/0.28	5/4.00	93
A31	50	5/0.42	5/4.18	90
A32	50	5/0.80	5/5.42	85
A33	50	5/0.80	5/3.12	74
A34	50	5/0.54	5/3.12	83
A36	50	5/1.54	5/5.06	70
A39	50	5/0.58	5/3.58	84
A40	50	5/0.18	5/3.52	95
A44	50	5/0.32	5/3.40	91
A46	50	5/0.88	5/4.52	81
A49	10	5/0.44	5/3.72	88
A59	10	5/0.22	5/4.02	94
A51	10	5/0.84	5/3.80	78

I
 , I :
 1:
 2- - 5 - - 8,8a - [1,2 - d] - 3a - (1)
 a) 2- - 6 - - 1 -
 5 - - 1 - 7.1g(0.04mol) 135ml , 48% 1.12ml 가 .
 , 40ml 2.06ml 가 , 2 .
 ;) . 113 2- - 6 - - 1 - (

b) 2- -5- -8,8a- [1,2-d] -3a- :

2- -6- -1- 1.28g(5mmol) 30ml , 10ml 530m
 g 가 . , , 2- -5- -8,8a- [1,
 2-d] -3a- 가 . 1 , ,
 10ml , 0.7ml
 가 , 15 . , 50ml 가 , 1 .
 [1,2-d] -3a- . 250 2- -5- -8,8a-

2:

3a- -2- -8,8a- -3aH- [1,2-d] -6-
 (14):

a) 1- -5-

5- -1- 9.5g CuCN 4.93g 10ml , 4
 . 5ml 3 18g 30ml 가 ,
 70 30 . 50ml 3 ,
 2N 50ml 2N 50ml , n-
 . 123 125 1- -5- .

b) 2- -1- -5- :

1- -5- 3.93g 40ml , (48%) 0.1ml 가 ,
 8ml 1.34ml 가 . 3 ,
 20g 40g 가 , 0.5g 가 , 50ml
 2 . 50ml , ,
 / 25/1 . 115 118 2-
 -1- -5- .

c) 3a- -2- -8,8a- -3aH- [1,2-d] -6-
 :

2- -1- -5- 236mg 10ml , N- 135mg 0
 가 . 3 . 90 .
 , 287 288 3a- -2- -8,8a- -3aH
 - [1,2-d] -6- .

3:

2- -5- (4-) -8,8a- [1,2-d] -3a- ()
 32):

a) 6 - (4 -) - 1 - :

6 - - 1 - 6.33g 100ml, 20ml 20ml 4 -
 5.7g 6.36g , (II) 338mg 78
 7mg 가 , 4
 , 0.5N 40ml 10
 50ml 3 50ml 1 , ,
 / 3/1 . 6 - (4 -) - 1 -
 , 가 .

b) 2 - - 6 - (4 -) - 1 - :

2b , 105 2 - - 6 - (4 -)
 - 1 - .

c) 2 - - 5 - (4 -) - 8,8a - [1,2 - d] - 3a -
 :

2 - - 6 - (4 -) - 1 - 1.06g 266mg 10ml
 , 228 230 2 - - 5 - (4 -) - 8,8a - [1,2 - d] - 3a -
 4

4:

2 - - 6 - - 8a - - 8,8a - [1,2 - d] - 3a - (38
):

5 - - 1 - 20g 600ml , N,N - 27.4ml p -
 1g 가 , (water trap) 4 ,
 , / 1/2
 N' - (5 - - 1 -) - N,N -

THF/ / 2M 33.1ml (THF)
 300ml 가 . - 70 , THF 100ml N' - (5 - - 1 -) - N,N' -
 12g 가 . - 70 1 - 40 가 3 ,
 3.882ml 가 , 가 200ml 가
 가 , THF , , / 1/2
 . N' - (5 - - 2 - - 1 -) - N,N -

N' - (5 - 2 - 1 -) - N,N - 5.5g 2N 100ml ,
 4 . , /
 1/5 . 5 - 2 - 1 .

