

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
1 September 2005 (01.09.2005)

PCT

(10) International Publication Number
WO 2005/079755 A3

(51) International Patent Classification: **A61K 9/00**, 9/14, 9/16, 39/395, A61P 11/06

(21) International Application Number:
PCT/US2005/004750

(22) International Filing Date:
14 February 2005 (14.02.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/544,528 12 February 2004 (12.02.2004) US

(71) Applicant (for all designated States except US): **NEKTAR THERAPEUTICS** [US/US]; 150 Industrial Road, San Carlos, CA 94070 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **GONG, David, K.** [US/US]; 175 Calvert Drive, #A102, Cupertino, CA 95014 (US). **HASTEDT, Jayne, E.** [US/US]; 777 Knoll Drive, San Carlos, CA 94070 (US). **PATTON, John, S.** [US/US]; 1433 Webster Street, Palo Alto, CA 94301 (US).

(74) Agents: **HELMER, Steven, J.** et al.; Nektar Therapeutics, 150 Industrial Road, San Carlos, CA 94070 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

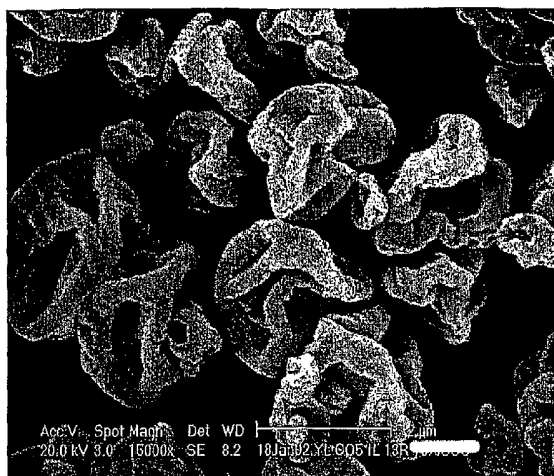
Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:
6 April 2006

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: INTERLEUKIN-13 ANTAGONIST POWDERS, SPRAY-DRIED PARTICLES, AND METHODS



(57) Abstract: A powder includes IL-13 antagonist, wherein the powder has a mass median aerodynamic diameter (MMAD) of less than about 10 μm . A composition includes a spray-dried particle including IL-13 antagonist. A method of administering IL-13 antagonist to the lungs of a subject includes: dispersing a dry powder composition involving IL-13 antagonist to form an aerosol; and delivering the aerosol to the lungs of the subject by inhalation of the aerosol by the subject, thereby ensuring delivery of the IL-13 antagonist to the lungs of the subject. A method of treating an IL-13-related condition includes: pulmonarily administering a therapeutically effective amount of a dry powder including IL-13 antagonist. A method of preparing IL-13 antagonist-containing powder involves: combining IL-13 antagonist, optional excipient, and solvent to form a mixture or solution; and spray drying the mixture or solution to obtain the powder.

WO 2005/079755 A3

INTERNATIONAL SEARCH REPORT

International Application No
PCT, 2005/004750

A. CLASSIFICATION OF SUBJECT MATTER
A61K9/00 A61K9/14 A61K9/16 A61K39/395 A61P11/06

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 A61P

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, EMBASE, BIOSIS

C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 03/086451 A (CENTOCOR, INC) 23 October 2003 (2003-10-23) page 6, lines 13-18 page 39, line 19 page 46, lines 19-27 page 47, line 30 - page 49, line 16 example 2	1-62
X	WO 03/047632 A (THE GOVERNMENT OF THE UNITED STATES, AS REPRESENTED BY THE SECRETARY O) 12 June 2003 (2003-06-12) paragraphs '0008!, '0017! claims 17,46	1-62
X	WO 00/64944 A (GENETICS INSTITUTE, INC) 2 November 2000 (2000-11-02) page 6, line 1 - line 8 page 20, line 9 - line 14	1-62
-/--		

Further documents are listed in the continuation of box C.

Patent family members are listed in 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

9 February 2006

Date of mailing of the international search report

23/02/2006

Name and mailing address of the ISA
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

Authorized officer

Büttner, U

INTERNATIONAL SEARCH REPORT

International Application No
PCT/2005/004750

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6 514 496 B1 (PLATZ ROBERT M ET AL) 4 February 2003 (2003-02-04) column 7, line 28 - line 36 -----	1-62
A	TANG L ET AL: "SOLUBLE CANINE IL-13 RECEPTOR ALPHA2-FC FUSION PROTEIN INHIBITS CANINE ALLERGEN-SPECIFIC-IGE PRODUCTION STIMULATED BY IL-13 IN VITRO" JOURNAL OF ALLERGY AND CLINICAL IMMUNOLOGY, MOSBY - YEARLY BOOK, INC, US, vol. 107, no. 2, February 2001 (2001-02), page S91, XP001030691 ISSN: 0091-6749 the whole document -----	1-62
E	WO 2005/062967 A (TANOX, INC; FUNG, SEK, CHUNG; MOYLE, MATTHEW; LU, MASON; YAN, CHANGNIN) 14 July 2005 (2005-07-14) paragraph '0147! -----	1-62

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2005/004750

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:

Although claims 47-62 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.
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:

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.

INTERNATIONAL SEARCH REPORT

 International Application No
 PCT/JP2005/004750

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
WO 03086451	A	23-10-2003	AU	2003223497 A1	27-10-2003
WO 03047632	A	12-06-2003	AU	2002258011 A1	17-06-2003
			CA	2469082 A1	12-06-2003
			EP	1455833 A1	15-09-2004
WO 0064944	A	02-11-2000	AU	780991 B2	28-04-2005
			AU	4680500 A	10-11-2000
			BR	0010061 A	25-02-2003
			CA	2370306 A1	02-11-2000
			CN	1348465 A	08-05-2002
			EP	1173484 A1	23-01-2002
			HU	0200862 A2	29-07-2002
			JP	2003527311 T	16-09-2003
			MX	PA01011023 A	06-05-2002
			NZ	515464 A	27-02-2004
US 6514496	B1	04-02-2003	NONE		
WO 2005062967	A	14-07-2005	WO	2005062972 A2	14-07-2005