

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference X21874	FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/US2020/040881	International filing date (<i>day/month/year</i>) 6 July 2020 (06-07-2020)	(Earliest) Priority Date (<i>day/month/year</i>) 9 July 2019 (09-07-2019)
Applicant ELI LILLY AND COMPANY		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 6 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of:

- ☒ the international application in the language in which it was filed
☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))

b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6**bis**(a)).

c. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (See Box No. II)

3. ☒ **Unity of invention is lacking** (see Box No III)

4. With regard to the **title**,

- ☒ the text is approved as submitted by the applicant
☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

- ☒ the text is approved as submitted by the applicant
☐ the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority

6. With regard to the **drawings**,

- a. the figure of the **drawings** to be published with the abstract is Figure No. _____
☐ as suggested by the applicant
☐ as selected by this Authority, because the applicant failed to suggest a figure
☐ as selected by this Authority, because this figure better characterizes the invention
b. ☒ none of the figures is to be published with the abstract

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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.:

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.

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A. CLASSIFICATION OF SUBJECT MATTER
 INV. A61K31/444 A61P25/06 C07D401/06
 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)

A61K A61P 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, EMBASE, BIOSIS, CHEM ABS Data, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2018/010345 A1 (SOLIPHARMA LLC [CN]) 18 January 2018 (2018-01-18)	8,9
A	claims 1,17,21,26-28; examples 32-41	1-7, 10-20
X	----- MARKUS FÄRKKILÄ ET AL: "Efficacy and tolerability of lasmiditan, an oral 5-HT1F receptor agonist, for the acute treatment of migraine: a phase 2 randomised, placebo-controlled, parallel-group, dose-ranging study", LANCET NEUROLOGY, vol. 11, no. 5, 1 May 2012 (2012-05-01), pages 405-413, XP055521638, GB ISSN: 1474-4422, DOI: 10.1016/S1474-4422(12)70047-9 page 405 - page 407 ----- -/-	8,9



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

20 October 2020

Date of mailing of the international search report

28/10/2020

Name and mailing address of the ISA/

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Rufet, Jacques

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2018/106657 A1 (COLUCID PHARMACEUTICALS INC [US]) 14 June 2018 (2018-06-14) cited in the application Examples; page 13, line 7 - page 15, line 15; claims 1-24	1-20
A	----- WO 2011/123654 A1 (COLUCID PHARMACEUTICALS INC [US]; CARNIAUX JEAN-FRANCOIS [GB] ET AL.) 6 October 2011 (2011-10-06) cited in the application Scheme 1; examples; claims 1-19 -----	1-20

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2018010345 A1	18-01-2018	CN 108137536 A US 2019233393 A1 WO 2018010345 A1	08-06-2018 01-08-2019 18-01-2018
WO 2018106657 A1	14-06-2018	AU 2017373784 A1 BR 112019010934 A2 CA 3043772 A1 CL 2019001426 A1 CN 110291079 A CO 2019005290 A2 CR 20190251 A DO P2019000139 A EA 201991112 A1 EC SP19040190 A EP 3551617 A1 JP 2020500936 A KR 20190075130 A PE 20191134 A1 PH 12019501252 A1 TW 201833097 A US 2020087279 A1 WO 2018106657 A1	16-05-2019 01-10-2019 14-06-2018 11-10-2019 27-09-2019 31-05-2019 26-08-2019 15-08-2019 31-10-2019 30-08-2019 16-10-2019 16-01-2020 28-06-2019 02-09-2019 02-12-2019 16-09-2018 19-03-2020 14-06-2018
WO 2011123654 A1	06-10-2011	CA 2795062 A1 US 2013072524 A1 WO 2011123654 A1	06-10-2011 21-03-2013 06-10-2011

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

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

1. claims: 1-20

Processes an intermediates for the preparation of lasmitidan

1.1. claims: 13-20

Lasmiditan acetate, pharmaceutical composition thereof and use
