Title: METHODS FOR TREATING INFLAMMATORY DISEASE BY ADMINISTERING ALDEHYDES AND DERIVATIVES THEREOF

Abstract: A method is disclosed for treating inflammatory disease in an animal in need thereof by administering to the animal a pharmaceutical composition containing an anti-inflammatory effective amount of an organic aldehyde compound or a derivative thereof in a pharmaceutically acceptable vehicle.
INTERNATIONAL SEARCH REPORT

International application No
PCT/PT2007/000009

A. CLASSIFICATION OF SUBJECT MATTER

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A61K

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, CHEM ABS Data, EMBASE, BIOSIS, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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<td>X</td>
<td>WO 03/066067 A (HAAS WERNER [PT]; ROMAO CARLOS [PT]; ROYO BEATRIZ [PT]; FERNANDES ANA) 14 August 2003 (2003-08-14) claims 1,2,11-13 abstract paragraph [0074] - paragraph [0076] &quot;leading examples&quot; on page 57 claims 6,7</td>
<td>1-5,8-15</td>
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<td>A</td>
<td>WO 02/092075 A (NORTHWICK PARK INST FOR MEDICA [GB]; UNIV SHEFFIELD [GB]) 21 November 2002 (2002-11-21) claims 18-20</td>
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Further documents are listed in the continuation of Box C. 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 relating 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 or in combination with one or more other such documents, such combination being obvious to a person skilled in the art.
  Y: document member of the same patent family

Date of the actual completion of the international search
13 February 2008

Date of mailing of the international search report
04/06/2008

Name and mailing address of the ISA:
European Patent Office, P.B. 5816 Patentlaan 2 NL-2280 HV RIJSWIJK Tel. (+31-70) 340-2040, Tx. 31651 epp nl, Fac. (+31-70) 340-3016

Authorized officer
Langer, Oliver
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<td>WO 03/094932 A (UNIV YALE [US]; UNIV JOHNS HOPKINS [US]; CHOI AUGUSTINE M K [US]; OTTE) 20 November 2003 (2003-11-20) abstract</td>
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<td>OTTERBEIN L E ET AL: &quot;Carbon monoxide has anti-inflammatory effects involving the mitogen-activated protein kinase pathway&quot; NATURE MEDICINE, NATURE PUBLISHING GROUP, NEW YORK, NY, US, vol. 6, no. 4, April 2000 (2000-04), pages 422-428, XP002249546 ISSN: 1078-8956 abstract</td>
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INTERNATIONAL SEARCH REPORT

Box No. 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:

   Although claims 1-5 and 8-15 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.

2. [ ] Claims Nos.: 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:

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 No. 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

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

3. [ ] 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.:

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.:

   1-5, and 8-15 (all partial ly)

Remark on Protest

[ ] The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

[ ] The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

[ ] No protest accompanied the payment of additional search fees.
This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-5, and 8-15 (all partially)
   A method for treating inflammatory disease in an animal in need thereof comprising administering to the animal a pharmaceutical composition including an anti-inflammatory effective amount of a compound of general formula I, wherein the inflammatory disease is arthritis, rheumatoid arthritis, idiopathic arthritis, osteoarthritis or psoriatic arthritis.

2. claims: 1, 2, 4, 6, and 8-21 (all partially)
   A method for treating inflammatory disease in an animal in need thereof comprising administering to the animal a pharmaceutical composition including an anti-inflammatory effective amount of a compound of a derivative of general formula I wherein the derivative is an acetal or hemiacetal.

3. claims: 1, 2, 4, 6, and 8-21 (all partially)
   A method for treating inflammatory disease in an animal in need thereof comprising administering to the animal a pharmaceutical composition including an anti-inflammatory effective amount of a compound of a derivative of general formula I wherein the derivative is an aminocarbinol.

4. claims: 1, 2, 4, 6, and 8-21 (all partially)
   A method for treating inflammatory disease in an animal in need thereof comprising administering to the animal a pharmaceutical composition including an anti-inflammatory effective amount of a compound of a derivative of general formula I wherein the derivative is an aminal.

5. claims: 1, 2, 4, 6, and 8-21 (all partially)
   A method for treating inflammatory disease in an animal in need thereof comprising administering to the animal a pharmaceutical composition including an anti-inflammatory effective amount of a compound of a derivative of general formula I wherein the derivative is an imine or iminium salt.

6. claims: 1, 2, 4, 6, and 8-21 (all partially)
A method for treating inflammatory disease in an animal in need thereof comprising administering to the animal a pharmaceutical composition including an anti-inflammatory effective amount of a compound of a derivative of general formula I wherein the derivative is an enaminone.

