

Chemical Compound Searchin PATENTSCOPE

SCP, December 13, 2016

Paul Halfpenny

Senior Administrator, Office of the Assistant Director General

Search chemical compounds

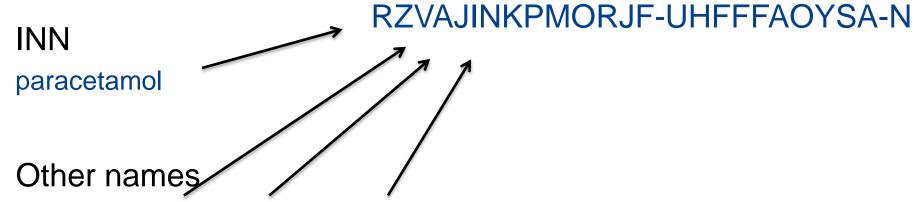
Principle:

- Recognize chemical compounds in patent texts and from embedded drawings included in patent texts
- Standardize all the different representations of chemical structures into Inchikeys and annotate the document
- Implement search functions for Inchikeys that can be used by non chemists

Common Search Phrases

IUPAC name

N-(4-hydroxyphenyl)acetamide



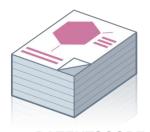
Acetaminophen, panadol, tylenol, ...

Addition of InchiKey Annotation

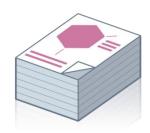
(...) At the moment the surgical procedure starts, benzodiazepin, e.g. diazepam, is administered in a dose of no more than 5 mg. (...)



(...) At the moment the surgical procedure starts, benzodiazepin, e.g. @AAOVKJBEBIDNHE-UHFFFAOYSA-N@, is administered in a dose of no more than 5 mg. (...)







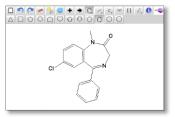
Enriched PATENTSCOPE Documents

(...) At the moment the surgical procedure starts, benzodiazepin, e.g. @AAOVKJBEBIDNHE-UHFFFAOYSA-N@, is administered in a dose of no more than 5 mg. (...)



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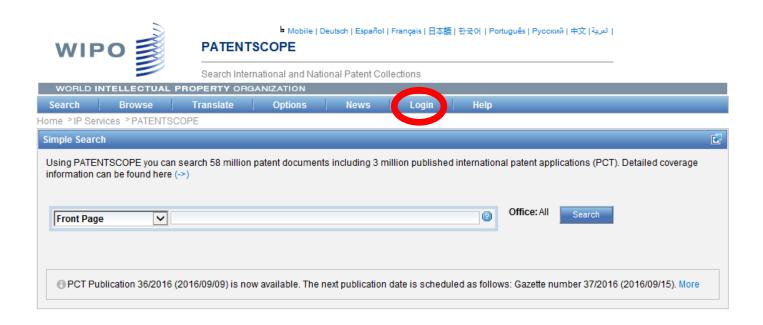




