

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
27 April 2006 (27.04.2006)

PCT

(10) International Publication Number  
**WO 2006/043966 A3**

(51) International Patent Classification:

A61P 3/04 (2006.01) A23L 1/29 (2006.01)  
A61K 31/047 (2006.01) A61K 33/06 (2006.01)

(21) International Application Number:

PCT/US2005/010710

(22) International Filing Date: 29 March 2005 (29.03.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

60/618,595 15 October 2004 (15.10.2004) US

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(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).

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))
- of inventorship (Rule 4.17(iv))

Published:

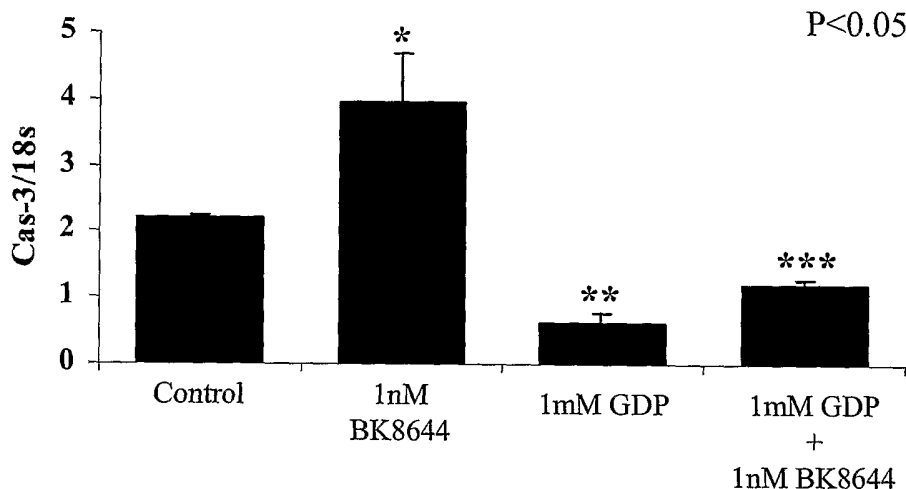
- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:

20 July 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: METHODS FOR INDUCING APOPTOSIS IN ADIPOCYTES



(57) Abstract: The subject invention provides for materials and methods of using dietary calcium, calcium-containing products, dairy and antagonists of calcitrophic hormone activity for inducing apoptosis in adipocytes in order to reduce the number of adipocytes in an individual regulating body weight.

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# INTERNATIONAL SEARCH REPORT

International Application No

PCT/US2005/010710

## A. CLASSIFICATION OF SUBJECT MATTER

INV. A61P3/04 A61K31/047 A23L1/29 A61K33/06

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

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, MEDLINE, EMBASE, BIOSIS, CHEM ABS Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,P	ZEMEL M B: "Role of whey and whey components in regulating adipose tissue and skeletal muscle metabolism." ASIA PACIFIC JOURNAL OF CLINICAL NUTRITION. 2005, vol. 14 Suppl, 2005, page S15, XP008059700 ISSN: 0964-7058 the whole document ----- -/--	1,2,6,7, 10-12, 14,17, 24-37, 49-63, 66-112

☒ 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

6 June 2006

Date of mailing of the International search report

- 7. 06. 2006

Name and mailing address of the ISA

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# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US2005/010710

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	MORRIS KRISTIN L ET AL: "Role of stanniocalcin-1 in calcitriol and cortisol-mediated inhibition of adipocyte apoptosis" FASEB JOURNAL, vol. 19, no. 4, Suppl. S, Part 1, March 2005 (2005-03), pages A417-A418, XP008059728 & EXPERIMENTAL BIOLOGY 2005 MEETING/35TH INTERNATIONAL CONGRESS OF PHYSIOLOGICAL SCIENCES; SAN DIEGO, CA, USA; MARCH 31 -APRIL 06, 2005 ISSN: 0892-6638 the whole document	1,2,6,7, 10-12, 14,17, 24-37, 49-63, 66-112
P,A	CIFUENTES MARIANA ET AL: "Calcium-sensing receptor expression in human adipocytes" ENDOCRINOLOGY, vol. 146, no. 5, May 2005 (2005-05), pages 2176-2179, XP008059727 ISSN: 0013-7227	
X	SUN X ET AL: "Role of uncoupling protein 2 (UCP2) expression and 1[alpha], 25-dihydroxyvitamin D3 in modulating adipocyte apoptosis" FASEB JOURNAL 2004 UNITED STATES, vol. 18, no. 12, September 2004 (2004-09), pages 1430-1432, XP008059702 ISSN: 0892-6638 page 1430, column 1, paragraph 2 - column 2, paragraph 3 page 1432, column 1 - column 2	1,2,6,7, 10-12, 14,17, 24-37, 49-63, 66-112
X	ZEMEL M B: "REGULATION OF ADIPOSITY AND OBESITY RISK BY DIETARY CALCIUM: MECHANISMS AND IMPLICATIONS" JOURNAL OF THE AMERICAN COLLEGE OF NUTRITION, AMERICAN COLLEGE OF NUTRITION, WILMINGTON, NC, US, vol. 21, no. 2, April 2002 (2002-04), pages 146S-151S, XP009011413 ISSN: 0731-5724 page 147S, column 2, paragraph 2 - paragraph 3	1,2,6,7, 10-12, 14,17, 24-37, 49-63, 66-112
X	US 2002/132014 A1 (ZEMEL MICHAEL B ET AL) 19 September 2002 (2002-09-19)  claims 1-6	1,2,6,7, 10-12, 14,17, 24-37, 49-63, 66-112

