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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
2 March 2006 (02.03.2006)

PCT

(10) International Publication Number
WO 2006/023943 A1

(51) International Patent Classification[7]: A61K 31/4965, 31/535, 31/357

(21) International Application Number:
PCT/US2005/030026

(22) International Filing Date: 23 August 2005 (23.08.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/603,761 23 August 2004 (23.08.2004) US

(71) Applicant *(for all designated States except US)*: **MANNKIND CORPORATION** [US/US]; 28903 North Avenue Paine, Valencia, CA 91355 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **LEONE-BAY, Andrea** [US/US]; 20 Woodland Way, Ridgefield, CT 06877 (US). **MOYE-SHERMAN, Destardi** [US/US]; 51 Saratoga Road, Newburgh, NY 12550 (US). **WILSON, Bryan, R.** [US/US]; 12 Woodland Road, Bedford, NY 10506 (US).

(74) Agents: **CULLMAN, Louis, C.** et al.; Preston Gates & Ellis LLP, 1900 Main Street, Suite 600, Irvine, CA 92614-7319 (US).

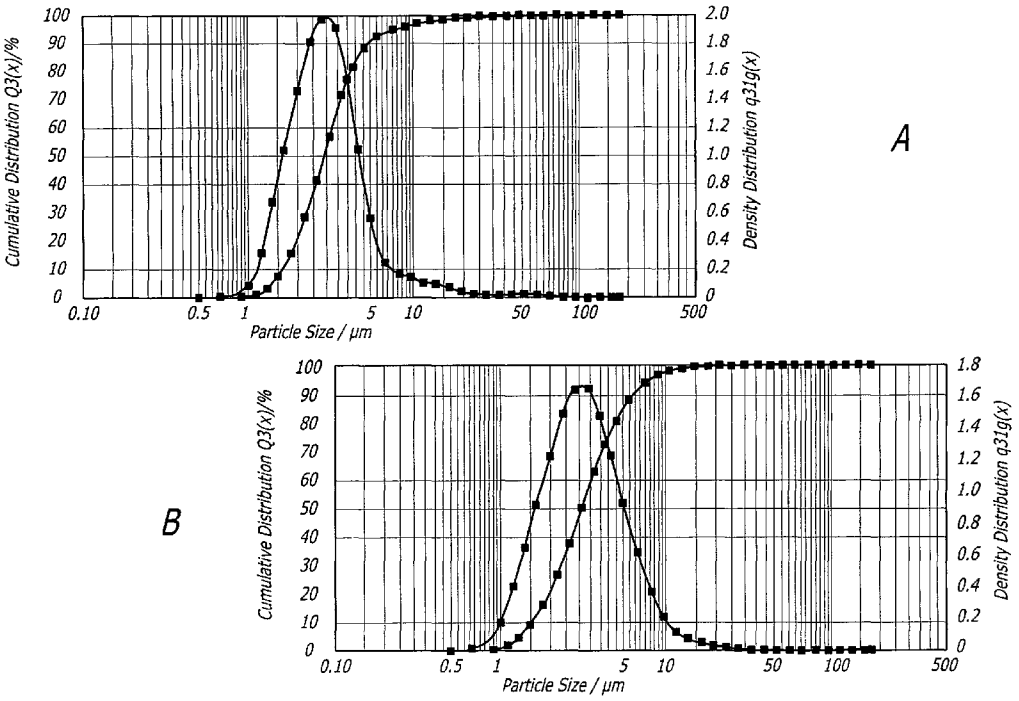
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, 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, LV, 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).

Published:
— *with international search report*

[Continued on next page]

(54) Title: DIKETOPIPERAZINE SALTS, DIKETOMORPHOLINE SALTS OR DIKETODIOXANE SALTS FOR DRUG DELIVERY



(57) Abstract: Biologically active agent delivery compositions, which comprise diketopiperazine carboxylate salts are provided. Related methods for making and using the biologically active agent delivery compositions are also provided.

WO 2006/023943 A1

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.