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Datasheet for the decision of 28 September 2023

Case Number: T 0337/21 - 3.3.07

Application Number: 12729943.6

Publication Number: 2861304

IPC: A61P17/02, A61Q19/08, A61Q19/00, A61K8/49, A61K8/35

Language of the proceedings: EN

Title of invention:
COMPOSITIONS COMPRISING HYALURONAN BIOSYNTHESIS PROMOTING AGENTS

Patent Proprietor:
Symrise AG

Opponent:
Mayr Kotsch Partnerschaftsgesellschaft mbB

Headword:
Hyaluronan biosynthesis promoting agents / SYMRISE

Relevant legal provisions:
RPBA 2020 Art. 12(4)
EPC Art. 100(c), 100(b), 100(a)

Keyword:

Amendment to case - amendment admitted (no)
Grounds for opposition - subject-matter extends beyond content of earlier application (no) - insufficiency of disclosure (no) - lack of novelty (no) - lack of inventive step (no)

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Case Number: T 0337/21 - 3.3.07

D E C I S I O N
of Technical Board of Appeal 3.3.07
of 28 September 2023

Appellant: (Opponent)	Mayr Kotsch Partnerschaftsgesellschaft mbB Luise-Ullrich-Straße 14 Design Offices 80636 München (DE)
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Representative:	Daniels, Stefanie IP2 Patentanwalts GmbH Schlossstrasse 523-525 41238 Mönchengladbach (DE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 28 January 2021 rejecting the opposition filed against European patent No. 2861304 pursuant to Article 101(2) EPC.**

Composition of the Board:

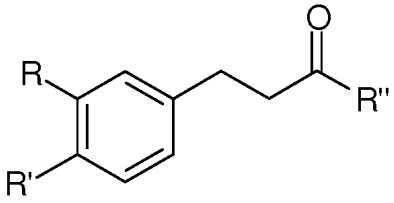
Chairman	A. Usuelli
Members:	M. Steendijk
	L. Basterreix

Summary of Facts and Submissions

I. European patent 2 861 304 ("the patent") was granted on the basis of twelve claims.

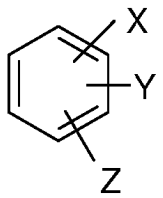
Claim 1 as granted defined:

"A cosmetic composition comprising active compounds of formula (I)



(I)

wherein R and R' independently of one another denote hydrogen, hydroxyl, a linear or branched OC1-C4-alkyl group, or optionally R and R' form together a methylenedioxy group resulting in a 3,4-methylendioxyphenyl residue and R" denotes a linear or branched C1-C9 alkyl group or A, wherein A denotes



with X, Y and Z being independently of one another hydrogen, hydroxyl, an linear or branched C1-C4-alkyl group,or a linear or branched OC1-C4-alkyl group, on condition that said active compounds are present in concentrations of from 0.00001 to 0,000005 % b.w."

Claim 10 as granted defined:

"Active compounds of formula (I) (...) for use as a medicament for improving wound healing." [formula (I) as defined in claim 1]

Claim 11 as granted related to:

"A non-therapeutic method for stimulating the hyaluronan biosynthesis comprising the steps:
(a) providing a composition comprising 0.00001 to 0,000005 % b.w.- calculated on the composition - of at least one compound of formula (I) (...)
(b) administering said composition to human tissue or skin or hair." [formula (I) as defined in claim 1]

Claim 12 as granted related to:

"The non-therapeutic use of a composition comprising a compound of formula (I) (...) in an amount 0.00001 to 0,000005 % b.w.- calculated on the composition - as stimulator for the biosynthesis of hyaluronan in human tissue or skin or hair." [formula (I) as defined in claim 1]

II. The patent was opposed on the grounds that its subject-matter lacked novelty and inventive step, that the claimed invention was not sufficiently disclosed and that the patent comprised subject-matter extending beyond the content of the application as filed. The appeal was filed by the opponent against the decision of the opposition division to reject the opposition.

The opposition division arrived at the following conclusions:

(a) The definition of the concentration range in claims 1, 11 and 12 resulted from the combination of the lower limit of the general range with the lower limit of the most preferred range for the concentration of the compounds of formula (I) described in the application as filed. In accordance with settled jurisprudence no new information resulted from such definition.

