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(71) Applicant (for all designated States except US):
SCINOPHARM TAIWAN LTD.; 1, Nan-Ke 8th Road,
Tainan Science-Based Industrial Park, Tainan County, 741
(TW).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **CHAN, Wai, Hong**
[US/US]; 708 Vista Del Sol, San Mateo, CA 94404 (US).
DING, Jin, Guo [CN/CN]; 811 Dong Chuan Road,
Building 86 Room 102, Minhang Shanghai, 200240 (CN).
XIE, Mei, Hua [CN/CN]; 3566 Du Shi Road, Building
330, Minhang, Shanghai, 200108 (CN). **HSIAO, Tsung,**
Yu; #36 Lane 160, Chung-Cheung Road Nei-Mong Shang,
Kaohsiung County (TW).

(74) Agent: **CHENG, Kent, H.**; Cohen Pontani Lieberman &
Pavane LLP, 551 Fifth Avenue, New York, NY 10176 (US).

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(54) Title: PROCESS FOR THE PREPARATION OF A POLYPEPTIDE

(57) Abstract: A process for the preparation of a polypeptide made from amino acids L-alanine, L-glutamic acid, L-lysine, and L-tyrosine comprising using N-thiocarboxyanhydride of at least one amino acid as a starting material.



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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2008/009233

A. CLASSIFICATION OF SUBJECT MATTER <i>C07K 1/02(2006.01)i, A61K 38/16(2006.01)i</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 C07K1/02, C07K1/00, C07D 263/00 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) eKIPASS, NCBI PubMed database, google, google scholar "polymerization", "N-thiocarboxyanhydride", "N-carboxyanhydride", "protection"				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
X	US 4,946,942 A (FULLER W. et al.) 07 August 1990 See the abstract and pages 3-7.	1-14		
X	US 2006-0172942 A1 (DOLITZKY B. et al.) 03 August 2006 See the abstract and claims.	10-14		
X	US 7,049,399 B2 (BEJAN E. et al.) 23 May 2006 See the abstract.	10-14		
A	US 6,686,446 B2 (DEMING T. et al.) 03 February 2004 See the abstract and claims.	1-14		
☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.				
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top; border: none;"> * 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 "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of 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 </td> <td style="width: 50%; vertical-align: top; border: none;"> "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 </td> </tr> </table>			* 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 "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of 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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Name and mailing address of the ISA/KR  Korean Intellectual Property Office Government Complex-Daejeon, 139 Seonsa-ro, Seo-gu, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140		Authorized officer Sohn, Younghee Telephone No. 82-42-481-5975 		

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2008/009233**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.: 15
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:

Claims 15 do not meet the requirements of PCT Article 6 in that the matter for which protection is sought is not clearly defined. The subject matter of claim 15 describes the protection L-lysine using N-thiocarboxyanhydride as shown in formular 2. But formular 2 denotes N-carboxyanhydride.
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/US2008/009233

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4946942 A	07.08.1990	AU 4188789 A	05.10.1989
		AU 616054 B2	17.10.1991
		CA 1321280 C	10.08.1993
		CN 1022412 C	13.10.1993
		CN 1040793 A	28.03.1990
		CN 1040793	28.03.1990
		CZ 8901489 A3	12.11.1997
		DD 280322 A5	04.07.1990
		DE 68916722 D1	18.08.1994
		DE 68916722 T2	03.11.1994
		DK 564489 A	10.11.1989
		EP 0357750 B1	13.07.1994
		EP 0357750 A1	14.03.1990
		EP 0357750 A4	30.01.1991
		EP 0357750 B1	13.07.1994
		FI 102379 B1	30.11.1998
		FI 895382 D0	10.11.1989
		HK 1007744 A1	23.04.1999
		HU 205091 B	30.03.1992
		HU 52488 A2	28.07.1990
		HU 891841 D0	28.04.1990
		IE 65149 B1	04.10.1995
		IE 890778 L	11.09.1989
		IL 89541 D0	10.09.1989
		JP 02-503923	15.11.1990
		KR 9702229 B1	26.02.1997
		NO 306304 B1	18.10.1999
		NO 894503 A	10.11.1989
		NO 894503 D0	10.11.1989
		NZ 228282 A	26.10.1990
		PT 89961 A	10.11.1989
		PT 89961 B	29.04.1994
		RU 2007396 C1	15.02.1994
		US 5028693	02.07.1991
		US 4946942 A	07.08.1990
		WO 89-08643 A1	21.09.1989
US 2006-0172942 A1	03.08.2006	US 2006-172942 A1	03.08.2006

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2008/009233

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 7049399 B2	23.05.2006	AU 2003-283152 A8	03.06.2004
		EP 1565486 A2	24.08.2005
		US 2004-0091956 A1	13.05.2004
		US 2004-091956 A1	13.05.2004
		US 7049399 B2	23.05.2006
		WO 2004-043995 A2	27.05.2004
		WO 2004-043995 A3	07.10.2004
US 6686446 B2	03.02.2004	US 6632922	14.10.2003
		US 6680365	20.01.2004
		US 7329727	12.02.2008
		US 2002-0032309 A1	14.03.2002
		US 2002-032309 A1	14.03.2002
		US 6632922 B1	14.10.2003
		US 6680365 B1	20.01.2004
		US 6686446 B2	03.02.2004