PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2019/066501	16.12.2019	26.12.2018

International Patent Classification (IPC) or both national classification and IPC
INV. A61K9/00 A61K47/02 A61K47/18 A61K8/27 A61K8/44 A61P1/02 A61P9/08 A61P31/04 A61Q11/00

Applicant
COLGATE-PALMOLIVE COMPANY

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 43*bis*.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 usually 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 notifed the International Bureau under Rule 66.1*bis*(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:	Date of completion of this opinion	Authorized Officer
European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Fax: +49 89 2399 - 4465	see form PCT/ISA/210	Simon, Frédéric Telephone No. +49 89 2399-0

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2019/066501

Box No. I Basis of the 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(a))

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:

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

1. Statement

Novelty (N)	Yes:	Claims	6, 8
	No:	Claims	1-5, 7, 9-14
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-14
Industrial applicability (IA)	Yes:	Claims	1-14
	No:	Claims	

2. Citations and explanations

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

The search has revealed the following documents:

D1 WO 2016/058140 A1

D2 XP055682847

D3 WO 2017/003844 A1

D4 WO 2014/098825 A1

D5 XP055442584

D6 XP009138434

D7 XP055682712

D8 XP036053600

D9 XP055682391

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1-5, 7 and 9-14 is not new in the sense of Article 33(2) PCT:

The patentability of claims 1 to 14 can be dependent upon the formulation of the claims. The EPO, for example, does not recognise as patentable claims to a method of treatment or prophylaxis of a disease or disorder using a composition, but may allow claims to a product, in particular substances or compositions for use in a first or further medical treatment. Moreover, the EPO does not recognized any limiting effect in the terms "in the manufacture of a medicament" as used in present claim 15, regardless of the purpose for which the drug is to be used. Novelty and inventive step of these claims have been assessed on the basis of a purpose-limited product claim taking into account the alleged effects of the composition, as defined in present claim 13.

D1 (cl. 1 and 21) relates to an oral care composition comprising arginine, in free or salt form; serine; zinc oxide and zinc citrate, and to a method of reducing or inhibiting biofilm formation in the oral cavity by contacting it with said composition. The document explains that the formation of biofilms on oral surfaces is due to bacterial growth and is implicated in the occurrence of gingivitis, periodontitis, caries and other forms of periodontal disease (see [0001]). Oral biofilms includes a mixture of Gram-postive and Gram-negative bacteria (see D2). Thus, D1 anticipates the subject-matter of independent claims 1, 13 and 14, and the features set out in dependent claims 2-5, 7 and 9-12.

D3 ([0002]; cl. 1 and 32) relates oral care compositions comprising arginine, lysine or a salt thereof, zinc oxide and zinc citrate, and a fluoride source, as well as to methods of using these compositions for oral care and, in particular, for reducing gingivitis and protecting the teeth against cariogenic bacteria and their effects. The applicants explains that they have found that the inclusion of an amino acid such as arginine and lysine increases the antibacterial effect of oral care compositions comprising a zinc oxide and a zinc citrate. They disclose that the claimed compositions promote systemic health, including cardiovascular health, e.g., by reducing potential for systemic infection via the oral tissues (see point 1.86, pp. 10-11). Thus, D3 anticipates the subject-matter of independent claims 1, 13 and 14, and the features set out in dependent claims 2-5, 7 and 9-12.

D4 relates to oral care compositions comprising tetrabasic zinc chloride and an amino acid, in particular a basic amino acid (see [0006]). The compositions are said to promote promote systemic health, including cardiovascular health, e.g., by reducing potential for systemic infection via the oral tissues (see [0015]). Thus, D4 anticipates the subject-matter of independent claims 1, 13 and 14, and the features set out in dependent claims 2-5, 7 and 9-11.

The features set out in claims 6 and 8, when combined with those defined in claim 1, do not appear to justify the presence of an inventive step (Article 33(3) PCT):

The use of an oral care composition comprising a basic amino acid, such as arginine, and a zinc ion source, such as a combination of zinc oxide and zinc citrate for treating endocarditis is not directly and unambiguously described in the documents at hand. However, it well known that inhibiting the proliferation of periodonthopatogens helps treat systemic disorders that are associated with periodontitis, including cardiovascular

disease, rheumatoid arthritis, aspiration pneumonia, pre-term birth, endocarditis and low birth weight (see D5, D6, D7 and D8, passages referred to in the search report). Thus, it was obvious for the skilled person that the oral care compositions of D3, promoting systemic health, including cardiovascular health, by reducing potential for systemic infection via the oral tissues, would also help treat endocarditis.

Re Item VIII

Certain observations on the international application

The list of basic amino acids provided in par. [00032] of the description does not correspond to those commonly regarded as basic amino acids by the skilled worker. The group of basic amino acid comprises arginine, hystidine and lysine (see D8; Group IV on page 15) and does not cover serine, citrulline and creatine. Thus, the term 'basic amino acid' of claim 1 is not clear (Art. 6 PCT).

This Authority is of the opinion that the claim-like clauses found in the description in paragraphs [00024] and [00028] lead to unclarity as to the actual scope of protection and thus, contravene the clarity requirements of Article 6 PCT. This applies, as a consequence, to any reference to 'Composition 1.0, et seq.' in paragraphs [00026], [00030], [00035], [00036] and [00039].

If not essential, the expression "which is hereby incorporated by reference" (see paragraphs [00035], [00037], [00048], [00049]), must be deleted from the description. If essential in the sense of Art. 5 PCT, the matter referred to must be incorporated into the description, because the patent specification should, regarding the essential features of the invention, be self-contained, that is, capable of being understood without reference to any other document (see PCT-EPO Guidelines, F-III.8).