The concentration as defined in the claims clearly related to the concentration by weight ("b.w."), which evidently concerned the concentration based on the total weight of the composition as disclosed in the application as filed.

The application as filed described the provision of effective agents for stimulating the biosynthesis of hyaluronan to provide wound healing promoting activity as an object of the invention and presented the compounds of formula (I) as solution. The definition of the utility of compounds of the defined formula (I) for use as a medicament for improving wound healing was therefore adequately based on the application as filed.

Accordingly, the patent as granted did not comprise subject-matter extending beyond the content of the application as originally filed.

(b) The opposed patent included experimental data in support of the hyaluronan biosynthesis promoting effect of the compounds and provided sufficient guidance concerning suitable effective concentrations of the active compounds. The activity of the compounds was further supported by the experimental data reported in the proprietor's

letter of 17 September 2019. In view of this information and in the absence of proof to the contrary the patent was considered to sufficiently disclose the claimed invention, including the utility for promoting wound healing.

(c) Documents D1, D2, D9, D12 and D19 did not disclose a composition comprising the relevant compounds in concentrations as defined in claim 1.

The utility in promoting wound healing defined in claim 10 was not anticipated by the anti-inflammatory activity in the treatment of periodontitis, skin irritation or erythema as described in document D1.

The subject-matter defined in the claims as granted was therefore new over the cited prior art.

(d) Documents D5-D8 and D10, which described compositions for treatment of skin ageing, represented the closest prior art. The claimed subject-matter differed from compositions of documents D5-D8 and D10 in the definition of the low amounts of the active compounds.

The problem to be solved was seen in the provision of alternative formulations with moisturizing, anti-ageing and/or wound healing promoting activity.

No cited prior art suggested the use of compositions comprising the defined low amounts of active compounds let alone the utility of these compounds for stimulating the biosynthesis of

hyaluronan, improving skin hydration and/or promoting wound healing.

The subject-matter defined in the claims as granted therefore also involved an inventive step.

III. With the statement setting out the grounds of appeal the appellant (opponent) filed the following documents:

A19: J. Agric. Food Chem., 40, 1176-1177, (1992)
A20: Growth Hormone and IGF Research, 18,335-344 (2008)
A21: Journal Of Surgical Research, 52, 389-394 (1992)
A22: Biochim Biophys Acta, 1135, 309-317 (1992)

With the reply to the appeal the respondent (patent proprietor) filed auxiliary requests 1-13 as well as the following document:

A23: Flavex Naturextrakte, Allegemeine Spezifikation Ingwer CO2-se Extrakt, Typ Nr. 014.001 (29 January 2020)

IV. The Board invited the parties to attend oral proceedings to be held on 28 September 2023. In its communication pursuant to Article 15(1) RPBA the Board expressed the preliminary opinion that the appeal was to be dismissed.

V. Oral proceedings were held on 28 September 2023 by means of a videoconference.

VI. The arguments of the appellant relevant to the present decision are summarized as follows:

(a) Admittance new documents and objections

Document A19 disclosed relevant compositions comprising raspberry ketone (RK) which were covered by the claims. Documents A20-A22 suggested the claimed utility of RK. The documents had not been held back by the opponent and had only been retrieved after the decision under appeal following an event that prompted the appellant to focus a search on RK within the broad generic definition of the compounds in the claims as granted.

Example 2 of document D1 described compositions covered by the claims. The objection of lack of novelty in view of example 2 of document D1 was therefore justified.

(b) Basis for the amendments in the application as filed

The definition of the range of 0.00001 to 0,000005% b.w. in claims 1, 11 and 12 as granted could not be directly and unambiguously derived from the application as originally filed, because the application as originally filed only disclosed the value of 0,000005% in the particular context of the lower limit of the general range of 0,000005 to 5% and the value of 0,00001% in the particular context of the lower limit of the most preferred range of 0,00001 to 0.1%.

Granted claim 1 further included subject-matter extending beyond the content of the application as

filed, because it defined the range in terms of "% b.w". without specifying any reference point, whereas the application as filed explicitly referred to the total weight as reference point.

The reference to the promotion of wound healing by compositions described in the application as filed did not represent a disclosure of the utility of the compounds as a medicament as defined in granted claim 10.

(c) Sufficiency

The patent failed to disclose the suitability of any composition for use as a medicament for improving wound healing as defined in granted claim 10. Moreover, the results reported in example 1 of the patent indicated that compound IV, which is covered by formula I of claim 10, does not show hyaluronan synthesis promoting activity at the tested concentration.

