A61K 9/12 (2006.01)

PCT/US2011/047858

16 August 2011 (16.08.2011)

English

61/374,113 16 August 2010 (16.08.2010)


WO 2012/024260 A3

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)
(19) World Intellectual Property Organization
International Bureau
(43) International Publication Date
23 February 2012 (23.02.2012)
(51) International Patent Classification:
A61K 9/12 (2006.01)
(52) International Classification for Industrial Applications (CI): A61K 9/12 (2006.01)
(54) Title: INTRANASAL DELIVERY OF CELL PERMEANT THERAPEUTICS
(55) Priority Data:
61/374,113 16 August 2010 (16.08.2010)

(72) Inventors; and


Published: with international search report (Art. 21(3))
6 September 2013

(88) Date of publication of the international search report:

(57) Abstract: The present invention relates to compositions and methods for the inhibition of apoptosis associated with ischemic injury in the central nervous system. In addition, the present invention relates to compositions and methods useful for extending the therapeutic window associated with ischemic injury.
IMTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - A61K 9/12 (201.1.01)
USPC - USPC: 424/45

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)
IPC(8): A61K 9/12 (201.1.01)
USPC: 424/45

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC: 514/21.7

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PubWEST(PGPB,USPT,EPAB,JPAB); Google Patents; Google Scholar: Intranasal treatment. Ischemic injury, caspase inhibitor, cell penetrating peptide, CNS delivery, penetratin-1, transports, intranasal CNS peptide, caspase inhibitor, caspase inhibitor peptide, ischemic CNS apoptosis, CNS Ischemia, blood brain barrier peptide, Caspase 1

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, Y</td>
<td>US 7,439,063, B2 (Digicaylioglu, et al.) 21 October 2008 (21.10.2008) Col 1, In 16-17; Col 2, In 66-67; Col 8, In 47-57; Col 10, In 35-45; Col 21, In 54-57; Col 23, In 16-17; Col 26, In 5-9; Col 27, In 11-52</td>
<td>1, 5-6, 10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2-4, 7, 16-17</td>
</tr>
</tbody>
</table>

Further documents are listed in the continuation of Box C.

Date of the actual completion of the international search 18 February 2012 (18.02.2012)
Date of mailing of the international search report 27 MAR 2012

Name and mailing address of the ISA/US
Mail Stop PCT: Attn: ISA/US, Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450
Facsimile No. 571-273-3201

Authorized officer: Lee W. Young
PCT Helpdesk: 571-272-4200
PCT/USP. 571-272-7779

Form PCT/ISA/210 (second sheet) (July 2009)
**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:

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:

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:

Group 1: claims 1-18, drawn to a method of treating ischemic injury in the central nervous system by intranasally administering an effective amount of an apoptotic target inhibitor to a subject as need thereof, where said ischemic injury is treated thereby. The first invention is restricted to penetratin and an inhibitor of caspase-1. Should an additional fee(s) be paid, Applicant is invited to elect an additional cell-penetrating peptide(s) and inhibitor(s) of specific kinase(s) to be searched.

[NOTE: Claims 8-9, 11-15, 18 were excluded from the search, because they are drawn to a non-elected subject matter.]

* ************  ** See Supplemental Sheet to continue  

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 additional fees, 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.: 1-7, 10, 16-17, restricted to penetratin and an inhibitor of caspase-1

**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.
The inventions of Group I share the technical feature of a method of claim 1. However, this shared technical feature does not represent a contribution over prior art as being as being anticipated by U.S. 7,439,063 B2 to Dicicco et al. (hereinafter "Dicicco et al.).

The technical feature disclosed in Dicicco et al. relates to the prevention and treatment of a disease or condition, using intranasal administration of a composition comprising a mammalian or non-mammalian penetrating peptide. The technical feature of Dicicco et al. is limited to the specific compositions and methods described in the patent.

The technical feature of the invention of Group I includes the use of a mammalian or non-mammalian penetrating peptide for the prevention and treatment of a disease or condition. The technical feature of Group I is limited to the specific compositions and methods described in the invention.

Groups I and II lack unity under PCT Rule 13 because they do not share a same or corresponding special technical feature.