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(54) Title: CHOLESTEROL-INTERACTING LAYERED PHYLLOSILICATES AND METHODS OF REDUCING HYPERCHOLESTEREMIA IN A MAMMAL

(57) Abstract: Layered phyllosilicates are useful for adsorbing and/or binding to cholesterol and, thereby, reducing blood cholesterol in a patient. Accordingly, provided herein is a method of reducing hypercholesteremia in a mammal comprising administering to said mammal a protonated and at least partially exfoliated layered phyllosilicate material alone and in combination with other cholesterol-reducing agents in an amount effective to reduce hypercholesteremia in said mammal.



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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER					
INV.	A61K31/19	A61K31/27	A61K31/35	A61K31/405	A61K31/435
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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, CHEM ABS Data, 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 Y	KR 2003 0076536 A (SEOBONG BIO BESTECH CO LTD [KR]) 26 September 2003 (2003-09-26) abstract	1,2,5-7 1,2, 4-28, 30-46, 48-68
X Y	----- JP 62 223108 A (DAITO KASEI KOGYO CO LTD) 1 October 1987 (1987-10-01) abstract ----- -/--	1,2,5-7 1,2, 4-28, 30-46, 48-68

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	*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
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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)	*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.
O document referring to an oral disclosure, use, exhibition or other means	*&* document member of the same patent family
P document published prior to the international filing date but later than the priority date claimed	

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PCT/US2008/064351

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 096 278 A (QUEUILLE ANDRE) 20 June 1978 (1978-06-20)	1,2,5-8
Y	the whole document.	1,2, 4-28, 30-46, 48-68
X	----- US 6 287 576 B1 (BGATOV VASILY IVANOVICH [RU] ET AL) 11 September 2001 (2001-09-11)	1,2,5-7, 9,10,17, 25,27, 28, 31-33, 35,36, 38,45, 46,49, 50,52, 59,67
Y	column 1, line 44 - column 2, line 33 column 3, line 7 - line 28 column 4, lines 36-55 examples 1,4 claims 1,2,4,5	1,2, 4-28, 30-46, 48-68
X	----- EP 0 985 411 A (MCNEIL PPC INC [US]) 15 March 2000 (2000-03-15)	1,6,7,9, 10,17, 22,25, 27,32, 33,36, 38,43, 45,50, 52,59, 64,67
X	paragraph [0027] claims 1-3,7	
X	----- WO 2007/038596 A (WYETH CORP [US]; BUBNIS WILLIAM [US]; POXON SCOTT W [US]; SUTTON BRUCE) 5 April 2007 (2007-04-05)	1,6,7,9, 10,17, 22,25, 27,32, 33,36, 38,43, 45,50, 52,59, 64,67
	paragraph [0044] example 4 claim 23	
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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2008/064351

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 0 778 027 A (WACHTER HELMUT UNIV PROF DR [AT]) 11 June 1997 (1997-06-11) claim 1 column 1, lines 8-37 -----	1
Y	PELUSO M.R., SCHNEEMAN B.O.: "A food-grade silicon dioxide is hypocholesterolemic in the diet of cholesterol-fed rats" JOURNAL OF NUTRITION, vol. 124, no. 6, 1994, pages 853-860, XP008100836 abstract page 856, left-hand column, paragraph 1 table 4 page 860, left-hand column, paragraph 1 -----	1
Y	US 4 180 566 A (ABDO KAMAL M [US] ET AL) 25 December 1979 (1979-12-25) claims 8-11 -----	1
Y	NAJDA J ET AL: "THE EFFECT OF SILICON (SI) ON LIPID PARAMETERS IN BLOOD SERUM AND ARTERIAL WALL" BIOLOGICAL TRACE ELEMENT RESEARCH, HUMANA PRESS, CLIFTON, NJ, US, vol. 31, no. 3, 1 December 1991 (1991-12-01), pages 235-247, XP002052946 ISSN: 0163-4984 abstract figures 3,7 -----	1
Y	EP 0 291 960 A (YAKURIGAKU CHUO KENKYUSHO [JP]) 23 November 1988 (1988-11-23) claims 1,2 page 8, lines 26-37 -----	1
Y	US 6 050 509 A (CLAREY MARK [US] ET AL) 18 April 2000 (2000-04-18) cited in the application the whole document -----	1,2, 4-28, 30-46, 48-68

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2008/064351

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
KR 20030076536	A	26-09-2003	NONE
JP 62223108	A	01-10-1987	NONE
US 4096278	A	20-06-1978	AU 513829 B2 08-01-1981 AU 2661577 A 04-01-1979 BE 856319 A1 30-12-1977 CA 1103154 A1 16-06-1981 DE 2729824 A1 05-01-1978 FR 2356425 A1 27-01-1978 GB 1564458 A 10-04-1980 JP 53006410 A 20-01-1978 NL 7707263 A 03-01-1978 ZA 7703747 A 26-07-1978
US 6287576	B1	11-09-2001	CH 692903 A5 13-12-2002 FR 2771009 A1 21-05-1999 JP 11199497 A 27-07-1999 RU 2125460 C1 27-01-1999
EP 0985411	A	15-03-2000	AT 282405 T 15-12-2004 AU 764513 B2 21-08-2003 AU 4585299 A 16-03-2000 BR 9903992 A 19-09-2000 CA 2281251 A1 02-03-2000 DE 69921919 D1 23-12-2004 DE 69921919 T2 24-11-2005 DK 985411 T3 14-03-2005 JP 2000103737 A 11-04-2000 NO 994233 A 03-03-2000 NZ 337574 A 24-11-2000 PT 985411 T 28-02-2005 US 2001009677 A1 26-07-2001
WO 2007038596	A	05-04-2007	NONE
EP 0778027	A	11-06-1997	NONE
US 4180566	A	25-12-1979	AU 4697979 A 22-11-1979 BE 876242 A1 03-09-1979 CA 1121267 A1 06-04-1982 DE 2919291 A1 22-11-1979 FR 2435249 A1 04-04-1980 GB 2020551 A 21-11-1979 IT 1113367 B 20-01-1986 JP 55004367 A 12-01-1980
EP 0291960	A	23-11-1988	CA 1335624 C 23-05-1995 DE 3852843 D1 09-03-1995 DE 3852843 T2 08-06-1995 JP 1052724 A 28-02-1989 JP 1719209 C 14-12-1992 JP 4005650 B 03-02-1992 US 4978536 A 18-12-1990
US 6050509	A	18-04-2000	NONE