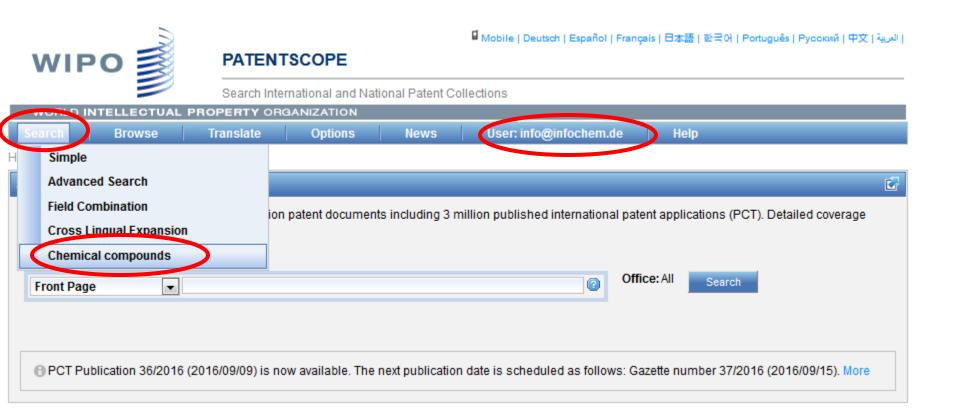




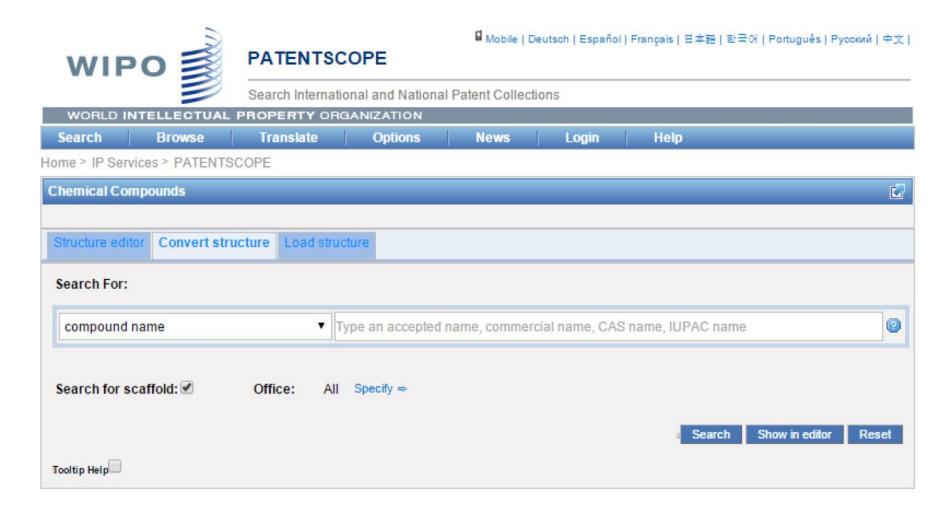
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How does it work?



How does it work?



Example 1: Theobromine

Its chemical formula is $C_7H_8N_4O_2$ and IUPAC name:

3,7-dimethyl-1*H*-purine-2,6-dione

Theobromine is found in the seeds of the plant Theobroma Cacao, which is the well-known source of chocolate and cocoa.





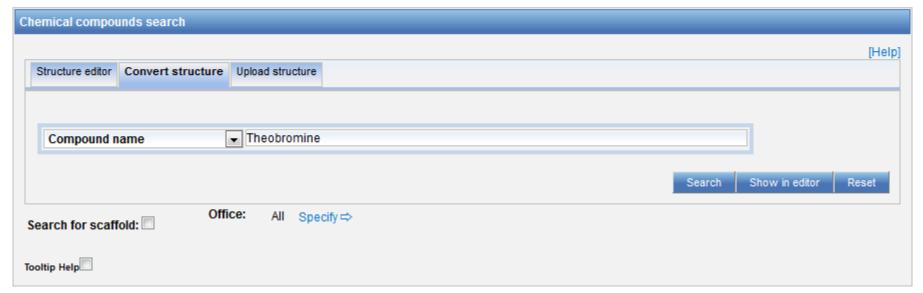
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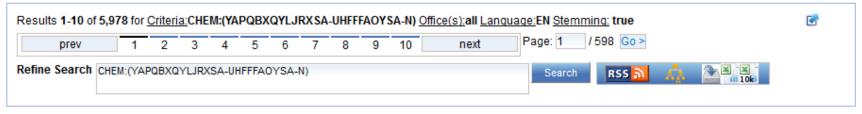
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Analysis List Length 10 Machine translation Sort by: Pub Date Desc View All Title PubDate Int.Class Appl.No Applicant Inventor 1. WO/2016/141458 BISPHENOL ETHER DERIVATIVES AND METHODS FOR USING THE SAME WO 15 09 2016 PCT/CA2016/000070 BRITISH COLUMBIA CANCER AGENCY BRANCH C07C 69/21 ANDERSEN, Raymond John Compounds having a structure of Formula I, or a pharmaceutically acceptable salt, tautomer or stereoisomer thereof, wherein R1, R2, L1, L2, L3, X, a, b, c, n, and m are as defined herein, are provided. Uses of such compounds for modulating androgen receptor activity and uses as therapeutics as well as methods for treatment of subjects in need thereof, including prostate cancer are also provided. 2. WO/2016/142250 BENZAZEPINE DICARBOXAMIDE COMPOUNDS WO 15.09.2016 C07D 403/12 PCT/EP2016/054487 F. HOFFMANN-LA ROCHE AG HOVES, Sabine This invention relates to novel benzazepine dicarboxamide compounds of the formula (I), wherein R1 to R4 are as defined in the description and in the claims, as well as pharmaceutically acceptable salts thereof. These compounds are TLR agonists and may therefore be useful as medicaments for the treatment of diseases such as cancer, autoimmune diseases, inflammation, sepsis, allergy, asthma, graft rejection, graft-versus-host disease, immunodeficiencies, and infectious diseases. 3. WO/2016/142310 TRICYCLIC DLK INHIBITORS AND USES THEREOF 15.09.2016 WO C07D 491/14 PCT/EP2016/054725 F HOFFMANN-I A ROCHE AG ESTRADA, Anthony The invention relates to compounds of formula (I) and salts thereof, wherein ring A and R1-R2 have any of the values defined in the specification. The compounds and salts are useful for treating DLK mediated disorders. The invention also provides pharmaceutical compositions comprising a compound of formula (I), or a