7. claims: 1, 2, 4, 6, and 8-21 (all partially)

A method for treating inflammatory disease in an animal in need thereof comprising administering to the animal a pharmaceutical composition including an anti-inflammatory effective amount of a compound of a derivative of general formula I wherein the derivative is an imidate.

8. claims: 1, 2, 4, 6, and 8-21 (all partially)

A method for treating inflammatory disease in an animal in need thereof comprising administering to the animal a pharmaceutical composition including an anti-inflammatory effective amount of a compound of a derivative of general formula I wherein the derivative is an amidine.

9. claims: 1, 2, 4, 6, and 8-21 (all partially)

A method for treating inflammatory disease in an animal in need thereof comprising administering to the animal a pharmaceutical composition including an anti-inflammatory effective amount of a compound of a derivative of general formula I wherein the derivative is a sodium bissulfite adduct.

10. claims: 1, 2, 4, 6, and 8-21 (all partially)

A method for treating inflammatory disease in an animal in need thereof comprising administering to the animal a pharmaceutical composition including an anti-inflammatory effective amount of a compound of a derivative of general formula I wherein the derivative is a hemimercaptal or dithioacetal.

11. claims: 1, 2, 4, 6, and 8-21 (all partially)

A method for treating inflammatory disease in an animal in need thereof comprising administering to the animal a pharmaceutical composition including an anti-inflammatory effective amount of a compound of a derivative of general formula I wherein the derivative is a 1,3-dioxepane, alpha-hydroxy-1,3-dioxepane or alpha-keto-1,3-dioxepane.
12. claims: 1, 2, 4, 6, and 8-21 (all partially)

A method for treating inflammatory disease in an animal in need thereof comprising administering to the animal a pharmaceutical composition including an anti-inflammatory effective amount of a compound of a derivative of general formula I wherein the derivative is a 1,3-dioxane, alpha-hydroxy-1,3-dioxane or alpha-keto-1,3-dioxane.

13. claims: 1, 2, 4, 6, and 8-21 (all partially)

A method for treating inflammatory disease in an animal in need thereof comprising administering to the animal a pharmaceutical composition including an anti-inflammatory effective amount of a compound of a derivative of general formula I wherein the derivative is a 1,3-dioxalane, alpha-hydroxy-1,3-dioxalane or alpha-keto-1,3-dioxalane.

14. claims: 1, 2, 4, 6, and 8-21 (all partially)

A method for treating inflammatory disease in an animal in need thereof comprising administering to the animal a pharmaceutical composition including an anti-inflammatory effective amount of a compound of a derivative of general formula I wherein the derivative is a 1,3-dioxetane or alpha-keto-1,3-dioxetane.

15. claims: 1, 2, 4, 6, and 8-21 (all partially)

A method for treating inflammatory disease in an animal in need thereof comprising administering to the animal a pharmaceutical composition including an anti-inflammatory effective amount of a compound of a derivative of general formula I wherein the derivative is a macrocyclic ester/imine or macrocyclic ester/hemiacetal.

16. claims: 1, 2, 4, and 6-21 (all partially)

A method for treating inflammatory disease in an animal in need thereof comprising administering to the animal a pharmaceutical composition including an anti-inflammatory effective amount of a compound of a derivative of general formula I wherein the derivative is an oxazolidine or oxazolidinone.

17. claims: 1, 2, 4, 6, and 8-21 (all partially)
A method for treating inflammatory disease in an animal in need thereof comprising administering to the animal a pharmaceutical composition including an anti-inflammatory effective amount of a compound of a derivative of general formula I wherein the derivative is a tetrahydro-1,3-oxazine or tetrahydro-1,3-oxazinone.

18. claims: 1, 2, 4, 6, and 8-21 (all partially)

A method for treating inflammatory disease in an animal in need thereof, comprising administering to the animal a pharmaceutical composition including an anti-inflammatory effective amount of a compound of a derivative, of general formula I wherein the derivative is a 1,3,4-oxadiazine.

19. claims: 1, 2, 4, and 6-21 (all partially)

A method for treating inflammatory disease in an animal in need thereof comprising administering to the animal a pharmaceutical composition including an anti-inflammatory effective amount of a compound of a derivative of general formula I wherein the derivative is a thiazolidine, tetrahydro-1,3-thiazine, thiazolidinone or tetrahydro-1,3-thiazinone.

20. claims: 1, 2, 4, 6-21 (all partially)

A method for treating inflammatory disease in an animal in need thereof comprising administering to the animal a pharmaceutical composition including an anti-inflammatory effective amount of a compound of a derivative of general formula I wherein the derivative is an imidazolidine or imidazolidinone.

