Title: MEDICAMENTS FOR THE TREATMENT OF NEURODEGENERATIVE DISORDERS OR DIABETES

Abstract: Novel compounds and methods are provided for the treatment of human neurodegenerative diseases, diabetes, mental conditions, inflammatory diseases, strokes and cancers. The compounds are small molecule inhibitors of glycogen synthase kinase-3 proteins. GSK-3 kinase protein/small molecule inhibitor compound adducts are also described wherein the compounds are bonded to the kinase proteins at the region of a protein switch control pocket in order to alter the conformation and/or protein activity of the kinases.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G09B 1/00, 19/02
US CL : 435/194

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)
U.S. : 435/194

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 practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category *</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>US 3,335,147 (Karten) 8 August 1967 (08.08.1967) See entire document, e.g. compound No. 9, column 2 under Example II, R1=naphthyl, R2=H, R3=H.</td>
<td>1</td>
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<tr>
<td>X</td>
<td>US 4,474,598 (Pilgram) 2 October 1984 (02.10.1984). See entire document, e.g. species No. 3 in column 3, line 43.</td>
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<tr>
<td>X</td>
<td>ES 2 166 328 (Martinez Gil et al.) 1 April 2002 (01.04.2002). See entire document, e.g., page 8, compound of formula I with R1 and R2= heteroaryl and X, Y=O. See also use in Alzheimer’s (page 8, lines 33-34), diabetes (lines 35-36) and cancer (lines 39-40).</td>
<td>1-2 and 4-14</td>
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<tr>
<td>X</td>
<td>WO/21927 (Coghlan et al.) 20 April 2000 (20.04.2000) See abstract for e.g. formula I with R=aralkyl, R1=H, R2 heterocyclic and R3=heterocyclic and use in diabetes, manic depression and Alzheimer’s.</td>
<td>1-14</td>
</tr>
</tbody>
</table>

[X] 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 application or patent 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
20 October 2004 (20.10.2004)

Date of mailing of the international search report
16 Feb 2005

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Form PCT/ISA/210 (second sheet) (January 2004)
<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
</table>
INTERNATIONAL SEARCH REPORT

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

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

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).

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:
Please See Continuation 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. 
   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.

Form PCT/ISA/210 (continuation of first sheet(2)) (January 2004)
BOX III. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

This application contains the following inventions or groups of inventions, which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claim(s) 1-12, drawn to a compound of formula I.
Group II, claim(s) 13-14, drawn to an adduct of gsk-3 kinase.

This International Searching Authority considers that the international application does not comply with the requirements of unity of invention (Rules 13.1, 13.2 and 13.3) for the reasons indicated below:

The inventions listed as Groups I-II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the special technical feature (as defined by the first presented composition) is a compound of formula I, which is known in the art (see US 3534057). Since no special technical feature exists, there is no Unity of Invention.

The special technical feature of the remaining group is distinct as described above.