

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

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PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing
(day/month/year)

17 MAR 2020

Applicant's or agent's file reference
B1510.70000WO00

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/US20/13118

International filing date (day/month/year)

10 January 2020 (10.01.2020)

Priority date (day/month/year)

10 January 2019 (10.01.2019)

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

IPC - A61K 8/60, 8/64, 8/73, 47/34, 47/36, 47/38, 47/42, 47/44 (2020.01)

CPC - A01N 43/16, 63/20; A61K 8/60, 8/64, 8/73, 8/731, 9/0014, 47/34, 47/36, 47/38, 47/42, 47/44

Applicant

INNOVACORIUM, INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA/US
Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450
Facsimile No. 571-273-8300

Date of completion of this opinion

24 February 2020 (24.02.2020)

Authorized officer

Shane Thomas

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**WRITTEN OPINION OF THE
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Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established 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)).
2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(b)).
3. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:
 - a. ☐ forming part of the international application as filed:
 - ☐ in the form of an Annex C/ST.25 text file.
 - ☐ on paper or in the form of an image file.
 - b. ☐ furnished together with the international application under PCT Rule 13*ter*.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.
 - c. ☐ furnished subsequent to the international filing date for the purposes of international search only:
 - ☐ in the form of an Annex C/ST.25 text file (Rule 13*ter*.1(a)).
 - ☐ on paper or in the form of an image file (Rule 13*ter*.1(b) and Administrative Instructions, Section 713).
4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

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Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application.

☒ claims Nos. 7-71 and 73-76

because:

☐ the said international application, or the said claims Nos. _____ relate to the following subject matter which does not require an international search (*specify*):

because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 7-71 and 73-76 are so unclear that no meaningful opinion could be formed (*specify*):

because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

☐ the claims, or said claims Nos. _____ are so inadequately supported by the description that no meaningful opinion could be formed (*specify*):

☒ no international search report has been established for said claims Nos. 7-71 and 73-76

☐ a meaningful opinion could not be formed without the sequence listing; the applicant did not, within the prescribed time limit:

☐ furnish a sequence listing in the form of an Annex C/ST.25 text file, and such listing was not available to the International Searching Authority in the form and manner acceptable to it; or the sequence listing furnished did not comply with the standard provided for in Annex C of the Administrative Instructions.

☐ furnish a sequence listing on paper or in the form of an image file complying with the standard provided for in Annex C of the Administrative Instructions, and such listing was not available to the International Searching Authority in the form and manner acceptable to it; or the sequence listing furnished did not comply with the standard provided for in Annex C of the Administrative Instructions.

☐ pay the required late furnishing fee for the furnishing of a sequence listing in response to an invitation under Rule 13ter.1(a) or (b).

☐ See Supplemental Box for further details.

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Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-2, 3/1-2, 4/3/1-2, 5/3/1-2, 6/3/1-2, 72	YES
	Claims	NONE	NO
Inventive step (IS)	Claims	NONE	YES
	Claims	1-2, 3/1-2, 4/3/1-2, 5/3/1-2, 6/3/1-2, 72	NO
Industrial applicability (IA)	Claims	1-2, 3/1-2, 4/3/1-2, 5/3/1-2, 6/3/1-2, 72	YES
	Claims	NONE	NO

2. Citations and explanations:

Claims 1-2, 3/1-2, 4/3/1-2, and 5/3/1-2 lack an inventive step under PCT Article 33(3) as being obvious over WO 2018/208530 A1 to Locus IP Company LLC (hereinafter 'Locus') in view of WO 2017/215526 A1 to Nanjing Jianzhuang Biotechnology Ltd (hereinafter 'Nanjing').

As per claim 1, Locus discloses a composition (composition; page 4, lines 30-32; page 5, lines 1-2) comprising: (i) a drug delivery system (compositions for treating skin conditions (drug delivery system); page 4, lines 30-32; page 5, lines 1-2) comprising a carbonate buffer solution (potassium carbonate buffer solution; page 25, lines 8-10), at least two different biosurfactants (one or more biosurfactants (at least two different biosurfactants); page 5, lines 20-23), at least one hygroscopic agent (hyaluronic acid (hygroscopic agent); page 5, line 27-30), and at least one antioxidant (resveratrol (antioxidant); page 5, lines 27-30); and (ii) at least one bioactive agent (active ingredients (bioactive agent); page 5, lines 23-25), but Locus does not disclose wherein the composition has a pH that ranges from about 7.5 to about 9.5. However, Nanjing discloses wherein the composition has a pH that ranges from about 7.5 to about 9.5 (composition has a pH that ranges from about 6.0 to 8.0; claim 7). It would have been obvious to one skilled in the art at the time of the invention to have modified the composition, as disclosed by Locus, to provide the composition wherein the composition has a pH that ranges from about 7.5 to about 9.5, as disclosed by Nanjing, for the benefit that composition for delivering active agents for treating skin with PEG (hygroscopic agent), flavonoids (antioxidants), and other agents are prepared in preferably sodium bicarbonate buffer (Nanjing; abstract; claims 7-8).

