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(54) Title: CYCLODEXTRIN-BASED POLYMERS CONTAINING PHOTOCLEAVABLE LINKERS FOR DRUG DELIVERY

(57) Abstract: The present invention relates to novel-compositions of therapeutic-polymeric compounds designed as carriers for small molecule therapeutics delivery and pharmaceutical compositions thereof. The small molecule therapeutic is attached to the polymer by a photocleavable linker. The polymeric compounds may also employ targeting agents. By selecting from a variety of linker groups and targeting ligands the polymers present methods for controlled delivery of the therapeutic agents. On reaching a targeted site in the body of a patient, the linker can then be cleaved by the shining of ultraviolet, visible, or infrared wavelength light onto the site. The methods provide reduced toxicity and local delivery of therapeutics. The invention also relates to methods of treating subjects with the therapeutic compositions described herein. The invention further relates to methods for conducting a pharmaceutical business comprising manufacturing, licensing, or distributing kits containing or relating to the polymeric compounds described herein.

INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER
INV. A61K47/48 A61K41/00

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)
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, WPI Data, PAJ, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 94/09826 A (MEDIPRO SCIENCES LIMITED) 11 May 1994 (1994-05-11) abstract; claims 1-18, 27 and 28 (especially claim 12); page 5, lines 16-18; page 9, lines 31-33; page 17, lines 11-13	1-6, 14-40
Y	WO 2004/022099 A (INSERT THERAPEUTICS, INC; CHENG, JIANJUN; DAVIS, MARK, E; KHIN, KAY, T) 18 March 2004 (2004-03-18) page 15, lines 1-7; claims 1-21,27,34,35	1-6, 14-40
A	WO 02/03850 A (CERAMOPTEC INDUSTRIES, INC) 17 January 2002 (2002-01-17) abstract; claim 4; example 2	

☐ 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 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	Date of mailing of the international search report
12 July 2006	13. 10. 2006

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Fausti, Simone

Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2006/005448

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.:
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 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 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.:

1-6, 14-32 (partially), 33-38, 39-40 (partially)

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-6,14-32(partially),33-38,39-40(partially).

Linear or branched cyclodextrin-containing polymers having a plurality of bioactive moieties, or at least one therapeutic agent or prodrug, covalently attached thereto. The bioactive moieties or at least one among the therapeutic agent, a targeting ligand and the cyclodextrin moieties are/is attached through a photocleavable linkage. This group also includes the pharmaceutical compositions of the compounds of formula I and methods for their preparation. Claims 14-32, 39 and 40 are partially to be considered within this group in so far as they only refer to the compounds of formula I.

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2. claims: 7-10,14-32(partially),39-40(partially)

Compounds of formula II, methods for their preparation and pharmaceutical compositions thereof. Claims 14-32, 39 and 40 are partially to be considered within this group in so far as they only refer to the compounds of formula II.

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3. claims: 11-13,14-32(partially),39-40(partially)

Compounds of formula III, methods for their preparation and pharmaceutical compositions thereof. Claims 14-32, 39 and 40 are partially to be considered within this group in so far as they only refer to the compounds of formula III.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2006/005448

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WO 9409826 A	11-05-1994	AU 5414194 A	24-05-1994
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