pharmaceutically acceptable salt thereof, as well as methods of using said compounds, salts, or compositions as DLK inhibitors and for treating neurodegeneration diseases and disorders.

रो ⇔ ☑ Machine translation

1. (WO2016141458) BISPHENOL ETHER DEPLYATIVES AND METHODS FOR USING THE SAME

PCT Biblio. Data Description Claims National Phase Notes Compounds Drawings Documents

Latest bibliographic data on file with the International Bureau

Submit observation

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Pub. No.: WO/2016/141458 International Application No.: PCT/CA2016/000070

Publication Date: 15.09.2016 International Filing Date: 11.03.2016

IPC: C07C 69/21 (2006.01), A61K 31/05 (2006.01), A61P 35/00 (2006.01), C07C 43/23 (2006.01), C07F 9/40 (2006.01)

Applicants: BRITISH COLUMBIA CANCER AGENCY BRANCH [CA/CA]; 600 West 10th Avenue Vancouver, British Columbia V5Z 4E6 (CA).

THE UNIVERSITY OF BRITISH COLUMBIA [CA/CA]: University-Industry Liaison Office #103-6190 Agronomy Road Vancouver, British

Columbia V6T 1ZE (CA)

Inventors: ANDERSEN, Raymond John; (CA).

JIAN, Kunzhong; (CA).

SADAR, Marianne Dorothy; (CA).

MAWJI, Nasrin R.: (CA).

BANUELOS, Carmen Adriana; (CA)

Agent: DEETH WILLIAMS WALL LLP; 150 York Street, Suite 400 Toronto, Ontario M5H 3S5 (CA)

Priority Data: 62/131,969 12.03.2015 US

Title (EN) BISPHENOL ETHER DERIVATIVES AND METHODS FOR USING THE SAME

(FR) DÉRIVÉS D'ÉTHER DE BISPHÉNOL ET LEURS PROCÉDÉS D'UTILISATION

Abstract: (EN)Compounds having a structure of Formula I, or a pharmaceutically acceptable salt,

tautomer or stereoisomer thereof, wherein R^1 , R^2 , L^1 , L^2 , L^3 , X, a, b, c, n, and m are as defined herein, are provided. Uses of such compounds for modulating androgen receptor activity and uses as therapeutics as well as methods for treatment of subjects

in need thereof, including prostate cancer are also provided.

(FR)Cette invention concerne des composés ayant une structure de formule I : ou un sel , un tautomère ou un stéréoisomère pharmaceutiquement acceptable de ceux-ci, où R¹,

R², L¹, L², L³, X, a, b, c, n et m étant tels que définis dans la présente. L'invention concerne également les utilisations de ces composés pour moduler l'activité du récepteur des androgènes et leurs utilisations comme substances thérapeutiques,

ainsi que des méthodes destinées à traiter des sujets en ayant besoin, dont des sujets atteints de cancer de la prostate.