21. claims: 1, 2, 4, 6, and 8-21 (all partially)

A method for treating inflammatory disease in an animal in need thereof comprising administering to the animal a pharmaceutical composition including an anti-inflammatory effective amount of a compound of a derivative of general formula I wherein the derivative is a hexahydro-1,3-pyrimidine or tetrahydro-1,3-pyrimidinone.

22. claims: 1, 2, 4, 6, and 8-21 (all partially)
A method for treating inflammatory disease in an animal in need thereof comprising administering to the animal a pharmaceutical composition including an anti-inflammatory effective amount of a compound of a derivative of general formula I wherein the derivative is an oxime, hydrazone, carbazole, thiocarbazone, semicarbazone or semithiocarbazone.

23. claims: 1, 2, 4, 6, and 8-21 (all partially).

A method for treating inflammatory disease in an animal in need thereof comprising administering to the animal a pharmaceutical composition including an anti-inflammatory effective amount of a compound of a derivative of general formula I wherein the derivative is an acyloxyalkyl ester derivative, 0-acyloxyalkyl derivative or N-acyloxyalkyl derivative.

24. claims: 1, 2, 4, 6, and 8-21 (all partially)

A method for treating inflammatory disease in an animal in need thereof comprising administering to the animal a pharmaceutical composition including an anti-inflammatory effective amount of a compound of a derivative of general formula I wherein the derivative is a N-Mannich base derivative.

25. claims: 1, 2, 4, 6, and 8-21 (all partially)

A method for treating inflammatory disease in an animal in need thereof comprising administering to the animal a pharmaceutical composition including an anti-inflammatory effective amount of a compound of a derivative of general formula I wherein the derivative is a N-hydroxymethyl derivative.

26. claims: 1-5, 8-12 and 16 (all partially)

A method for treating inflammatory disease in an animal in need thereof comprising administering to the animal a pharmaceutical composition including an anti-inflammatory effective amount of a compound of general formula I wherein the inflammatory disease is Alzheimer's disease, Parkinson's disease, amyotrophic lateral sclerosis or multiple sclerosis.

27. claims: 1-5, 8-12 and 17 (all partially)
A method for treating inflammatory disease in an animal in need thereof comprising administering to the animal a pharmaceutical composition including an anti-inflammatory effective amount of a compound of general formula I, wherein the inflammatory disease is an inflammatory lung disease.

28. claims: 1-5, 8-12 and 18 (all partially)

A method for treating inflammatory disease in an animal in need thereof comprising administering to the animal a pharmaceutical composition including an anti-inflammatory effective amount of a compound of general formula I, wherein the inflammatory disease is an inflammatory bowel disease.

29. claims: 1-5, 8-12 and 19 (all partially)

A method for treating inflammatory disease in an animal in need thereof comprising administering to the animal a pharmaceutical composition including an anti-inflammatory effective amount of a compound of general formula I, wherein the inflammatory disease is an inflammatory skin disease.

30. claims: 1-5, 8-12 and 20 (all partially)

A method for treating inflammatory disease in an animal in need thereof comprising administering to the animal a pharmaceutical composition including an anti-inflammatory effective amount of a compound of general formula I, wherein the inflammatory disease is atherosclerosis.

31. claims: 1-5, 8-12 and 20 (all partially)

A method for treating inflammatory disease in an animal in need thereof comprising administering to the animal a pharmaceutical composition including an anti-inflammatory effective amount of a compound of general formula I, wherein the inflammatory disease is myocardial infarction.

32. claims: 1-5, 8-12 and 20 (all partially)

A method for treating inflammatory disease in an animal in need thereof comprising administering to the animal a pharmaceutical composition including an anti-inflammatory effective amount of a compound of general formula I, wherein the inflammatory disease is stroke.

33. claims: 1-5, 8-12 and 20 (all partially)
A method for treating inflammatory disease in an animal in need thereof comprising administering to the animal a pharmaceutical composition including an anti-inflammatory effective amount of a compound of general formula I, wherein the inflammatory disease is transplant rejection.

34. claims: 1-5, 8-12 and 21 (all partially)

A method for treating inflammatory disease in an animal in need thereof comprising administering to the animal a pharmaceutical composition including an anti-inflammatory effective amount of a compound of general formula I, wherein the inflammatory disease is gram-positive or gram-negative shock, sepsis, septic shock, hemorrhagic or anaphylactic shock, or systemic inflammatory response syndrome.
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