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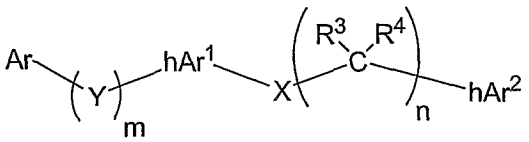
WO 2006/084186 A3

(54) Title: COMPOUNDS COMPRISING LINKED HETERO ARYL MOIETIES AND THEIR USE AS NOVEL UMAMI FLAVOR MODIFIERS, TASTANTS AND TASTE ENHANCERS FOR COMESTIBLE COMPOSITIONS



(57) Abstract: The inventions disclosed herein relate to the discovery of the use of compounds having the formula shown below and certain subgenera or species thereof, as flavor or taste modifiers, particularly, savory ("umami") taste modifiers, savory flavoring agents and savory flavor enhancers in foods, beverages, and other comestible compositions.

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2006/003956

A. CLASSIFICATION OF SUBJECT MATTER
INV. A23L1/226 A23L1/231 C07D401/12 C07D405/14

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A23L C07D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data, PAJ, FSTA, BIOSIS, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	WO 2005/041684 A (SENOMYX INC) 12 May 2005 (2005-05-12) cited in the application claims 1-322; examples 1-175,A-E	1-102, 104-111
X	EP 0 413 162 A (BASF K & F CORPORATION; GIVAUDAN-ROURE S.A) 20 February 1991 (1991-02-20) claims 1,7	1-66, 100-102, 107,109, 111
X	WO 2004/026840 A (UNILEVER PLC; UNILEVER NV; HINDUSTAN LEVER LIMITED) 1 April 2004 (2004-04-01) claims 1,3,4,6,11-13,30 page 6, line 11 - page 7, line 17	1-66, 100-102, 107,109, 111

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
5 October 2006	19/10/2006

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Tallgren, Antti

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2006/003956

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 01/35768 A (J.MANHEIMER, INC) 25 May 2001 (2001-05-25) claims 1-18	1-66, 100-102, 107,109, 111
A	WO 2004/080976 A (KUDOS PHARMACEUTICALS LIMITED; MAYBRIDGE LIMITED) 23 September 2004 (2004-09-23) claims 1-8; examples 1-20	1-66, 100-103, 107,109, 111
A	CLARK R L ET AL: "SYNTHESIS AND ANALGESIC ACTIVITY OF 1,3-DIHYDRO-3-(SUBSTITUTED PHENYL)IMIDAZOÄ4,5-BÜPYRIDIN-2-ONES AND 3-(SUBSTITUTED PHENYL)-1,2,3-TRIAZOLOÄ4,5-BÜPYRIDINES" JOURNAL OF MEDICINAL CHEMISTRY, AMERICAN CHEMICAL SOCIETY, US, vol. 21, no. 9, 1978, pages 965-978, XP001191133 ISSN: 0022-2623 page 977, paragraph 6-12	1-66, 100-102, 107,109, 111
A	BIAGI G ET AL: "N<6>-Cycloalkyl-2-phenyl-3-deaza-8-azaadenines: a new class of A1 adenosine receptor ligands. A comparison with the corresponding adenines and 8-azaadenines" EUROPEAN JOURNAL OF MEDICINAL CHEMISTRY, EDITIONS SCIENTIFIQUE ELSEVIER, PARIS, FR, vol. 38, no. 11-12, November 2003 (2003-11), pages 983-990, XP004475843 ISSN: 0223-5234 page 989, paragraph 2-6; figure 4	1-66, 100-103, 107,109, 111
A	HUANG D ET AL: "2-{2-[3-(Pyridin-3-yloxy)phenyl]-2H-tetrazol-5-yl}pyridine: a highly potent, orally active, metabotropic glutamate subtype 5 (mGlu5) receptor antagonist" BIOORGANIC & MEDICINAL CHEMISTRY LETTERS, OXFORD, GB, vol. 14, no. 22, 15 November 2004 (2004-11-15), pages 5473-5476, XP004598576 ISSN: 0960-894X page 5475, paragraph 3; table 1	1-66, 100-103, 107,109, 111