Designated States: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE,

EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK,

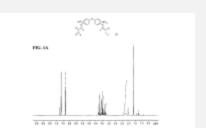
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African Regional Intellectual Property Organization (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW)

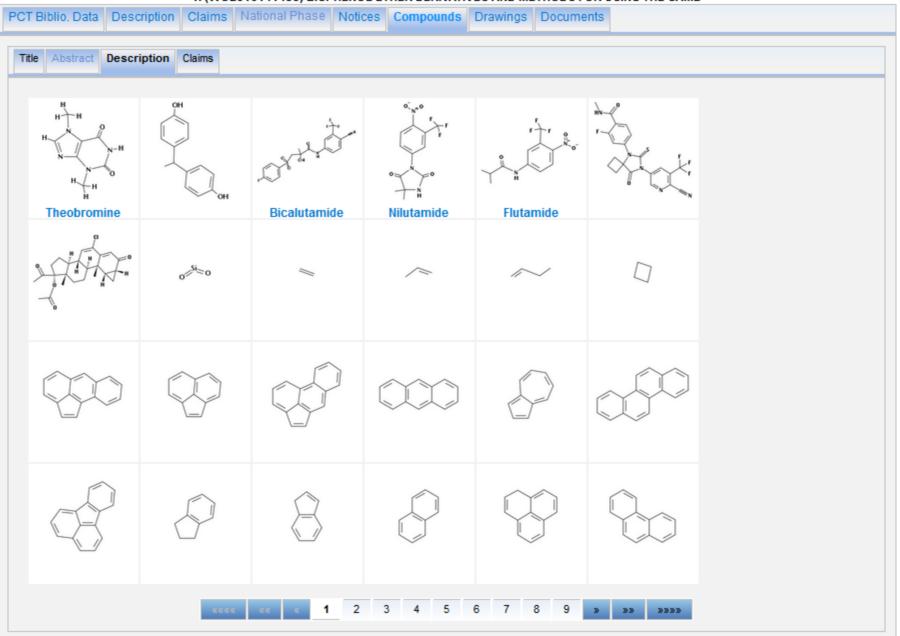
Eurasian Patent Organization (AM, AZ, BY, KG, KZ, RU, TJ, TM)

European Patent Office (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL,

NO. PL. PT. RO. RS. SE. SI. SK. SM. TR)



1. (WO2016141458) BISPHENOL ETHER DERIVATIVES AND METHODS FOR USING THE SAME



Compounds as described herein may be in the free form or in the form of a salt thereof. In some embodiments, compounds as described herein may be in the form of a pharmaceutically acceptable salt, which are known in the art (Berge et al., J. Pharm. Sci. 1977, 66, 1). Pharmaceutically acceptable salt as used herein includes, for example, salts that have the desired pharmacological activity of the parent compound (salts which retain the biological effectiveness and/or properties of the parent compound and which are not biologically and/or otherwise undesirable). Compounds as described herein having one or more functional groups capable of forming a salt may be, for example, formed as a pharmaceutically acceptable salt. Compounds containing one or more basic functional

groups may be capable of forming a pharmaceutically Pharmaceutically acceptable salts may be derived from benzoic acid, benzenesulfonic acid, butyric acid, cinnal digluconic acid, dodecylsulfonic acid, cthanesulfonic a hemisulfonic acid, heptanoic acid, hexanoic acid, hydro malic acid, maieic acid, malonic acid, mandelic acid, r nicotinic acid, nitric acid, oxalic acid, pamoic acid, pect pyruvic acid, salicylic acid, succinic acid, sulfuric acid, functional groups may be capable of forming pharmac inorganic bases based on alkaline metals or alkaline amine compounds, quaternary amine compounds, su Pharmaceutically acceptable salts may be derived from acceptable metal cation such as ammonium.

sodium, potassium, lithium, calcium, magnesium, iror dimethylamine, trimethylamine, ethylamine, m^mylami 2-drmethylarninoethanol, 2-diethylaruinoethanol, dicyc Theobromine glucosamine, glucamine, memylglucamine, theologo compounds, tetraethylammonium compounds, pd, N,N-dimemylaniline, N-methylpiperidine, n, hohne, N-methylmorpholine, N-ethylmorpholine,

reacting an isolated and purified compound.