(d) Novelty

Document D1 disclosed cosmetic compositions comprising 6-paradol and bisabolol in a ratio from 1:100,000 to 1:10 and a total amount of these agents of 0.01 to 1 wt.% and thereby anticipated the subject-matter of granted claims 1-9 and 11-12.

The utility in treatment of skin irritation described in document D1 further anticipated the subject-matter of claims 10-12 as granted. The stimulation of hyaluronan synthesis reflected the mere discovery of a property rather than a new utility.

Moreover, the Keratinocyte Growth Medium (KGM) comprising 0.20 µM or 0.25 µM 6-paradol described in Example 2 of document D1 qualified as a cosmetic composition and therefore anticipated the subject-matter of claim 1 as granted.

Document D17 described in examples 6 and 8 as well in Table 4 compositions comprising 0.002 wt.% or 0.001 wt.% of the ginger derived component "Ginger CO2 Extract (FLAVEX)-Zingiber Officinale (Ginger) Root Extract". This FLAVEX-extract comprised according to document D17 itself < 0.5% zingerone (compound III of the patent). According to documents D15 and D16 this extract was commercially available and known to comprise zingerone in a concentration of 0.37%. The compositions comprising this extract therefore lacked novelty. Moreover, the utility of the compositions in treatment of skin irritation as described in document D17 anticipated the subject-matter of claims 10-12 as granted.

Document D9 disclosed cosmetic compositions comprising compound IV of the patent as an anti-inflammatory agent as well as compositions comprising "Ginger CO2 Extract (FLAVEX)-Zingiber Officinale (Ginger) Root Extract" in amounts of 0.003 and 0.001 wt.%. Document D9 therefore also anticipated the subject-matter of claims 1-12 as granted.

Document D2 disclosed cosmetic compositions comprising compounds covered by formula I of claim 1 of the patent, namely DULCINYL™ (= cassione) or OXYPHENYLON™ (= raspberry ketone (RK)) in an

amount of 0-2 wt%. The range of the concentration of the compounds defined in the patent represented an arbitrary choice not far from the 0%-limit described in document D2 and did therefore not represent a new selection within the range described in document D2.

Document A19 described compositions suitable as cosmetics comprising (p-hydroxyphenyl) butan-2-one (=raspberry ketone (RK)) in an amount of 5.8 µg/100 g and thereby anticipated the subject-matter of granted claims 1-8.

(e) Inventive step

The subject-matter of claims 1-9 lacked an inventive step in view of any of documents D3-D10 and D12 as starting point, taken alone or in combination with documents D1, D9 or D17. Documents D3-D10 and D12 already described compounds of formula I as active agents in cosmetic compositions with skin moisturizing anti-ageing promoting effect. The difference of the claimed compositions with the compositions from this prior art, if any, concerned the low concentration of the compounds of formula I as defined in the claims.

The experimental results reported in the patent did not relate to concentrations of zingerone, cassione and 6-paradol as defined in the claims. The results reported for compound IV actually demonstrated no hyaluronan synthesis promoting activity of compound IV at the concentrations as defined in the claims.

In the absence of evidence of any particular effect from the difference with the prior art, the

objective technical problem was the provision of an alternative cosmetic composition with moisturizing and anti-ageing promoting effect. The reduction of the concentration of the agents was obvious to the skilled person, because the investigation of the lowest effective concentration was motivated by considerations of toxicity and economy and required no more than routine experimentation. The low concentrations of the relevant agents defined in the claims would further seem obvious in view of documents D1, D9 and D17, which already indicated that the compounds were useful in cosmetic compositions in low concentrations.

The wound healing utility as defined in claim 10 remained unsubstantiated and could therefore not be relied upon for an inventive step.

The wound healing utility of compounds of formula I as defined in claim 10 was furthermore obvious to the skilled person in view of the IGF-1 activating effect and the increased skin elasticity from topical application of RK described in document D20 and the stimulation of wound healing by IGF-1 described in document A21. The hyaluronan synthesis promoting effect described in the patent was obvious in view of the activation of IGF-1, which was known to promote the hyaluronan synthesis from document D22. Any unexpected effect of the claimed subject-matter would only represent a bonus effect from what was anyway obvious.

