

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
18 September 2008 (18.09.2008)

PCT

(10) International Publication Number  
**WO 2008/112715 A3**

(51) International Patent Classification:  
**A61K 31/00 (2006.01)**

[US/US]; 130 Descanso Dr., #158, San Jose, CA 95134 (US).

(21) International Application Number:  
PCT/US2008/056569

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(22) International Filing Date: 12 March 2008 (12.03.2008)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/894,368 12 March 2007 (12.03.2007) US

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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW

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(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,

[Continued on next page]

(54) Title: NOVEL AGENTS OF CALCIUM ION CHANNEL MODULATORS

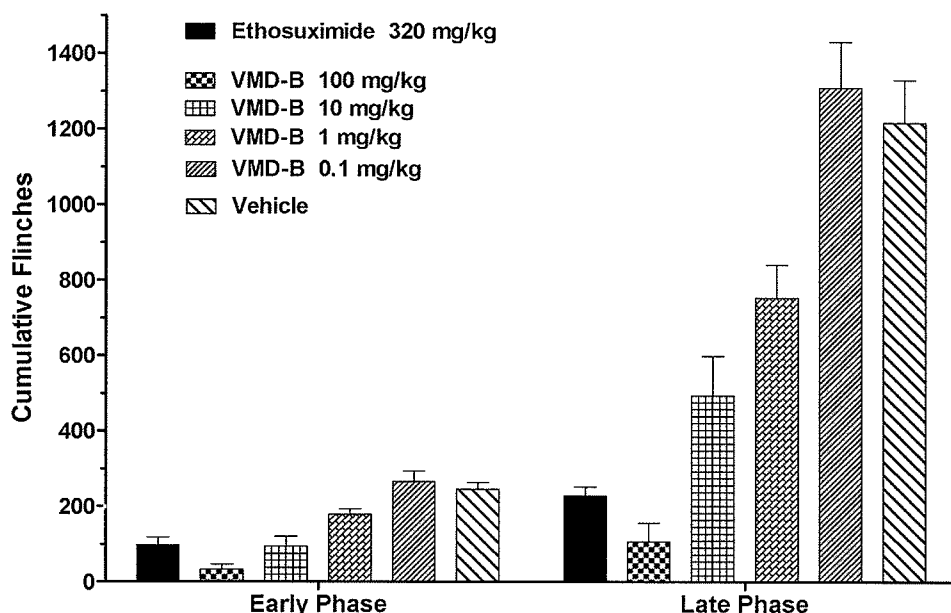


Figure 2.

(57) Abstract: The present invention includes a group of chemical compounds useful as modulators of calcium ion (Ca<sup>2+</sup>) channels, especially for T-type, N-Type and L-type channels. The present invention also includes pharmaceutical compositions comprising these calcium ion channel modulating agents and methods of using these calcium ion channel modulating agents for the treatment diseases and conditions associated with the calcium ion channels.

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FR, GB, GR, **HR**, HU, IE, **IS**, **IT**, LT, LU, LV, MC, MT, NL,  
NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, **BJ**, CF, CG,  
CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(88) Date of publication of the international search report:  
20 November 2008

**Published:**

— *with international search report*

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 08/56569

<b>A CLASSIFICATION OF SUBJECT MATTER</b> <b>IPC(8) - A61 K 31/00 (2008.04)</b> <b>USPC - 514/186</b> According to International Patent Classification (IPC) or to both national classification and IPC														
<b>B. FIELDS SEARCHED</b> Minimum documentation searched (classification system followed by classification symbols) USPC: 514/186 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Google Patent, Google Scholar Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) Electronic Databases Searched: USPTO WEST (PGPUB, EPAB, JPAB, USPT), Google Patent, Google Scholar. Search Terms Used: disorder or disease, voltage, neuropathy or psychosis or hypertension or angina, bicyclohexyl, therapS or agent, salt or ester or solvate														
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b> <table border="1"> <thead> <tr> <th>Category*</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td><b>X</b></td> <td>US 6,268,507 B1 (Massey et al.) 31 July 2001 (31.07.2001); entire document especially col 8, ln 50 to Col 11, ln 45</td> <td>1-37 ----- 38-42, 69-71</td> </tr> <tr> <td><b>Y</b></td> <td>US 2006/0003985 A1 (Renger et al.) 05 January 2006 (05.01.2006); especially para [0014]; [0033]; [0046]</td> <td>38-42, 69-71</td> </tr> <tr> <td><b>A</b></td> <td>US 6,160,009 A (Massey et al.) 12 December 2000 (12.12.2000); entire document</td> <td>1-37</td> </tr> </tbody> </table>			Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	<b>X</b>	US 6,268,507 B1 (Massey et al.) 31 July 2001 (31.07.2001); entire document especially col 8, ln 50 to Col 11, ln 45	1-37 ----- 38-42, 69-71	<b>Y</b>	US 2006/0003985 A1 (Renger et al.) 05 January 2006 (05.01.2006); especially para [0014]; [0033]; [0046]	38-42, 69-71	<b>A</b>	US 6,160,009 A (Massey et al.) 12 December 2000 (12.12.2000); entire document	1-37
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<b>D</b> Further documents are listed in the continuation of Box C. <input type="checkbox"/>														
<table border="0"> <tr> <td>           * 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 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         </td> <td>           "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the: <del>Principle</del> <del>Or</del> <del>the</del> <del>invention</del>            "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            "Sc" 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 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: <del>Principle</del> <del>Or</del> <del>the</del> <del>invention</del> "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 "Sc" document member of the same patent family										
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Date of the actual completion of the international search 25 August 2008 (25.08.2008)		Date of mailing of the international search report <b>02 SEP 2008</b>												
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201		Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP 571-272-7774												

## INTERNATIONAL SEARCH REPORT

International application No

PCT/US 08/56569

**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 ☐ I 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 **D** 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

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid

Group I claims 1-42, 69-71 directed to a compound having a structural Formula (I)  
 Group II claims 43-59, 72-74 directed to compound having structural Formulas (IIj)(III) and (IV)  
 Group III claims 60-64, 75, 76 directed to a method of treating a disease by administering a compound having the structural formula (XII)  
 Group IV claims 65-68, 77, and 78 directed to a method of treating a condition comprising administering one of the compounds Zafirlukast, Bromocriptine, or Probucof

The inventions listed as Groups I-IV do not relate to a single general inventive concept under PCT Rule 13.1 because under PCT Rule 13.2 they lack the same or corresponding technical features for the following reasons

-----See Supplemental Sheet on Page 8-----

- 1 ☐ I As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims
  
- 2 ☐ I As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees
  
- 3 ☐ I 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 claims 1-42 and 69-71

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**

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Continuation of Lack of Unity

Groups II - IV do not include the structure of Group I

Groups I, III, and IV do not include the structure of Group II

Groups I, II, and IV do not include the structure of Group III

Groups I-III do not include one of the compounds Zafirlukast, Bromocriptine, or Probucol

None of these technical features are common to the other groups, nor do they correspond to a special technical feature in the other groups. Therefore, unity of invention is lacking.