pharmaceutically acceptable organic or inorganic acid. acetic acid, adipic acid, alginic acid, aspartic acid, ascorbic acid, camphorsulfonie acid, cyclopentanepropionic acid, diethylacetic acid, reptanoic acid, gluconic acid, glycerophosphoric acid, glycolic acid, iodic acid, 2-hydroxyethanesulfonic acid, isomcotinic acid, lactic acid,

sulfonic acid, n osphoric acid, c acid or undermaceutically as primary and ı substituted a i, a hydroxide,

num, ammoni

p-toluenesulfonic acid. ic acid, propionic acid. taining one or more acidic and without limitation. amine compounds, tertiary cion-exchange resins. a pharmaceutically

ethylamine,

ipropylamine. dethanolamine. line, caffeine, hydrabamine, choline, betaine, ethylenediamine,), procaine 4- etliylpiperidine, theobromine, tetrame ylammonium dicyclohexylamine, dibenzylamine, N,N- dibenzylph __ethylaniine, 1-ephenamine, N^-m³/4enzylemylenediamine or polyamine resins. In some embodiments, compounds as described herein may contain both acidic and basic groups and may be in the form of inner salts or zwitterions, for example, and without limitation, betaines. Salts as described herein may be prepared by conventional processes known to a person slcilled in the art, for example, and without limitation, by reacting the free form with an organic acid or inorganic acid or base, or by anion exchange or cation exchange from other salts. Those skilled in the

In some embodiments, compounds and all different forms thereof (e.g. free forms, salts, polymorphs, isomeric forms) as described herein may be in the solvent addition form, for example, solvates. Solvates contain either stoichiometric or non-stoicbiometric amounts of a solvent in physical association the compound or salt thereof. The solvent may be, for example, and without limitation, a pharmaceutically acceptable solvent. For example, hydrates are formed when the solvent is water or alcoholates are formed when the solvent is an alcohol.

art will appreciate that preparation of salts may occur in situ during isolation and purification of the compounds or preparation of salts may occur by separately

In some embodiments, compounds and all different forms thereof (e.g. free forms, salts, solvates, isomeric forms) as described herein may include crystalline and amorphous forms, for example, polymorphs, pseudopolymorphs, conformational polymorphs, amorphous forms, or a combination thereof. Polymorphs include different crystal packing arrangements of the same elemental composition of a compound. Polymorphs usually have different X-ray diffraction patterns, infrared spectra, melting points, density, hardness, crystal shape, optical and electrical properties, stability and/or solubility. Those skilled in the art will appreciate that various factors including recrystallization solvent, rate of crystallization and storage temperature may cause a single crystal form to dominate.

In some embodiments, compounds and all different forms thereof (e.g. free forms, salts, solvates, polymorphs) as described herein include isomers such as geometrical isomers, optical isomers based on asymmetric carbon, stereoisomers, tautomers, individual enantiomers, individual diastereomers, racemates, diastereomeric mixtures and combinations thereof, and are not limited by the description of the formula illustrated for the sake of convenience.

III. Methods



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1. WO/2002/0	WO	WO 26.09.2002												
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disorders or i	nsufficient mood	l, obesity, overweight,	premenstrual sy	ndrome, cravi	disorders, in particular of treati ing, carbohydrate craving, <mark>cho</mark> re if its pharmacologically activ	colate craving, menop	ausal cor	mplaints, erectile						
2. WO/2002/0	WO	10.10.2002												
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		_			nimals, particularly humans, s			_						

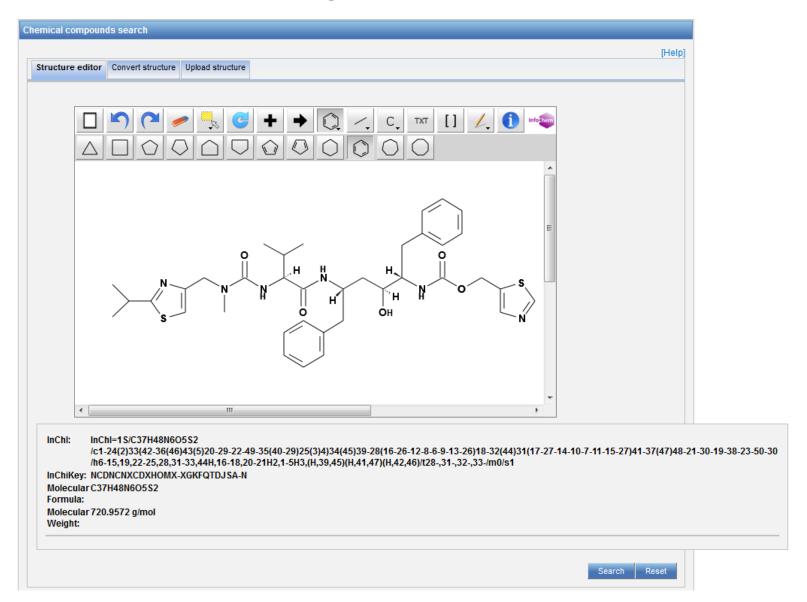
concentration, optimization, and the addition of endogenous and exogenous ingredients to increase such craving as well as to treat specific indications. The chocolate product contains: from about 0.5 to about 200 milligrams, more preferably from about 5 to about 20 milligrams, of one or more biogenic amines per 1 gram of the chocolate product; from about 10 to about 500 milligrams, more preferably form about 20 to about 200 milligrams, of one or more amino acids per 1