As per claim 2, Locus and Nanjing, in combination, disclose the composition of claim 1, and Locus further discloses wherein the carbonate buffer solution comprises one of the following ions: sodium, potassium (potassium carbonate; page 25, lines 8-10), calcium, and magnesium, optionally (optional) wherein the carbonate buffer solution is sodium bicarbonate buffer solution.

As per claims 3/1-2, Locus and Nanjing, in combination, disclose the composition of claims 1 and 2, and Locus further discloses wherein each of the at least two biosurfactants are selected from a glycolipid (glycolipid; page 5, lines 20-23), lipopeptide (lipopeptides; page 5, lines 20-23), and polymeric biosurfactant.

As per claims 4/3/1-2, Locus and Nanjing, in combination, disclose the composition of claims 3/1-2, and Locus further discloses wherein the glycolipid (glycolipid; page 5, lines 20-23) is selected from a rhamnolipid (rhamnolipid; page 5, lines 20-23), sophorolipid (sophorolipid; page 5, lines 20-23), trehalolipid (trehalose lipids (trehalolipid); page 5, lines 20-23), cellobiolipid, mannosylerythritol lipid (mannosylerythritol lipids; page 5, lines 20-23), and any combination thereof (combination thereof; page 5, lines 20-23).

As per claims 5/3/1-2, Locus and Nanjing, in combination, disclose the composition of claims 3/1-2, and Locus further discloses wherein the lipopeptide (lipopeptide; page 5, lines 20-23) is selected from a surfactin (surfactin; page 5, lines 20-23), plipastatin, bacillomycin, fengycin (fengycin; page 5, lines 20-23), subtilisin, gramicidin, polymyxin, and any combination thereof (combinations thereof; page 5, lines 20-23).

Claim 72 lacks an inventive step under PCT Article 33(3) as being obvious over US 10,149,816 B2 (LEVY) in view of US 2009/0169489 A1 (HALEY).

As per claim 72, Levy discloses a method of regenerating a peripheral nerve ending in a subject in need thereof (method improving skin appearance through activation of skin stem cell in the dermis where nerve endings are located (regenerating a peripheral nerve ending in a subject in need thereof); column 1, lines 57-60; column 4, lines 13-16), the method comprising administering to the subject (administering to the subject; column 8, lines 50-52): (i) a first composition comprising a Melissa officinalis bioactive extract (first composition comprising Melissa officinalis bioactive extract; claim 1), but Levy does not disclose (ii) a second composition comprising methylcobalamin and/or cyanocobalamin. However, Haley discloses (ii) a second composition comprising methylcobalamin and/or cyanocobalamin (second composition comprising methylcobalamin and cyanocobalamin; paragraph [0014]). It would have been obvious to one skilled in the art at the time of the invention to have modified the method, as disclosed by Levy, to provide the method (ii) a second composition comprising methylcobalamin and/or cyanocobalamin, as disclosed by Haley, for the benefit that bioactive cobalamins are used to protect exposed nerve endings on mucosal surfaces (regenerating a peripheral nerve endings) (Haley; paragraph [0019]).

-Continued Within the Next Supplemental Box-

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

-***-Continued from Box V: Citations and Explanations-***-

Claims 6/3/1-2 lack an inventive step under PCT Article 33(3) as being obvious over Locus in view of Nanjing and in further view of KR 20090117081 A1 to LG Household & Healthcare Ltd (hereinafter 'LG').

As per claim 6/3/1-2, Locus and Nanjing, in combination, disclose the composition of claims 3/1-2, but Locus does not disclose wherein the polymeric biosurfactant is selected from emulsan, biodispersan, liposan, mannan-lipid-protein complex, carbohydrate-lipid-protein complex, and any combination thereof. However, LG discloses wherein the polymeric biosurfactant (bio-polymers biosurfactant; claim 5) is selected from emulsan (emulsan; claim 10), liposan (liposan; claim 10), mannan-lipid-protein complex (mannanprotein (mannan-lipid-protein complex); claim 10), and any combination thereof (combination thereof; claim 10). It would have been obvious to one skilled in the art at the time of the invention to have modified the composition, as disclosed by Locus, to provide the composition wherein the polymeric biosurfactant is selected from emulsan, liposan, mannan-lipid-protein complex, and any combination thereof, as disclosed by LG, for the benefit that biosurfactants when compared to chemical synthetic surfactants, extreme conditions (temperature, pH, salinity, etc) maintain activity with low toxicity and excellent emulsifying and stabilizing properties (LG; page 4, fifth and twelfth paragraphs).

Claims 1-2, 3/1-2, 4/3/1-2, 5/3/1-2, 6/3/1-2, and 72 have industrial applicability as defined by PCT Article 33(4) because the subject matter can be made or used in industry.