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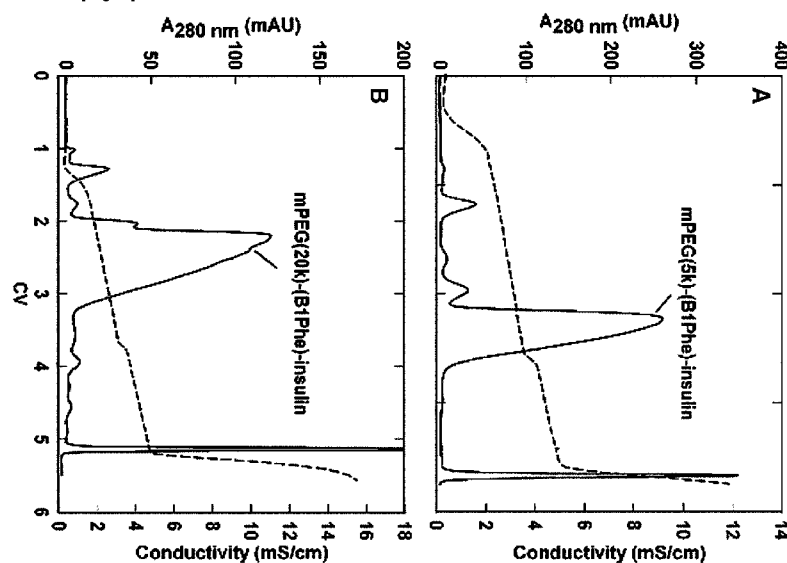
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[Continued on next page]

(54) Title: NON-PEPTIDYL POLYMER-INSULIN MULTIMER AND METHOD FOR PRODUCING THE SAME

[Fig. 1]



(57) Abstract: The present invention relates to a non-peptidyl polymer-insulin multimer comprising two or more of a non-peptidyl polymer-insulin conjugate prepared by linking a non-peptidyl polymer and insulin via a covalent bond, in which the conjugates are complexed with cobalt ion to form a multimer, a method and kit for the preparation of the multimer, a pharmaceutical composition for the prevention or treatment of diabetes comprising the multimer as an active ingredient, and a method for preventing or treating diabetes by administering the composition to a subject.



Published:

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28 March 2013

- *with international search report (Art. 21(3))*
- *with sequence listing part of description (Rule 5.2(a))*

A. CLASSIFICATION OF SUBJECT MATTER*A61K 47/48(2006.01)i, A61K 38/28(2006.01)i, A61K 47/30(2006.01)i, A61P 3/10(2006.01)i*

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: A61K 47; A61K 31; A61K 49

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)

eKOMPASS(KIPO internal), PUBMED

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	TAKASHI UCHIO et al. Site-specific insulin conjugates with enhanced stability and extended action profile. Advanced Drug Delivery Reviews. 1999. Vol. 35, pp 289-306 See whole document	1-17, 19-20
A	BORIS N. NOVIKOV et al. Improved pharmacokinetics and immunogenicity profile of organophosphorus hydrolase by chemical modification with polyethylene glycol. Journal of Controlled Release. 2010. Vol. 146, Issue 3, pp 318-325 See Results and discussion	1-17, 19-20
A	US 2009-0004118 A1 (NIE SHUMING et al.) 01 January 2009 See whole document	1-17, 19-20
A	WO 2009-098510 A2 (ULIVE ENTERPRISES LIMITED et al.) 13 August 2009 See whole document	1-17, 19-20



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 but published on or after the international filing date

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"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

26 DECEMBER 2012 (26.12.2012)

Date of mailing of the international search report

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Name and mailing address of the ISA/KR

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR2012/004368

Box No. I Nucleotide and/or amino acid sequence(s) (Continuation of item 1.c of the first sheet)

1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of :

a. a sequence listing filed or furnished

☐

on paper

☒

in electronic form

b. time of filing or furnishing

☒

contained in the international application as filed

☐

filed together with the international application in electronic form

☐

furnished subsequently to this Authority for the purposes of search

2. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

3. Additional comments:

INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR2012/004368**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.: 18
because they relate to subject matter not required to be searched by this Authority, namely:
Claim 18 pertains to methods for treatment or diagnostic of the human body by therapy, and thus relates to a subject matter which this International Searching Authority is not required, under Article 17(2)(a)(i) of the PCT and Rule 39.1(iv) of the Regulations under the PCT, to search.
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:

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 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.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/KR2012/004368

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2009-0004118 A1	01.01.2009	AU 2005-294214 A1 CA 2583389 A1 CN 101438252 A EP 1812864 A2 JP 2008-515915 A WO 2006-042146 A2	20.04.2006 20.04.2006 20.05.2009 01.08.2007 15.05.2008 20.04.2006
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