VII. The arguments of the respondent relevant to the present decision are summarized as follows:

(a) Admittance new documents and objections

Documents A19-A22 and the objection of lack of novelty in view of example 2 of document D1 should not be admitted, because they represented unjustified amendments to the appellant's case and lacked *prima facie* relevance. Document A19 only described the obtention of 5.8 µg RK from 100 g fruit, but not the actual concentration of RK in any composition. Documents D20-D22 merely described an effect of RK on dermal IGF-1 levels, a correlation between IGF-1 expression and wound healing and an effect of IGF-1 on hyaluronan synthesis in explant cultures of articular cartilage. Example 2 of document D1 related to KGM compositions which were not suitable as cosmetic compositions, because KGM typically comprised an antibiotic.

(b) Basis for the amendments in the application as filed

The definition of a range by combination of the lower limit of an originally disclosed broad range with the lower limit of an originally disclosed preferred range was in accordance with established jurisprudence not objectionable.

The skilled person understood that the percentage by weight as defined in granted claim 1 refers to the total weight of the composition as disclosed in the application as filed.

The application as filed aimed specifically at providing effective agents with wound healing promoting activity and thereby provided an adequate

basis for the use as a medicament defined in claim 10 as granted.

(c) Sufficiency

The patent disclosed in examples 1-3 effective concentrations of the exemplified compounds, including compound IV, for stimulating hyaluronan synthesis. The patent thereby enabled the skilled person to achieve the desired effects.

(d) Novelty

Specific selections from the ratio and the total amount of 6-paradol and bisabolol described in document D1 were required to arrive at the concentration of a compound of formula I as defined in claims 1, 11 and 12 of the patent. The improvement of wound healing as defined in claim 10 represented a distinct therapeutic treatment with respect to treatment of inflammation and skin irritation as described in document D1.

The actual zingerone content of the ginger extract used for the compositions of documents D17 and D9 remained undetermined. As demonstrated by document D23 the FLAVEX-extract mentioned in documents D17 and D9 did not necessarily correspond to the FLAVEX-extract with a 0.37% zingerone content as described in documents D15 and D16.

The effective concentration range defined in the claims was not an arbitrary choice close to the value of 0% from the range of 0-2% defined in document D2.

(e) Inventive step

The patent described the promotion of the hyaluronan synthesis by compositions comprising the defined low concentrations of the defined compounds, which thereby provided moisturizing, anti-ageing or wound healing promoting activity. The activity of the defined compounds was demonstrated in the examples of the patent and confirmed by the results presented with the proprietor's letter of 17 September 2019. Documents D5-D8 and D10 represented appropriate starting points in the prior art describing the utility of similar compounds against ageing of the skin at substantially higher concentrations. The objective technical problem was to provide compositions in which the compounds stimulated at a reduced concentration the hyaluronan synthesis and thereby provided improved moisturizing, anti-ageing or wound healing promoting activity. The prior art did not present any suggestion towards the utility of the compounds at the reduced concentrations nor towards their efficacy in stimulating the hyaluronan synthesis and the associated utility for promoting wound healing.

VIII. The appellant requested that the decision under appeal be set aside and that the patent be revoked.

IX. The respondent requested that the appeal be dismissed. Subsidiarily, the respondent requested that the patent be maintained on the basis of one of auxiliary requests 1-13

The respondent further requested that documents A19-A22 and the appellant's new argument of lack of novelty in

view of example 2 of document D1 (KGM compositions) not be admitted into the appeal proceedings.

Reasons for the Decision

1. Admittance new documents and objections

1.1 Documents A19-A22

The appellant filed with the statement of grounds of appeal document A19 as an additional item of prior art anticipating the subject-matter of claim 1 as granted and documents A20-A22 as relevant prior art for denying the subject-matter of claim 10 an inventive step.

The appellant thereby raised with the appeal entirely new objections of lack of novelty and lack of inventive step. The appellant referred to the broadness of the generic definition of the compounds in the granted claims and argued that the event that prompted the appellant to focus a search on RK as a compound covered by that definition occurred only after the announcement of the decision under appeal. In the Board's view the appellant thereby presented at best a subjective explanation why the documents had not been filed at an earlier stage. However, this explanation falls short of any objective justification why the documents could not be retrieved and presented at an earlier stage.

