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- (71) **Applicant:** AUROBINDO PHARMA LIMITED
[IN/IN]; Plot No. 2, Maitri Vihar, Ameerpet, Andhra Pradesh, 500038 Hyderabad (IN).
- (72) **Inventors; and**
- (71) **Applicants (for US only):** BUDIDET, Shankar Reddy [IN/IN]; Aurobindo Pharma Limited, Plot No 2, Maitri Vihar, Ameerpet, Hyderabad 500 038, Andhra Pradesh (IN). KARURU, Mallikarjuna Reddy [IN/IN]; Aurobindo Pharma Limited, Plot No 2, Maitri Vihar, Ameerpet, Hyderabad 500 038, Andhra Pradesh (IN). KURIMISSETTY, Sivakumar [IN/IN]; Aurobindo Pharma Limited, Plot No 2, Maitri Vihar, Ameerpet, Hyderabad 500 038, Andhra Pradesh (IN). KONDURU, Rajasekhara Raju [IN/IN]; Aurobindo Pharma Limited, Plot No 2, Maitri Vihar, Ameerpet, Hyderabad 500 038, Andhra Pradesh (IN). MEENAKSHISUNDERAM, Sivakumaran [IN/IN]; Aurobindo Pharma Limited, Plot No 2, Maitri Vihar, Ameerpet, Hyderabad 500 038, Andhra Pradesh (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, IS, JP, KE, KG, KM, 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, 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, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

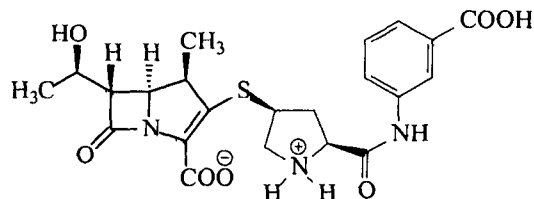
— of inventorship (Rule 4.17(iv))

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))

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

12 September 2014

(54) Title: PROCESS TO PREPARE ERTAPENEM

(I)

(57) **Abstract:** The present invention relates to a novel process for the preparation of Ertapenem of formula (I) or salt thereof, using hydrogenation catalyst in presence of N-methylmorpholine, 2,6-Lutidine or mixture thereof.

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2013/000211

A. CLASSIFICATION OF SUBJECT MATTER
INV. C07D477/20 C07D477/08
ADD.

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)
C07D

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)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 2 388 261 A2 (SAVIOR LIFETEC CORP [TW]) 23 November 2011 (2011-11-23) paragraph [0020] example 3	1-9
A	----- US 7 071 330 B2 (WILLIAM JOHN M [US] ET AL WILLIAMS JOHN M [US] ET AL) 4 July 2006 (2006-07-04) cited in the application column 7 - column 8 example 1	1-9
A	----- US 2009/312539 A1 (GNANAPRAKASAM ANDREW [IN] ET AL) 17 December 2009 (2009-12-17) cited in the application paragraph [0025] - paragraph [0026] examples 5,6 ----- -/-	1-9



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" 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)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" 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

"X" 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

"Y" 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 June 2013

Date of mailing of the international search report

10/07/2014

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Miniejew, Catherine

INTERNATIONAL SEARCH REPORT

International application No

PCT/IB2013/000211

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 2 141 167 A1 (ACS DOBFAR SPA [IT]) 6 January 2010 (2010-01-06) paragraph [0007] example 2 -----	1-9
A	US 5 478 820 A (BETTS MICHAEL J [GB] ET AL) 26 December 1995 (1995-12-26) cited in the application example 12 -----	1-9

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2013/000211

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-9

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-9

subject-matter related to the process of claim 1

2. claims: 10-12

subject-matter related to the process of claim 10

3. claims: 13-17

subject-matter related to the process of claim 13

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2013/000211

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

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