5 - 2 - 1 - 2b) , 2 - 5 - 2 -
 - 1 - , 가 .

2 - 5 - 2 - 1 - 1.5g 460mg 50ml ,
 8 . 229
 2 - 6 - 8a - 8,8a - [1,2 - d] - 3a -

5:

6 - (2,2,3,3,4,4,4 -) - 2 - 8,8a - [1,2 - d] - 3a -
 (39):

a) 6 - (2,2,3,3,4,4,4 -) - 2 - 8,8a - [1,2 - d] - 3a -
 :

2 - 5 - (2,2,3,3,4,4,4 -) - 1 - 1.7g 30ml N -
 0.31g , 24 , : 2
 80 282 () .

b) 6 - (2,2,3,3,4,4,4 -) - 2 - 8,8a - [1,2 - d] - 3a - :

6 - (2,2,3,3,4,4,4 -) - 2 - 8,8a - [1,2 - d] - 3a -
 0.9g 30ml 0.72g , .

, : 178 180 .

c) 6 - (2,2,3,3,4,4,4 -) - 2 - 8,8a - [1,2 - d] - 3a -
 :

- 8,8a - [1,2 - d] - 3a - 20ml 6 - (2,2,3,3,4,4,4 -) - 2 -
 1 , : 238 240 .
 가 , .

6:

2 - 6 - 8a - 8,8a - [1,2 - d] - 3a - (43)

a) 5 - 2 - 1 - :

n - n - 1.6mol 25ml 60ml 5.24ml
 - 50 가 , - 50 가 10 ,
 60ml 5 - 1 - 6.33g 가 , - 50 가

20 가 . 2 , 0 , 60ml , - N - 11.4g
 , 150ml 2 , 120ml 가 ,
 , /n - 1/1 .
 102 104 5 - - 2,2 - - 1 - 5 -
 - 2 - - 1 - .

b) 5 - - 2 - - 2 - - 1 - :

5 - - 2 - - 1 - 2b) , 104 105
 5 - - 2 - - 2 - - 1 - .

c) 2 - - 6 - - 8a - - 8,8a - [1,2 - d] - 3a - :

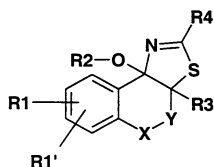
5 - - 2 - - 2 - - 1 - 263mg 152mg 2.5ml
 , 50 8 . 가 ,
 - 6 - - 8a - - 8,8a - [1,2 - d] - 3a - .
 159 2 -

(57)

1.

| , .

|



Y , -CH₂ - - CH₂ - CH₂ - ,

X CH₂, CH(CH₃), CH(C₂H₅), CH(CH₃H₇) CH(C₆H₅) ,

R1 R1'가 H, F, Cl, CF₃, NO₂, CN, COOH, COO(C₁-C₆), CONH₂, CONH(C₁-C₆), CON[(C₁-C₆)₂], (C₁-C₆)-, (C₂-C₆)-, (C₂-C₆)-, O-(C₁-C₆)- (가 OH, OC(O)CH₃, OC(O)H, O-CH₂-Ph, NH₂, NH-CO-CH₃ N(COOCH₂Ph)₂), SO₂-NH₂, SO₂NH(C₁-C₆)-, SO₂N[(C₁-C₆)₂], SO₂-(C₁-C₆)-, SO₂-(CH₂)_n- (n 0 6), F, Cl, Br, OH, CF₃, NO₂, CN, OCF₃, O-(C₁-C₆)-, (C₁-C₆)-NH₂), NH₂, NH-(C₁-C₆)-, N((C₁-C₆)-)₂, NH(C₁-C₇)-, O-(CH₂)_n- (n 0 6), 1-2-, 2-, 3-4-, 2-3-, 2-3- (F, Cl, Br, I, OH, CF₃, NO₂, CN, OCF₃, O-(C₁-C₆)-, (C₁-C₆)-, NH₂, NH(C₁-C₆)-, N((C₁-C₆)-)₂, SO₂-CH₃, COOH, COO-(C₁-C₆)-CONH₂ 1 2), 1,2,3-5- (1, 2 3) 5- (1 2)