The Board further considers that in the absence of any indication of a quantitative yield the reference in document A19 to the obtention of 5.8 µg RK from 100 g fruit (see A19, page 1177, Table 1) does not allow a conclusion as to the actual concentration of RK in the originating composition. Moreover, the Board observes

that document D20 reports the promotion of dermal IGF-I, hair growth and skin elasticity by RK without any reference to wound healing (see page 342, right column), that document D21 merely reports a correlation between IGF-I/II expression and wound healing (see D21, see page 394) and that document D22 only refers to an influence of IGF-I on the hyaluronan synthesis in explant cultures of articular cartilage (see D22, page 316, right column). It is therefore not evident that the information in documents A19-A22 is of relevance to the outcome of the appeal.

The Board has therefore decided not to admit documents A19-A22 into the appeal proceedings (Article 12(4) RPBA 2022).

1.2 Document A23

The respondent filed document A23 with the reply to the appeal to further support its argument that the reference in document D17 to "Ginger CO2 Extract (Flavex)" does not necessarily relate to the "Ginger CO2-to Extrakt Typ Nr. 014.002" described in documents D15 and D16 as argued by the appellant. The filing of document A23 thus addresses an issue relevant to the appeal. Its admittance would not be detrimental to procedural economy or give rise to particular complications. In fact, the appellant has not objected to the admittance of document A23. The Board has therefore admitted document A23 into the appeal proceedings (Article 12(4) RPBA 2022) .

1.3 Objection for lack of novelty in view of example 2 of D1

The objection that the cosmetic composition of claim 1 as granted lacks novelty in view of the KGM-compositions comprising 0.20 µM or 0.25 µM 6-paradol described in Example 2 of document D1 was raised by the appellant for the first time in the statement of grounds of appeal without any particular justification. Moreover, in view of the respondent's argument that a KGM-composition typically contains an antibiotic and does therefore not qualify as a cosmetic composition, it is not evident that the KGM-compositions of Example 2 of document D1 represent cosmetic compositions as defined in claim 1 of the patent.

The Board has therefore decided not to admit the objection into the appeal proceedings (Article 12(4) RPBA 2022).

Main request (patent as granted)

2. Basis for the amendments in the application as filed

2.1 The definition of the range of 0.00001 to 0,000005% b.w. in granted claims 1, 11 and 12 results from the disclosure of the value of 0,000005% as the lower limit of the general range of 0,000005 to 5% and the value of 0,00001% as the lower limit of the most preferred range of 0,00001 to 0.1% in the application as originally filed (see page 8, lines 1-4).

According to the established jurisprudence the definition of a range by combination of the lower limit of an originally disclosed broad range with the lower limit of an originally disclosed preferred range within

said broad range is generally not considered to introduce subject-matter extending beyond the content of the original disclosure (see Case law of the Boards of Appeal of the European Patent Office 10th edition 2022, section II.E.1.5.1).

The Board therefore agrees with the decision under appeal that the defined concentration range can be directly and unambiguously derived from the application as filed.

2.2 Claim 1 defines the range in terms of a percentage by weight ("% b.w.") without specifying explicitly that the defined percentage is based on the total weight of the composition as disclosed in the application as filed.

In the absence of an explicitly defined reference point the skilled person understands that the percentage by weight can in line with the disclosure in the application as filed (see page 8, lines 1-4) only relate to the total weight of the composition.

Accordingly, the Board considers that the omission of the definition of the reference point for the percentage by weight does not present the skilled person with information extending beyond the original disclosure.

2.3 The application as filed does not explicitly mention the term "medicament" in relation to the utility of the compounds for improving wound healing as defined in claim 10. However, the application as filed (see page 5, lines 1-7 and page 5, lines 21-23) discloses the promotion of wound healing to be associated with the hyaluronan synthesis stimulating activity of the

defined agents. The application as filed (see page 5, lines 5-6) actually distinguishes in this context between cosmetic and pharmaceutical compositions. The Board agrees with the opposition division that thereby the application as filed implicitly disclosed the therapeutic utility of the relevant agents as a medicament for improving wound healing as defined in claim 10 as granted.

2.4 Accordingly, the Board concludes that the patent as granted does not comprise subject-matter extending beyond the content of the application as originally filed.

