

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
9 August 2001 (09.08.2001)

PCT

(10) International Publication Number
WO 01/56983 A2

- (51) International Patent Classification⁷: C07D
- (21) International Application Number: PCT/US01/03336
- (22) International Filing Date: 1 February 2001 (01.02.2001)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
60/179,505 1 February 2000 (01.02.2000) US
- (71) Applicant: **THE PROCTER & GAMBLE COMPANY** [US/US]; One Procter & Gamble Plaza, Cincinnati, OH 45202 (US).
- (72) Inventors: **CAZER, Fredrick, Dana**; 220 Reese Rd., Earlville, NY 13312 (US). **PERRY, Gregory, Eugene**; 8 Gerald St., Norwich, NY 13815 (US). **BILLINGS, Dennis, Michael**; 142 Warner Road, Norwich, NY 13815 (US). **REDMAN-FUREY, Nancy, Lee**; 786 Beaver Meadow Rd., Smyrna, NY 13464 (US).
- (74) Agents: **REED, T., David** et al.; The Procter & Gamble Company, 5299 Spring Grove Avenue, Cincinnati, OH 45217-1087 (US).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AT (utility model), AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, CZ (utility model), DE, DE (utility model), DK, DK (utility model), DM, DZ, EE, EE (utility model), ES, FI, FI (utility model), 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, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (utility model), SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:

— without international search report and to be republished upon receipt of that report

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: SELECTIVE CRYSTALLIZATION OF 3-PYRIDYL-1-HYDROXYETHYLIDENE-1,1-BISPHOSPHONIC ACID SODIUM AS THE HEMIPENTAHYDRATE OR MONOHYDRATE

(57) Abstract: The present invention discloses 3-pyridyl-1-hydroxyethylidene-1,1-bisphosphonic acid sodium hemipentahydrate and monohydrate, methods of preparing the hemipentahydrate or monohydrate through control of the nucleation temperature and rate of crystallization and pharmaceutical compositions containing one or both of the hydrate forms



WO 01/56983 A2