R2가 H, (C₁-C₆)-, (C₃-C₆)-, (CH₂)_n-, (CH₂)_n-, (CH₂)_n-, (CH₂)_n-, C(O)-(C₁-C₆)-, C(O)-(C₃-C₆)-, C(O)-(CH₂)_n-, C(O)-(CH₂)_n-, C(O)- (n 0 5), Cl, F, CN, CF₃, (C₁-C₃)-, OH O-(C₁-C₆)- 2)

R3 H, (C₁-C₆)-, F, (CH₂)_n-, (CH₂)_n-, (CH₂)_n-, (CH₂)_n- (n 0 5), Cl, F, CN, CF₃, (C₁-C₃)-, OH O-(C₁-C₆)- 2), (C₂-C₆)-, (C₂-C₆)-, C(O)OCH₃, C(O)OCH₂CH₃, C(O)OH, C(O)NH₂, C(O)NHCH₃, C(O)N(CH₃)₂ OC(O)CH₃

R4가 NR6R7[R6 R7 H, (C₁-C₆)-, (C₃-C₆)-, (C₁-C₆)-, (C₃-C₆)-, Cl, F, CN, CF₃, (C₁-C₃)-, OH O-(C₁-C₆)- 2), CO-(C₁-C₆)-, CHO, CO-, -NH₂, -N=C(CH₃)₂, -(-1-), -(-1-), -(-4-), -(-1-) -(4- -1-) , NR6R7, 4- -1- , 4- -1-] I ,

3.

1 2 ,

Y가 ,

X가 CH₂ ,

R1 R1'가 H, F, Cl, CF₃, CN, COOH, COO(C₁-C₆), CONH₂, CONH(C₁-C₆), CON[(C₁-C₆)₂], (C₁-C₆)-, (C₂-C₆)-, (C₂-C₆)-, O-(C₁-C₆)- (가 OH, OC(O)CH₃, OC(O)H, O-CH₂-Ph, NH₂, NH-CO-CH₃ N(COOCH₂Ph)₂), SO₂-(C₁-C₆)-, SO₂-(CH₂)_n- (n 0 3), F, Cl, OH, CF₃, CN, OCF₃, O-(C₁-C₆)-, (C₁-C₆)-NH₂), NH₂, NH-(C₁-C₆)-, N((C₁-C₆)-)₂, NH(C₁-C₇)-, O-(CH₂)_n- (n 0 6), 1-2-, 2-, 3-4-, 2-3-, 2-3- (F, Cl, OH, CF₃, CN, OCF₃, O-(C₁-C₄)-, (C₁-C₄)-, NH₂, NH(C₁-C₄)-, N((C₁-C₄)-)₂, SO₂-CH₃, COOH, COO-(C₁-C₄)-CONH₂ 1 2), 1,2,3-5- (1, 2 3) 5- (1 2)

R2가 H, (C₁ - C₆) - , (CH₂)_n - , (CH₂)_n - , (CH₂)_n - (CH₂)_n - (, ,
 , Cl, F, CN, CF₃, (C₁ - C₃) - , OH O - (C₁ - C₆) - 2
) ,

R3 H, F (C₁ - C₄) - ,

R4가 NR6R7[, R6 R7 H, (C₁ - C₆) - , (C₃ - C₆) - , (,
 Cl, F, CN, CF₃, (C₁ - C₃) - , OH O - (C₁ - C₆) - 2), CO - (C₁ - C₆)
 - , CHO, CO - , -NH₂, -N=C(CH₃)₂, - (-1-), - (-1-), - (-4-), -
 (-1-) - (4- -1-) , NR6R7 , , , , 4-
 -1- , 4- -1-] I

4.

1 3

5.

1 3

6.

1 3

7.

1 3 , II

8.

1 3

9.

1 3 , II

10.

1 3

11.

, 1 3

12.

II , 1 3