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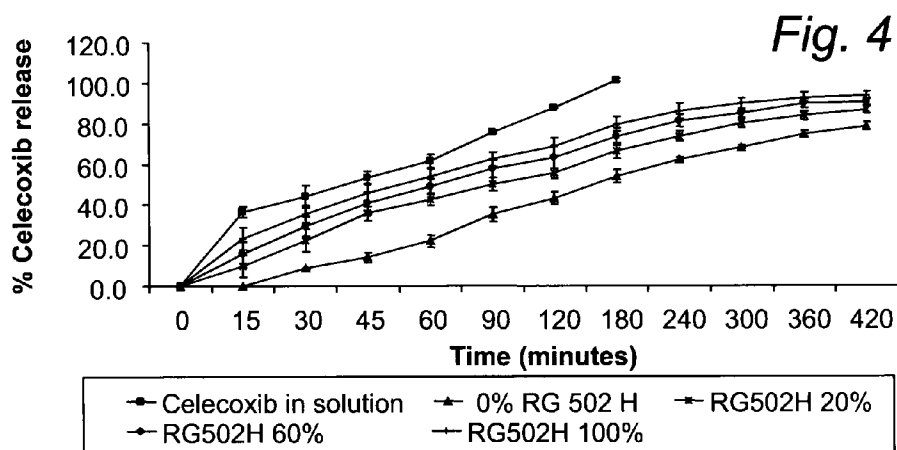
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(54) Title: NANOPARTICLE PHARMACEUTICAL CARRIER



(57) Abstract: A nanoparticle pharmaceutical carrier comprising a first polymer, or copolymer, having a plurality of terminal amino-carboxyl groups and a second polymer, or copolymer. Preferably, the second polymer or copolymer is branched or linear. Preferably, the second polymer or copolymer has a plurality of terminal alkyl groups.

INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2007/001741

A. CLASSIFICATION OF SUBJECT MATTER

INV. A61K47/48 A61K9/51 A61P43/00

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, BIOSIS, EMBASE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	KEEGAN M.E. ET AL: "Biodegradable Microspheres with Enhanced Capacity for Covalently Bound Surface Ligands" MACROMOLECULES, vol. 37, 2004, pages 9779-9784, XP002498493 abstract page 9780, section "Experimental Section" page 9780, column 2, last paragraph figures 2,3 page 9783, column 1, lines 27-32 page 9784, section "Conclusion" ----- -/--	1,2,6,7, 9,10,16

☒ 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

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INTERNATIONAL SEARCH REPORT

International application No

PCT/GB2007/001741

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	MO ET AL: "Paclitaxel-loaded PLGA nanoparticles: Potentiation of anticancer activity by surface conjugation with wheat germ agglutinin" JOURNAL OF CONTROLLED RELEASE, ELSEVIER, AMSTERDAM, NL, vol. 108, no. 2-3, 28 November 2005 (2005-11-28), pages 244-262, XP005163068 ISSN: 0168-3659 pages 246-247, section 2.2.2. "Preparation of paclitaxel formulations"	1,3-10, 16
X	MO ET AL: "Preparation and in vitro anticancer activity of wheat germ agglutinin (WGA)-conjugated PLGA nanoparticles loaded with paclitaxel and isopropyl myristate" JOURNAL OF CONTROLLED RELEASE, ELSEVIER, AMSTERDAM, NL, vol. 107, no. 1, 20 September 2005 (2005-09-20), pages 30-42, XP005064058 ISSN: 0168-3659 pages 32-33, section 2.3. "Preparation of nanoparticles"	1,3-10, 16
X	MCCARRON PAUL A ET AL: "Antibody conjugates and therapeutic strategies." MOLECULAR INTERVENTIONS DEC 2005, vol. 5, no. 6, December 2005 (2005-12), pages 368-380, XP002498492 ISSN: 1534-0384 pages 375-376, section "Immunocolloidal Conjugates" figures 2,3	1,5-7,9, 10,16
X	NOBS L ET AL: "Poly(lactic acid) nanoparticles labeled with biologically active Neutravidin(TM) for active targeting" EUROPEAN JOURNAL OF PHARMACEUTICS AND BIOPHARMACEUTICS, ELSEVIER SCIENCE PUBLISHERS B.V., AMSTERDAM, NL, vol. 58, no. 3, 1 November 2004 (2004-11-01), pages 483-490, XP004586428 ISSN: 0939-6411 abstract pages 483-484, section "Introduction" figures 1,2 pages 484-485, section "Materials and methods"	1,4,6,7, 9,10,16

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INTERNATIONAL SEARCH REPORT

International application No

PCT/GB2007/001741

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2006/041613 A (NANOMEGA MEDICAL CORP [US]) 20 April 2006 (2006-04-20) paragraph [0030] examples 4,5,8	1,6-10; 16
A	TRACY M A ET AL: "Factors affecting the degradation rate of poly(lactide-co-glycolide) microspheres in vivo and in vitro" BIOMATERIALS 199906 GB, vol. 20, no. 11, June 1999 (1999-06), pages 1057-1062, XP002498494 ISSN: 0142-9612 the whole document	2

INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB2007/001741

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:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International search report covers allsearchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an 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 reportcovers 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.:

see annex

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.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

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

1. claims: 1-10,16

A nanoparticle pharmaceutical carrier comprising a first polymer or copolymer, having a plurality of terminal amino-carboxyl groups, and a second polymer or copolymer; A nanopharmaceutical composition comprising a nanoparticle pharmaceutical carrier as defined above and a pay-load and a bioactive agent; The use of said nanoparticle pharmaceutical composition for the preparation of a medicament for the treatment of a disease; A method for altering the rate release of the pay-load from a nanoparticle pharmaceutical composition as defined above wherein the ratio of the first polymer or copolymer and the second polymer or copolymer is altered.

2. claims: 11-15

A method of preparing a nanoparticle pharmaceutical carrier comprising the steps a) and b) as defined in claim 11; A succinimide ester of a polymer or copolymer, preferably PLGA.

INTERNATIONAL SEARCH REPORT

International application No

PCT/GB2007/001741

Patent document
cited in search report

Publication
date

Patent family
member(s)

Publication
date

WO 2006041613 A 20-04-2006 US 7348030 B1 25-03-2008