

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
22 August 2019 (22.08.2019)



(10) International Publication Number
WO 2019/161238 A1

(51) International Patent Classification:
C07D 495/04 (2006.01) A61P 25/00 (2006.01)
A61K 31/381 (2006.01)

(21) International Application Number:
PCT/US2019/018265

(22) International Filing Date:
15 February 2019 (15.02.2019)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
62/710,416 16 February 2018 (16.02.2018) US

(71) Applicant: SUNOVION PHARMACEUTICALS INC.
[US/US]; 84 Waterford Drive, Marlborough, Massachusetts
01752 (US).

(72) Inventors: **BAUER, Andrea**; c/o Sunovion Pharmaceu-
ticals Inc., 84 Waterford Drive, Marlborough, Massachu-
setts 01752 (US). **BHOGLA, Nandkumar Nivritti**; c/o
Sunovion Pharmaceuticals Inc., 84 Waterford Drive, Marl-
borough, Massachusetts 01752 (US). **CHEN, Xiaoxia**; c/o
Sunovion Pharmaceuticals Inc., 84 Waterford Drive, Marl-
borough, New York 01752 (US). **JAMZAD, Shahla**; c/o
Sunovion Pharmaceuticals Inc., 84 Waterford Drive, Marl-
borough, Massachusetts 01752 (US). **PRYTKO, Robert
Joseph**; c/o Sunovion Pharmaceuticals Inc., 84 Waterford
Drive, Marlborough, Massachusetts 01752 (US). **SARAN-
TEAS, Kostas**; c/o Sunovion Pharmaceuticals Inc., 84 Wa-
terford Drive, Marlborough, Massachusetts 01752 (US).
WILKINSON, Harold Scott; 84 Waterford Drive, Marl-
borough, Massachusetts 01752 (US). **ZHANG, Haitao**; c/o
Sunovion Pharmaceuticals Inc., 84 Waterford Drive, Marl-
borough, Massachusetts 01752 (US).

(74) Agent: **HANSEN, Philip E.**; Heslin Rothenberg Farley &
Mesiti P.C., 5 Columbia Circle, Albany, New York 12203
(US).

(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, BN, BR, BW, BY, BZ,
CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO,
DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN,
HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP,
KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME,
MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ,
OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA,

SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN,
TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ,
UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ,
TM), European (AL, 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, RS, SE, SI, SK, SM,
TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— of inventorship (Rule 4.17(iv))

Published:

— with international search report (Art. 21(3))
— before the expiration of the time limit for amending the
claims and to be republished in the event of receipt of
amendments (Rule 48.2(h))

(54) Title: SALTS, CRYSTAL FORMS, AND PRODUCTION METHODS THEREOF

(57) Abstract: Provided are salts of (S)-(4,5-dihydro-7H-thieno[2,3-c]pyran-7-yl)-N-methylmethanamine and various of crystal forms thereof, and compositions, medicaments, pharmaceutically acceptable formulations thereof, and methods of making same. In addition, provided are compounds comprising specific particle size distributions of crystalline (S)-(4,5-dihydro-7H-thieno[2,3-c]pyran-7-yl)-N-methylmethanamine HCl and methods of making and modulating the particle size distributions.

WO 2019/161238 A1