3. Sufficiency

The Board observes that the patent (see paragraph [0020]) mentions the beneficial effect of hyaluronan on wound healing and teaches (see paragraph [0034]) that the stimulation of hyaluronan synthesis promotes wound healing. The patent further describes in examples 1-3 effective concentrations of the exemplified compounds, including compound IV (see paragraph [0114], Table 2), for stimulating hyaluronan synthesis, which provides the skilled person with adequate instruction how to achieve the desired effect. The Board therefore agrees with the decision under appeal that the patent sufficiently discloses the therapeutic utility of the compounds as defined in claim 10 as granted.

4. Novelty

4.1 Document D1

Document D1 describes cosmetic compositions comprising 6-paradol and bisabolol in a ratio from 1:100,000 to

1:10 and a total amount of these agents of 0.01 to 1 wt.%(see D1, claims 1 and 6). It would require the combination of the selection of a specific limit of the ratio with the selection of a specific limit of the total amount of 6-paradol and bisabolol described in document D1 to arrive at a concentration of 6-paradol as defined for a compound of formula I in claims 1, 11 and 12 of the patent. Document D1 does not present any pointer to such combined selection. The concentrations as defined in granted claims 1-9 and 11-12 can therefore not be directly and unambiguously derived from document D1.

The Board further considers the improvement of wound healing as defined in claim 10 as granted to represent a distinct therapeutic treatment with respect to treatment of inflammation and skin irritation as described in document D1 (see D1, page 7, lines 27-30).

4.2 Document D17

Document D17 discloses skin irritation reducing compositions comprising a ginger derived component. In examples 6 and 8 (see D17 pages 48-57) and in composition A (see D17, page 64) "Ginger CO2 Extract (FLAVEX)-Zingiber Officinale (Ginger) Root Extract" is used in an amount of 0.002 wt.% or 0.001 wt.%. Document D17 further discloses (see D17, page 65, line 3) that this ginger extract comprised < 0.5% zingerone (compound III of the patent). Documents D15 and D16 indicate that such ginger extract may be commercially available as "Ginger CO2-to Extrakt Typ Nr. 014.002", which comprises zingerone in a concentration of 0.37%. Document D17 further describes the utility of the compositions in the treatment of skin irritation described (see D17, claim 1).

The Board observes that the actual zingerone content of the ginger extract of examples 6 and 8 and composition A of document D17 remains undetermined, because it has not been demonstrated that the FLAVEX-extract used in document D17 necessarily corresponds to the FLAVEX-extract of Typ Nr.014002 with a 0.37% zingerone content as described in documents D15 and D16. Document A23 describes for instance an alternative FLAVEX-extract designated as Typ Nr.014001. The Board further considers that the mention of a < 0.5% zingerone content of the extract in document D17 does not allow to determine whether the zingerone content of the compositions in document D17 actually falls within the range defined in the claims of the patent.

As indicated in section 4.1 above, the Board considers the improvement of wound healing defined in granted claim 10 to represent a distinct therapeutic treatment with respect to treatment of skin irritation described in document D17.

4.3 Document D9

Document D9 describes cosmetic compositions comprising compound IV of the patent as an anti-inflammatory agent (see D9, claim 1). As indicated in section 4.1 above, the Board considers the improvement of wound healing defined in granted claim 10 to represent a distinct therapeutic treatment with respect to treatment of inflammation described in document D9.

Document D9 further describes compositions comprising "Ginger CO2 Extract (FLAVEX)-Zingiber Officinale (Ginger) Root Extract" in amounts of 0.003 and 0.01 wt.% (see D9, page 29, lines 6-10). The actual

zingerone content of the Flavex extract used in document D9 remains undetermined for the same reason as explained in section 4.2 above in relation to document D17.

4.4 Document D2

Document D2 describes cosmetic compositions comprising compounds covered by formula I of granted claim 1, namely DULCINYL™ (= cassione) or OXYPHENYLON™ (= raspberry ketone (RK)) in an amount of 0-2 wt% (see D2, paragraphs [0017]-[0018]).

Claims 1-9 and 11-12 as granted require the actual presence of a low amount of a compound of formula I within the narrow concentration range of 0.00001 to 0.000005% as compared to the range of 0-2% mentioned in document D2. The lower limit of 0% in document D2 actually indicates that the presence of such a compound is according to document D2 not even required. The Board therefore agrees with the finding in the decision under appeal that the concentration of the compounds defined in claims 1-9 and 11-12 as granted is not anticipated by the range of 0-2% described in document D2.

