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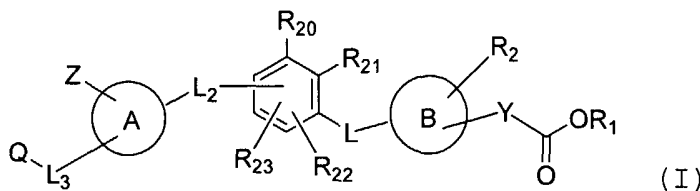
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: HETEROCYCLE SUBSTITUTED CARBOXYLIC ACIDS FOR THE TREATMENT OF DIABETES



(57) Abstract: The present invention relates to compounds and pharmaceutically acceptable salts of formula (I): which are useful in the treatment of metabolic disorders related to insulin resistance, leptin resistance, or hyperglycemia. Compounds of the invention include inhibitors of Protein tyrosine phosphatases, in particular Protein tyrosine phosphatase-1B (PTP-1B), that are useful in the treatment of diabetes and other

PTP mediated diseases, such as cancer, neurodegenerative diseases and the like. Also disclosed are pharmaceutical compositions comprising compounds of the invention and methods of treating the aforementioned conditions using such compounds.

INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

INV. C07D417/12	C07D409/10	C07D403/14	C07D403/10	C07D401/14
C07D417/10	C07D405/10	C07D401/12	C07D405/12	A61K31/443
A61K31/427	A61K31/4439	A61K31/381	A61K31/53	A61K31/405

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)
C07D A61K A61P

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, BEILSTEIN Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 542 059 A (BAYER) 19 May 1993 (1993-05-19) claims; tables 1-8 -----	1,2,4-6, 14,18
X	DE 44 07 488 A1 (BAYER) 14 September 1995 (1995-09-14) claims; examples 1G,10-12; tables 4,7 -----	1,2,4-6, 11,14,18
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A	WO 02/04458 A (NOVO NORDISK) 17 January 2002 (2002-01-17) page 1, line 30 - page 3, line 13; claims; examples ----- -/-	1-19

☒ 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)

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"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

6 June 2006

Date of mailing of the international search report

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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 02/04459 A (NOVO NORDISK) 17 January 2002 (2002-01-17) page 1, line 30 - page 3, line 15; claims; examples -----	1-19
A	US 6 310 081 B1 (MALAMAS ET. AL.) 30 October 2001 (2001-10-30) column 1, line 10 - column 2, line 50; claims; examples -----	1-19
A	WO 02/08188 A (MERCK & CO.) 31 January 2002 (2002-01-31) page 1 - page 6; claims; examples -----	1-19
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International application No.
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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.: 13(part)
because they relate to subject matter not required to be searched by this Authority, namely:
Although claim 13 is 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 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:

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. ☐ 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.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2005/041677

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Form PCT/ISA/210 (patent family annex) (April 2005)