

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
22 December 2022 (22.12.2022)



(10) International Publication Number
WO 2022/266318 A3

(51) International Patent Classification:

A61K 31/33 (2006.01) A61K 31/4164 (2006.01)
A61K 31/41 (2006.01) A61K 31/00 (2006.01)

(21) International Application Number:

PCT/US2022/033786

(22) International Filing Date:

16 June 2022 (16.06.2022)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/211,320	16 June 2021 (16.06.2021)	US
63/236,972	25 August 2021 (25.08.2021)	US
63/263,556	04 November 2021 (04.11.2021)	US
63/264,052	15 November 2021 (15.11.2021)	US

(71) Applicant: **ACURX PHARMACEUTICALS LLC**
[US/US]; 22 Camelot Court, White Plains, New York 10603
(US).

(72) Inventor: **GAREY, Kevin**; 311 W. 24th Street, Houston,
Texas 77018 (US).

(74) Agent: **YELLIN, Deborah**; Crowell & Moring LLP, 1001
Pennsylvania Ave NW-Floor 10, United States of America,
Washington, District of Columbia 20004 (US).

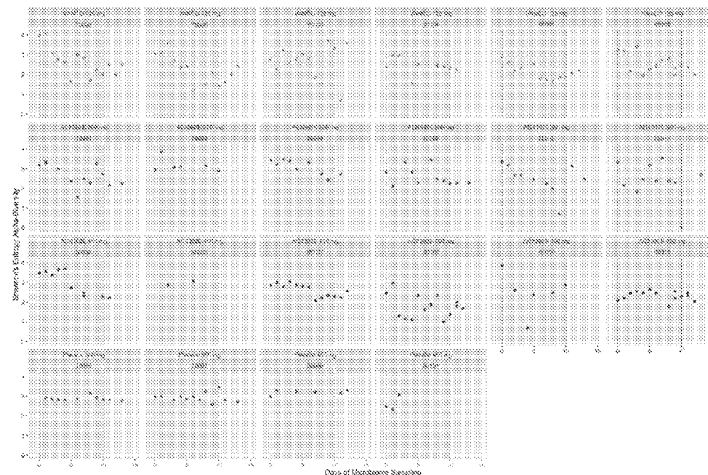
(81) Designated States (*unless otherwise indicated, for every
kind of national protection available*): AE, AG, AL, AM,
AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ,
CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO,
DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN,
HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, 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, ST, SV, SY, TH, TJ, TM,
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, 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,

(54) Title: USE OF IBEZAPOLSTAT TO PROMOTE MICROBIOME HEALTH

Fig. 1

Alpha diversity changes during the course of therapy



(57) Abstract: The invention relates to methods of using ibezapolstat to increase the health of the gut microbiome. The invention provides methods of simultaneously treating *C. difficile* infections while at the same time reducing the likelihood of or preventing the recurrence of *C. difficile* infection. The invention also provides methods of increasing the health of the gut microbiome by increasing the number of Actinobacteria and/or Firmicutes in the gut.

[Continued on next page]

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).

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))*

(88) Date of publication of the international search report:

26 January 2023 (26.01.2023)