4.5 Accordingly, the Board concludes that the patent as granted complies with the requirement of novelty.

5. Inventive step

5.1 Starting point in the prior art

The patent aims to provide agents which stimulate the synthesis of hyaluronan and thereby promote

moisturizing, anti-ageing and wound healing (see the patent, paragraph [0032]).

Documents D5-D8 describe the effect of a compound of formula I, zingerone, on fat-tissue and its utility, preferably in concentrations of 0.001-10 wt%, in cosmetic or dermatological compositions for skin care aimed at treating symptoms of skin ageing, including dryness (see D5, paragraphs [0008],[0011]-[0012]; see D6/D7/D8, page 2 lines 20-22 and claims 1-2, 4). Document D10 further describes the utility of a compound of formula I (compound IV of the patent), preferably in a concentration of 0.001-30%, in cosmetic or dermatological compositions for skin care aimed at moisturizing and improving firmness of the skin, improving barrier-properties and protecting the skin against harmful external influences (see D10, paragraphs [0011]-[0012],[0018]-[0020] and [0022]).

Document D3 indicates the utility of compounds of formula I, preferably in amounts of 0.01 to 5 wt%, in compositions for skin whitening. Document D4 describes the utility of compounds of formula I, preferably in a concentration of 0.01-10 wt%, in compositions for protecting the skin from UV-radiation (see D4, claims 1, 4-6). Document D12 describes the utility of ginger extract in treatment of viral infection (see page 18, Table 1, see claim 7).

In line with the finding in the decision under appeal the Board considers documents D5-D8 and D10 to represent the more pertinent starting points in the prior art having regard to the purpose of the claimed subject-matter disclosed in the patent.

5.2 Differences with the prior art

Claims 1-9 and 11-12 define with respect to the cited prior art a substantially lower concentration of the compounds of formula I. Furthermore, the utility in improving wound healing as defined in claim 10 represents a therapeutic use which can be distinguished from the known anti-inflammatory and anti-irritant utility described in the prior art.

5.3 Objective technical problem

The experimental results in examples 1-3 of the patent indicate that exemplified compounds of formula I stimulate the synthesis of hyaluronan in skin cells at concentrations partly even below the range defined in claim 1. In this context the Board observes that the exemplified "Compound of formula IV" was shown not to increase the hyaluronan synthesis in cultured normal human dermal fibroblasts at a concentration as defined in claim 1 of the patent (see example 1, Table 1, paragraphs [0110]-[0112]). However, at the same concentration this "Compound of formula IV" significantly increased the hyaluronan synthesis in cultured normal epidermal keratinocytes (see example 2, Table 2, paragraphs [0113]-[0115]). Accordingly, the patent demonstrates that this compound very well exhibits at a relevant concentration hyaluronan synthesis stimulating activity in skin cells. The activity of exemplified compounds at a relevant concentration is further confirmed by the experimental data reported in the respondent's letter of 17 September 2019 (see Table 1, page 19).

As explained in the patent (see paragraph [0032]) the stimulation of hyaluronan synthesis in skin tissue

provides moisturizing, anti-ageing and wound healing promoting activity.

In view of the mentioned experimental results the Board therefore agrees with formulation of the technical problem in the decision under appeal as the provision of alternative formulations with moisturizing, anti-ageing or wound healing promoting activity.

5.4 Assessment of the solution

Documents D5-D8 and D10 themselves do not provide the skilled person with any reasonable expectation that the described known compositions retain their utility when the concentration of the contained compound covered by formula I is drastically reduced to the level as defined in claims 1-9 and 11-12 as granted. Moreover, these documents do not in any way suggest the skilled person that a compound of formula I as defined in the patent would be capable of stimulating hyaluronan synthesis and would thereby be useful in promoting wound healing as defined in granted claim 10.

Documents D1, D9 and D17 relate to compositions with anti-irritant and anti-inflammatory activity, which does not provide the skilled person with any reasonable expectation concerning the skin moisturizing, anti-ageing or wound healing promoting activity of the compositions of the claims as granted.

5.5 The Board therefore agrees with the decision under appeal that the claimed subject-matter of the patent as granted involves an inventive step.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

B. Atienza Vivancos A. Usuelli

Decision electronically authenticated