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(54) Title: NATURAL LIPIDS CONTAINING NON-OXIDIZABLE FATTY ACIDS

(57) Abstract: Provided herein is technology relating to natural lipids containing non-β-oxidizable fatty acids and particularly, but not exclusively, to compositions and methods related to the production and use of natural lipids containing non-β-oxidizable fatty acids.

INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER
INV. A61K45/06 A61K31/23 A61K31/685
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

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.
X	WO 2006/009464 A2 (THIA MEDICA AS [NO]; BERGE ROLF [NO]) 26 January 2006 (2006-01-26) claims 27, 36, 39-41 page 2, paragraph 9 - page 3, paragraph 20 page 5, paragraph 35 page 5, paragraph 38 ----- -/--	1-4,6,7, 9,10,12, 87-119, 128-130

[X] Further documents are listed in the continuation of Box C.

[X] 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	Date of mailing of the international search report
17 October 2014	09/02/2015

Name and mailing address of the ISA/	Authorized officer
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INTERNATIONAL SEARCH REPORT

International application No
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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.
X	MOYA-FALCON C ET AL: "Phospholipid molecular species, beta-oxidation, desaturation and elongation of fatty acids in Atlantic salmon hepatocytes: Effects of temperature and 3-thia fatty acids", COMPARATIVE BIOCHEMISTRY AND PHYSIOLOGY. PART B, BIOCHEMISTRYAND MOLECULAR BIOLOGY, ELSEVIER,OXFORD, GB, vol. 145, no. 1, 1 September 2006 (2006-09-01), pages 68-80, XP028031867, ISSN: 1096-4959, DOI: 10.1016/J.CBPB.2006.06.004 [retrieved on 2006-09-01] page 73, column 1, paragraph 3.1 page 73, column 2; table 3 -----	1-4,6,7, 9,10
X	CN 101 010 101 A (THIA MEDICA AS [NO] THIA MEDICA AS) 1 August 2007 (2007-08-01) abstract claims 1, 16, 18 page 20, line 1 - line 6 -----	1-4,6,7, 9,10,12, 87-119, 128-130
X	ImuThes: "TMI-100 Series (CVD)", , 1 March 2013 (2013-03-01), pages 1-8, XP002731247, Retrieved from the Internet: URL:http://wayback.archive.org/web/20130301014904/http://www.imuthes.com/products/pipeline/tmi-100-series-cvd [retrieved on 2014-10-02] figures 3, 8 page 7, paragraph 3.6 -----	1-4,6,7, 9,10,12, 87-119, 128-130
X	WO 2004/000854 A1 (IC VEC LTD [GB]; THIA MEDICA AS [NO]; MILLER ANDREW DAVID [GB]; JORGEN) 31 December 2003 (2003-12-31) page 68 page 70 page 73; table 1 page 78 - page 81 -----	1-4,6,7, 9,10,12, 87-119, 128-130

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2014/001254

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.:

1-4, 6, 7, 9, 10, 12, 87-119, 128-130(all partially)

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: 1-4, 6, 7, 9, 10, 12, 87-119, 128-130(all partially)

   A composition comprising a natural lipid and a natural biomolecule, wherein the natural lipid comprises a non-beta-oxidizable fatty acid analogue, wherein the natural lipid comprises a phosphatidylcholine headgroup and the non-beta-oxidizable fatty acid analogue is TTA

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2. claims: 1-3, 5-7, 9, 10, 12, 87-119, 128-130(all partially)

   A composition comprising a natural lipid and a natural biomolecule, wherein the natural lipid comprises a non-beta-oxidizable fatty acid analogue, wherein the natural lipid comprises a phosphatidylcholine headgroup and the non-beta-oxidizable fatty acid analogue is TSA

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3. claims: 1-7, 9, 10, 12, 96, 97, 112-119, 128(all partially)

   A composition comprising a natural lipid and a natural biomolecule, wherein the natural lipid comprises a non-beta-oxidizable fatty acid analogue, wherein the natural lipid comprises a phosphatidylethanolamine headgroup

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4. claims: 1-7, 9, 10, 12, 87-119, 128-130(all partially)

   A composition comprising a natural lipid and a natural biomolecule, wherein the natural lipid comprises a non-beta-oxidizable fatty acid analogue, wherein the natural lipid comprises a phosphatidylserine headgroup

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5. claims: 1-7, 9, 10, 12, 87-119, 128-130(all partially)

   A composition comprising a natural lipid and a natural biomolecule, wherein the natural lipid comprises a non-beta-oxidizable fatty acid analogue, wherein the natural lipid comprises a phosphatidylglycerol headgroup

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6. claims: 1-7, 9, 10, 12, 87-119, 128-130(all partially)

   A composition comprising a natural lipid and a natural biomolecule, wherein the natural lipid comprises a non-beta-oxidizable fatty acid analogue, wherein the natural lipid comprises a phosphatidylinositol headgroup

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7. claims: 8(completely); 1-5, 9, 10, 12, 87-119, 128-130(partially)

A composition comprising a natural lipid and a natural biomolecule, wherein the natural lipid comprises a non-beta-oxidizable fatty acid analogue, wherein the natural lipid comprises an ether link between a lipid tail and a headgroup

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8. claims: 11(completely); 1-5, 9, 10, 12, 87-119, 128-130(partially)

A composition comprising a natural lipid and a natural biomolecule, wherein the natural lipid comprises a non-beta-oxidizable fatty acid analogue, wherein the natural lipid is a sphingolipid

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9. claims: 13, 14(completely); 1-5, 9, 10, 12, 87-119, 128-130(partially)

A composition comprising a natural lipid and a natural biomolecule, wherein the natural lipid comprises a non-beta-oxidizable fatty acid analogue, wherein the natural lipid is an omega-3 fatty acid moiety

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10. claims: 15, 16(completely); 1-5, 9, 10, 12, 87-119, 128-130(partially)

A composition comprising a natural lipid and a natural biomolecule, wherein the natural lipid comprises a non-beta-oxidizable fatty acid analogue, wherein the natural lipid is an omega-6 fatty acid moiety

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11. claims: 17-77(completely); 87-119, 128-130(partially)

A composition comprising a natural lipid, the composition obtainable by a process comprising the steps of: 1) providing a biologically active biomolecule to a living organism in vitro; and 2) isolating the composition comprising the natural lipid from the living organism

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12. claims: 78-86(completely); 87-119, 128-130(partially)

A structured phospholipid composition comprising phospholipid molecules of the following structure: [image removed] wherein one of R1 and R2 is a non-beta-oxidizable fatty acid analogue moiety and the other of R1 and R2 is a bioactive fatty acid moiety selected from the group consisting of an omega-3 fatty acid moiety, on omega-6 fatty acid moiety, a polyunsaturated fatty acid moiety, a conjugated linoleic fatty acid moiety, and combinations thereof

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

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13. claims: 120-127(completely); 128-130(partially)

A composition comprising a physiologically effective amount of TTA or a derivative thereof, said composition characterized inby a substantial lack of side effects when administered to a human subject, said side effects selected from the group consisting of lethargy, muscle cramps, and muscle pain

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/IB2014/001254

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