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INTERNATIONAL SEARCH REPORT

International application No
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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 02/064631 A (SENOMYX, INC; ADLER, JON, ELLIOTT; LI, XIAODONG; STASZEWSKI, LENA; O'C) 22 August 2002 (2002-08-22) cited in the application page 94, paragraph 235 page 8, paragraph 35	1-111
A	US 4 535 084 A (LOMBARDINO ET AL) 13 August 1985 (1985-08-13) examples 15-21,25	103
A	US 4 810 715 A (SCHICKANEDER ET AL) 7 March 1989 (1989-03-07) claim 1	103
A	US 3 625 949 A (GUSTAV SCHORRE ET AL) 7 December 1971 (1971-12-07) claim 1; examples 1-31	103
A	PERNAK J ET AL: "ACTIVITY OF NEW QUATERNARY AMMONIUM COMPOUNDS ON STRAINS OF BACTERIA AND FUNGI. PART 5: SYNTHESIS OF 3-METHYL-N-ALKYLTHIOMETHYLPYRIDINE-, 1-METHYL-3-N-ALKYLTHIOMETHYLIMIDAZOLE- AND 1-ETHYL-3-N-ALKYLTHIOLIMID AZOLINE CHLORIDES / WIRKUNG NEUER QUARTAERER AMMONIUMVERBINDUNGEN AUF BAKTERIEN UND PILZE. T" PHARMAZIE, DIE, GOVI VERLAG, ESCHBORN, DE, vol. 38, no. 11, 1983, pages 752-754, XP008069005 ISSN: 0031-7144 page 752, paragraphs 2,3	103
A	EVANGELISTA S ET AL: "SINTESI ED ATTIVITÁ ANTIULCERA DI ALCUNI NUOVI COMPOSTI A STRUTTURA ARILTIOMETIL-PIRIDINICA/SYNTHESIS AND ANTI-ULCER ACTIVITY OF SOME NEW COMPOUNDS WITH ARYLTHIOMETHYL-PYRIDINE STRUCTURE" FARMACO, EDIZIONE SCIENTIFICA, SOCIETA CHIMICA ITALIANA, PAVIA, IT, vol. 43, no. 11, November 1988 (1988-11), pages 901-908, XP008068997 ISSN: 0430-0920 page 905	103
A	WO 2004/081018 A (NESTEC SA [CH]; BLANK IMRE [CH]; GRIGOROV MARTIN [CH]; HOFMANN THOMAS) 23 September 2004 (2004-09-23) claims 1,4; example 3	1-111

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2006/003956

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. [ ] Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. [X] Claims Nos.: 1-102,104-111 (partially)
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210

3. [ ] Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. [ ] As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. [ ] As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. [X] As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

1-102, 103 partially, 104-111

4. [ ] No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

[X] The additional search fees were accompanied by the applicant's protest.

[ ] No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.2

Claims Nos.: 1-102,104-111 (partially)

The present claims 1-102,104-111 relate to an extremely large number of possible compounds. There are huge amount of options for different subgroups (claims 1,67,101,104,106,108,110) making the total amount of different combinations extremely high. It appears impossible to a skilled person to distinguish which all compounds fall into the scope of the claims.

Taking into account the extremely broad definitions of claims 1-102, 104-111 (especially 1,67,101,104,106,108,110) it is inherently quite unlikely that each of the claimed compounds are capable of solving the technical problem. There are no instructions in the description to prepare all such derivatives falling under the claims. If all optional compounds claimed in claims 1,67,101,104,106,108,110 solve the problem, there are a lot of other compounds solving the problem as well and there is no suprising effect.

Moreover, support and disclosure in the sense of Article 6 and 5 PCT is to be found however for only a very small proportion of the compounds see [examples, tables A,B,C on pages 83-88]. The non-compliance with the substantive provisions is to such an extent, that the search was performed taking into consideration the non-compliance in determining the extent of the search of claims 1-102, 104-111 (PCT Guidelines 9.19 and 9.23).

The search of claim 1-102, 104-111 was restricted to those claimed compounds which appear to be supported, namely the compounds in examples, tables A,B,C on pages 83-88.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-102,103 (partially),104-111

A taste modified comestible composition and a method for modulating the savory taste comprising:
a) at least one comestible product, or one or more precursors thereof, and
b) at least a savory flavor modulating amount of at least one compound having the formula Ar-hAr1-x-CR3R4-har2 or Ar-Y- hAr1-x-CR3R4-har2. 2-((5-(2-methoxy-4-methylphenyl)-1 H-1,2,4-triazol-3-ylthio)methyl)pyridine (example 1) and 2-((5-(2-methoxy-4-methylphenyl)-1 H-1,2,4-triazol-3-ylthio)methyl)-5-pyridine (example 2)

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2. claim: 103 (partially)

2-((5-(2,4-dimethylphenyl)-1H-1,2,4-triazol-3-ylthio)methyl) pyridine (example 3)

2-((5-(4-Ethylphenyl)-1 H-1,2,4-triazol-3-ylthio)methyl)pyridine (example 4)

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4. claim: 103 (partially)

2-((5-(4,5-dimethylfuran-2-yl)-1H-1,2,4-triazol-3-ylthio)met hyl)pyridine (example 5)

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5. claim: 103 (partially)

2-((5-(4-Ethyl-2-methylphenyl)-1H-1,2,4-triazol-3-ylthio)met hyl)pyridine (example 10)

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6. claim: 103 (partially)

2-((5-(4-ethyl-2-methoxyphenyl)-1H-1,2,4-triazol-3-ylthio)me thyl)pyridine (example 18a)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2006/003956

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Information on patent family members

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