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

(19) World Intellectual Property Organization

International Bureau





(10) International Publication Number WO 2014/115167 A3

(43) International Publication Date 31 July 2014 (31.07.2014)

(51) International Patent Classification: A61K 31/56 (2006.01) C07J 5/00 (2006.01) **C07J 71/00** (2006.01)

(21) International Application Number:

PCT/IN2014/000048

(22) International Filing Date:

23 January 2014 (23.01.2014)

(25) Filing Language:

English

(26) Publication Language:

English

IN

(30) Priority Data:

173/DEL/2013 23 January 2013 (23.01.2013)

- (71) Applicant: SPHAERA PHARMA PVT. LTD. [IN/IN]; Plot No.32, Sector 5, IMT Manesar, Haryana 122051 (IN).
- (72) Inventors: DUGAR, Sundeep; Sphaera Pharma Pvt. Ltd., Plot No.32, Sector 5, IMT Manesar, Haryana 122051 (IN). SCHREINER, Frederic, George; 12774 Leander Drive, Los Altos Hills, Ca, California 94022 (US). MAHAJAN, Dinesh; Sphaera Pharma Pvt. Ltd., Plot No.32, Sector 5, IMT Manesar, Haryana 122051 (IN). SHARMA, Amit; Sphaera Pharma Pvt. Ltd., Plot No.32, Sector 5, IMT Manesar, Haryana 122051 (IN). PATIL, Ishwar, Rakesh; Sphaera Pharma Pvt. Ltd., Plot No.32, Sector 5, IMT Manesar, Haryana 122051 (IN). KUILA, Bilash; Sphaera Pharma Pvt. Ltd., Plot No.32, Sector 5, IMT Manesar, Haryana 122051 (IN).

- (74) Agent: ARVIND, Chitra; Rajeshwari & Associates, Amsoft Business Centre, Unitech Trade Centre, Sector 43, Gurgaon, Haryana 122002 (IN).
- (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, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, 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, 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).

Published:

- with international search report (Art. 21(3))
- (88) Date of publication of the international search report:

4 December 2014



(54) Title: NOVEL COMPOUNDS OF 11BETA-HYDROXY-STEROIDS FOR USE IN MITOCHONDRIA BIOGENESIS AND DISEASES ASSOCIATED WITH MITOCHONDRIAL DYSFUNCTION OR DEPLETION

(57) Abstract: The present invention provides novel compounds of 11β-hydroxy steroids and compositions and their application as pharmaceuticals for preventing or reversing injury to mitochondria, for treating or preventing diseases relating to mitochondrial dysfunction or depletion, and for inducing regeneration or restructuring of mitochondria as a means of treating diseases relating to abnormalities in mitochondrial structure and function in a human or animal subject. Also disclosed herein are methods for diagnosing injury to mitochondria and for diagnosing the success or failure of therapeutics designed to treat, prevent, or reverse injury to or depletion of mitochondria.

INTERNATIONAL SEARCH REPORT

International application No. PCT/IN2014/000048

Α.	CLASSIFICATION OF SUBJECT MATTER	
A 61	K31/56 C07.T71/00 C07.T05/00 Version=2014	0.1

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A61K, C07J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Orbit, IPO Internal database, STN

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 1988/002753 A2 (GISTBROCADES N.Y.) 21/04/1988 see page-4, line-5 see page-1 line 5-7	1-15
A	WO 2004/037251 A1 (STERIX LIMITED) 06/05/2004 see abst., page 5-8 see page-8, line-7	1-15
нежения менения менен		

	Further documents are listed in the continuation of Box C.		See patent family annex.	
* "A" "E" "L" "O" "p"	Special categories of cited documents: document defining the general state of the art which is not considered to be of particular relevance earlier application or patent but published on or after the international filing date document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) document referring to an oral disclosure, use, exhibition or other means document published prior to the international filing date but later than the priority date claimed	"Y"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art document member of the same patent family	
Date of the actual completion of the international search $10-07-2014$		Date of mailing of the international search report $10-07-2014$		
Name and mailing address of the ISA/ Indian Patent Office Plot No.32, Sector 14,Dwarka,New Delhi-110075 Facsimile No.		Authorized officer Md Atiqullah Telephone No. +91-1125300200		

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
PCT/IN2014/000048

Citation	Pub.Date	Family	Pub.Date
WO 2004/037251 A	06-05-2004	CA 2501228 A1 AU 2003274373 A1 US 7786152 B2	06-05-2004 13-05-2004 31-08-2010
		CN 1723022 A JP 2008114042 A EP 1556040 A1	18-01-2006 11-05-2006 27-07-2005
WO 1988/002753 A2	21-04-1988	EP 0263569 A2 CN 87106868 A US 5352809 A KR 960010793 B1 DE 3783007 T2	13-04-1988 27-04-1988 04-10-1994 08-08-1996 01-07-1993