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# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US2005/010710

## 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 2004/101575 A1 (HINZ MARTIN C) 27 May 2004 (2004-05-27)  claims 1,8  -----	1,2,6,7, 10-12, 14,17, 24-37, 49-63, 66-112
X	US 2003/165574 A1 (WARD LOREN SPENCER ET AL) 4 September 2003 (2003-09-04)  page 2, paragraph 16 claim 1  -----	1,2,6,7, 10-12, 14,17, 24-37, 49-63, 66-112
X	WO 02/096393 A (POTCHEFSTROOM UNIVERSITY FOR CHRISTIAN HIGHER EDUCATION; VORSTER, HEST) 5 December 2002 (2002-12-05)  claim 1  -----	1,2,6,7, 10-12, 14,17, 24-37, 49-63, 66-112
X	US 2004/202727 A1 (TAI PAUL LING) 14 October 2004 (2004-10-14)  abstract claim 1  -----	1,2,6,7, 10-12, 14,17, 24-37, 49-63, 66-112

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2005/010710

## 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.: 13, 15-16, 18-23, 38-48  
because they relate to subject matter not required to be searched by this Authority, namely:  
Although claims 1, 2, 6, 7, 10-12, 14, 17, 24, 49-63, 66-112 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:

see additional sheet

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.:  
1, 2, 6, 7, 10-12, 14, 17, 24, 49-58, 66-112 (partially); 25-37, 59-63

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.  
☐ 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: 1,2,6,7,10-12,14,17,24,49-58,66-112 (partially);  
25-37,59-63

Use of a calcium containing product for reducing weight, treating obesity via reduction of adipocytes in an individual and compositions thereof.

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2. claims: 1,2,6,7,10-12,14,17,24,49-58,66-112 (partially); 64,65

Use of a calcium containing product for treating obesity related disorders via reduction of adipocytes in an individual.

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3. claims: 2,3,6,8,9 (partially).

Use for reducing weight, treating obesity and treating obesity related disorders via reduction of adipocytes in an individual of an antagonist of calcitrophic hormone 1,25 di OH vitamin D activity, in particular an antibody that binds to 1,25 (OH)<sub>2</sub> vitamin D receptor.

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4. claims: 2,3,6,8,9 (partially)

Use for reducing weight, treating obesity and treating obesity related disorders via reduction of adipocytes in an individual of an antagonist of calcitrophic hormone 1,25 di OH vitamin D activity, in particular a chemical compound that binds to 1,25 (OH)<sub>2</sub> vitamin D receptor.

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5. claims: 8,9 (partially); 4,5

Use for reducing weight, treating obesity and treating obesity related disorders via reduction of adipocytes in an individual of 1,25 (OH)<sub>2</sub> vitamin D or an analog, homolog, isomer of 1,25 (OH)<sub>2</sub> vitamin D.

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6. claims: 6,8,9 (partially)

Use for reducing weight, treating obesity and treating obesity related disorders via reduction of adipocytes in an individual of one or more soluble 1,25 (OH)<sub>2</sub> vitamin D receptors.

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7. claims: 6,8,9 (partially)

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Use for reducing weight, treating obesity and treating obesity related disorders via reduction of adipocytes in an individual of 1,25 (OH)<sub>2</sub> vitamin D neutralizing antibodies.

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8. claims: 6,9 (partially)

Use for reducing weight, treating obesity and treating obesity related disorders via reduction of adipocytes in an individual, of fusion proteins comprising the 1,25 (OH)<sub>2</sub> vitamin D receptor.

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US2005/010710

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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