

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
17 April 2025 (17.04.2025)



(10) International Publication Number
WO 2025/077675 A3

(51) International Patent Classification:

C07D 233/91 (2006.01) A61P 3/00 (2006.01)
A61K 31/4168 (2006.01) A61P 3/04 (2006.01)
A61P 3/10 (2006.01) A61P 3/06 (2006.01)
A61P 9/00 (2006.01) A61P 1/16 (2006.01)
A61P 9/12 (2006.01)

(21) International Application Number:

PCT/CN2024/123314

(22) International Filing Date:

08 October 2024 (08.10.2024)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

202311324983.X 12 October 2023 (12.10.2023) CN
63/544,113 13 October 2023 (13.10.2023) US

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(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, CV, 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, MG, MK, MN, MU, 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, CV,
GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, 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, ME, 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:

22 May 2025 (22.05.2025)

(54) Title: PRODRUGS AND CONJUGATES OF 2, 4-DINITROPHENOL, AND COMPOSITIONS AND METHODS THEREOF

(57) Abstract: The invention provides novel 2, 4-dinitrophenol (DNP) derivatives and prodrugs thereof, as modulators of mitochondria functions. The invention also provides pharmaceutical compositions comprising a compound of the invention and methods thereof for treating various diseases and disorders associated with or related to mitochondrial dysfunctions (e.g., obesity, diabetes, insulin resistance, liver diseases, heart or renal failure, neurodegenerative diseases and aging related diseases, including but not limited to sarcopenia, osteoporosis, etc.).



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