International Non proprietary Names

WIKIPEDIA:

- INNs are official generic and non proprietary names given to a pharmaceutical drug or active ingredients issued by the World Health Organization (WHO).
- Growing need to be able to search INNs in patent texts
- PATENTSCOPE supports the search of 6917 INNs by Inchikey

Example 2: Ritonavir





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Title Title											Ctr											
	Int.Class Appl.No Applicant												Inventor									
1. WO/1994/014	1. WO/1994/014436 RETROVIRAL PROTEASE INHIBITING COMPOUNDS											wo	WO 07.07.1994									
A61K 31/425	PCT/US1993/012326 ABBOTT LABORATORIES											KEMF	KEMPF, Dale, J.									
A retroviral protease inhibiting compound of formula (A) is disclosed.																						
2. WO/1995/007696 PHARMACEUTICAL COMPOSITION OF HIV-PROTEASE INHIBITORS											WO	WO 23.03.1995										
A61K 9/48	8 © PCT/US1994/009788 ABBOTT LABORATORIES											AL-R	AL-RAZZAK, Laman, A.									
A pharmaceutical composition is disclosed which comprises a solution of an HIV protease inhibiting compound in a pharmaceutically acceptable organic solvent comprising a pharmaceutically acceptable alcohol. The composition can optionally comprise a pharmaceutically acceptable acid or a combination of pharmaceutically acceptable acids. The solution can optionally be encapsulated in hard gelating capsule or soft elastic gelating capsules. The solution can optionally be granulated with a pharmaceutically acceptable granulating agent.													nt									
3. WO/1995/009614 PHARMACEUTICAL COMPOSITION										WO	1	3.04.1995										
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A solid pharmad	ceutical com	positio	n is discl	osed	which	compri	ses a	pharn	naceu	uticall	y accepta	able a	adsoi	rbent	ora	mixtu	re of p	harmac	eutically a	acce	eptable	

adsorbents to which is adsorbed a mixture of (1) a pharmaceutically acceptable organic solvent or a mixture of pharmaceutically acceptable organic solvents, (2) an HIV protease inhibiting compound and (3) one or more pharmaceutically acceptable acids. The solid composition can optionally be encapsulated in a hard gelatin capsule.

8. (2S,3S,5S)-5-(N-(N-(M-Methyl-N-((2-isopropyl-4-thiazolyl)methyl)-amino)carbonyl)valinyl)amino)-2-(N-((5-thiazolyl)methoxycarbonyl)amino)-1,6-diphenyl-3-hydroxyhexane; or a pharmaceutically acceptable salt, ester or prodrug thereof.

9. (2S,3S,5S)-5-(N-(N-((N-Methyl-N-((2-isopropyl-4-oxaz 3-hydroxyhexane; or a pharmaceutically acceptable salt

10. A compound selected from the group consisting of: 2-(N-((5-thiazolyl)methoxycarbonyl)amino)-1,6-diphenyl-(2S,3S,5S)-5-(N-(N-((2-Isopropyl-4-thiazolyl)methoxycar (2S,3S,5S)-2-(N-(N-((2-Isopropyl-4-thiazolyl)methoxycar (2S,3S,5S)-5-(N-(N-((2-Isopropyl-4-thiazolyl)methoxycar (2S,3S,5S)-5-(N-(N-((2-(N,N-Dimethylamino)-4-thiazolyl 3-hydroxyhexane;

(2S,3S,5S)-2-(N-(N-((2-(N,N-Dimethylamino)-4-thiazolyl 3-hydroxyhexane;

