

REVISED VERSION

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
10 February 2005 (10.02.2005)

PCT

(10) International Publication Number  
**WO 2005/012233 A1**

(51) International Patent Classification<sup>7</sup>: **C07C 243/12**,  
53/00, A61K 31/205

MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,  
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,  
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,  
ZW.

(21) International Application Number:  
PCT/LV2004/000005

(22) International Filing Date: 15 July 2004 (15.07.2004)

(25) Filing Language: English

(26) Publication Language: English

(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, IT, 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).

(30) Priority Data:  
P-03-88 4 August 2003 (04.08.2003) LV  
P-03-87 4 August 2003 (04.08.2003) LV

**Declaration under Rule 4.17:**

— of inventorship (Rule 4.17(iv)) for US only

(71) Applicant (for all designated States except US):  
"GRINDEKS" PUBLIC JOINT STOCK COM-  
PANY [LV/LV]; Krustpils street 53, LV-1057 Riga (LV).

**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

(72) Inventors; and

(75) Inventors/Applicants (for US only): **KALVINSH, Ivars**  
[LV/LV]; Libieshu street 25, LV-5052 Ikshkile (LV). **BIR-**  
**MANS, Anatolijs** [LV/LV]; Ozolciema street, 46/3-15,  
LV-1058 Riga (LV).

(88) Date of publication of the revised international search  
report: 19 May 2005

(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,

(15) Information about Correction:  
see PCT Gazette No. 20/2005 of 19 May 2005, Section II

For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.

(54) Title: MELDONIUM SALTS, METHOD OF THEIR PREPARATION AND PHARMACEUTICAL COMPOSITION ON  
THEIR BASIS

(57) Abstract: New salts of Meldonium, the method of their preparation, and pharmaceutical formulation on their basis have been described. The general formula of these salts is X-(CH<sub>3</sub>)<sub>3</sub>N+NHCH<sub>2</sub>CH<sub>2</sub>COOH where X- is an acid anion selected from the group of pharmaceutically acceptable acids. Practically non-hygroscopic and/or increased thermal stability and/or lasting action Meldonium hydrogen salts of fumaric acid, phosphoric acid, oxalic acid, maleic acid, and pamoic acid as well as Meldonium orotate and galactarate are especially suitable. Novel pharmaceutical formulations containing non-hygroscopic and/or increased thermal stability and/or lasting action 3-(2,2,2-trimethylhydrazinium) propionate salts for oral, parenteral, rectal and transdermal introduction are concurrently described.



WO 2005/012233 A1