

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
29 April 2010 (29.04.2010)

(10) International Publication Number
WO 2010/046857 A1

PCT

(51) International Patent Classification:

C07D 235/14 (2006.01) **A61P 9/00** (2006.01)
A61K 31/4184 (2006.01)

[DE/CH]; c/o Actelion Pharmaceuticals Ltd, Gewerbestrasse 16, CH-4123 Allschwil (CH). **VON RAUMER, Markus** [CH/CH]; c/o Actelion Pharmaceuticals Ltd, Gewerbestrasse 16, CH-4123 Allschwil (CH).

(21) International Application Number:

PCT/IB2009/054637

(74) Agent: **GSCHWEND, Thomas**; c/o Actelion Pharmaceuticals Ltd., Legal Department, Gewerbestrasse 16, CH-4123 Allschwil (CH).

(22) International Filing Date:

21 October 2009 (21.10.2009)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

PCT/IB2008/054351

22 October 2008 (22.10.2008)

IB

(71) Applicant (for all designated States except US): **ACTELION PHARMACEUTICALS LTD** [CH/CH]; Gewerbestrasse 16, CH-4123 Allschwil (CH).

(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, CL, 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, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(72) Inventors; and

(75) Inventors/Applicants (for US only): **ABELE, Stefan** [DE/CH]; c/o Actelion Pharmaceuticals Ltd, Gewerbestrasse 16, CH-4123 Allschwil (CH). **COMBES, Stéphanie** [FR/CH]; c/o Actelion Pharmaceuticals Ltd, Gewerbestrasse 16, CH-4123 Allschwil (CH). **FUNEL, Jacques-Alexis** [FR/CH]; c/o Actelion Pharmaceuticals Ltd, Gewerbestrasse 16, CH-4123 Allschwil (CH). **HILPERT, Kurt** [CH/CH]; c/o Actelion Pharmaceuticals Ltd, Gewerbestrasse 16, CH-4123 Allschwil (CH). **HUBLER, Francis** [FR/CH]; c/o Actelion Pharmaceuticals Ltd, Gewerbestrasse 16, CH-4123 Allschwil (CH). **REICHENBAECHER, Katharina** [DE/CH]; Lachenweg 9, CH-4125 Riehen (CH). **RENNEBERG, Dorte**

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

Published:

— with international search report (Art. 21(3))

(54) Title: SALTS OF ISOBUTYRIC ACID (1 R*, 2R*, 4R*) -2- (2-{ [3- (4, 7-DIMETHOXY-1 H-BENZOIMIDAZOL-2-YL) -PROPYL] -METHYL-AMINO } -ETHYL) -5-PHENYL-BICYCLO [2.2.2] OCT-5- EN- 2 -YL

(57) Abstract: The invention relates to crystalline salts of isobutyric acid (1R*,2R*,4R*)-2-(2-{[3-(4,7-dimethoxy-1H-benzoimidazol-2-yl)-propyl]-methyl-amino}-ethyl)-5-phenyl-bicyclo[2.2.2]oct-5-en-2-yl ester, processes for the preparation thereof, pharmaceutical compositions containing said crystalline salts, and their use as medicaments, especially as calcium channel blockers.



WO 2010/046857 A1