(2S,3S,5S)-5-(N-(N-((2-(4-Morpholinyl)-4-thiazolyl)meth (2S,3S,5S)-2-(N-(N-((2-(4-Morpholinyl)-4-thiazolyl)-meth (2S,3S,5S)-5-(N-(N-((2-(1-Pyrrolidinyl)-4-thiazolyl)methol

(2S,3S,5S)-5-(N-(N-((N-Methyl-N-((2-isopropyl-4-oxazol) 3-hydroxyhexane;

(2S,3S,5S)-5-(N-(N-((N-Methyl-N-((2-isopropyl-4-thiazol) 3-hydroxyhexane;

(2S,3S,5S)-5-(N-(N-((N-Methyl-N-((2-isopropyl-4-thiazol Ritonavir

3-hydroxyhexane; and

chiral H

mino)-1,6-diphenyl-

/l)alaninyl)amino)-

ydroxyhexane; ydroxyhexane; -hydroxyhexane; -diphenyl-

-diphenyl-

nyl-3-hydroxyhexane; enyl-3-hydroxyhexane; yl-3-hydroxyhexane;

no)-1,6-diphenyl-

no)-1,6-diphenyl-

nino)-1,6-diphenyl-

(2S,3S,5S)-5-(N-(N-((N-Methyl-N-((2-isopropyl-4-oxazoly)))methyl-non-composition (2S,3S,5S)-5-(N-(N-((N-Methyl-N-((2-isopropyl-4-oxazoly))))methyl-non-composition (2S,3S,5S)-5-(N-(N-((N-Methyl-N-((2-isopropyl-4-oxazoly)))))methyl-non-composition (2S,3S,5S)-5-(N-(N-((N-Methyl-N-((2-isopropyl-4-oxazoly))))))methyl-non-composition (2S,3S,5S)-5-(N-(N-((N-Methyl-N-((2-isopropyl-4-oxazoly))))))methyl-non-composition (2S,3S,5S)))methyl-non-composition (2S,3S,5S)))methyl-non-composition (2S,3S,5S))methyl-non-composition (2S,3S,5S))methyl-non-compositio 3-hydroxyhexane; or a pharmaceutically acceptable salt, ester or prodrug thereof.

11. A compound of the formula:

wherein R1 is monosubstituted thiazolyl, monosubstituted oxazolyl, monosubstituted isoxazolyl or monosubstituted isothiazolyl wherein the substituent is selected from (i) loweralkyl, (ii) loweralkyl, (iii) cycloalkyl, (iv) cycloalkyl, (v) cycloalkenyl, (vi)cycloalkenylalkyl, (vii) heterocyclic wherein the heterocyclic is selected from aziridinyl, azetidinyl, pyrrolidinyl, piperidinyl, piperazinyl, morpholinyl, thiomorpholinyl, thiazolyl, oxazolyl, isoxazolyl, isothiazolyl, pyridinyl, pyrimidinyl, pyridazinyl and pyrazinyl and wherein the heterocyclic is unsubstituted or substituted with a substituent selected from halo, loweralkyl, hydroxy, alkoxy and thioalkoxy, (viii)

(heterocyclic)alkyl wherein heterocyclic is defined as above, (ix) alkoxyalkyl, (x) thioalkoxyalkyl, (xi) alkylamino, (xii) dialkylamino, (xiii) phenyl wherein the phenyl ring is unsubstituted or substituted with a substituent selected from halo, loweralkyl, hydroxy, alkoxy and thioalkoxy, (xiv) phenylalkyl wherein the phenyl ring is unsubstituted or substituted as defined above, (xv) dialkylaminoalkyl, (xvi) alkoxy and (xvii) thioalkoxy;

Scope

Works on **complete exact formulas** ≠ Markush structures (-R) that are chemical symbols used to indicate a collection of chemicals with similar structures.

$$R^{2}$$
 $X=Z$
 X
 R^{3}

- Chemical elements, short names (less than 4 characters), common solvents and polymers are not annotated by design
- PCT and US national collections with IPC codes related to chemistry
- Languages: English and German

Limitations

- Based on state of the art fully automated chemical recognition algorithms
- The technology is NOT 100% accurate
- OCR errors in the available patent full texts make the recognition of chemical compounds even more challenging

Suggested Approach

Use the tool as a guide

- positive identification is a good result
- negative identification is not authoritative