Internal distribution code:

(A) [-] Publication in OJ
(B) [-] To Chairmen and Members
(C) [-] To Chairmen
(D) [X] No distribution

Datasheet for the decision of 10 November 2021

Case Number: T 0454/19 - 3.3.09

Application Number: 12178192.6

Publication Number: 2526778

IPC: A23L29/00, A23D7/005, A23D7/04

Language of the proceedings: EN

Title of invention:
Natural high-potency sweetener compositions with improved temporal profile and/or flavor profile, methods for their formulation, and uses

Patent Proprietor:
The Coca-Cola Company

Opponent:
UNILEVER PLC / UNILEVER NV

Headword:
Sweetener/COCA-COLA

Relevant legal provisions:
EPC Art. 54, 56, 83, 123(2)

Keyword:
Main request (novelty) - (no)
Auxiliary request 1 (allowable) - yes

Decisions cited:
T 1085/13

Catchword:

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern

Boards of Appeal

Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0
Fax +49 (0)89 2399-4465

Case Number: T 0454/19 - 3.3.09

D E C I S I O N
of Technical Board of Appeal 3.3.09
of 10 November 2021

Appellant: (Patent Proprietor)	The Coca-Cola Company One Coca-Cola Plaza, N.W. Atlanta, GA 30301 (US)
Representative:	Dehns St. Bride's House 10 Salisbury Square London EC4Y 8JD (GB)
Appellant: (Opponent)	UNILEVER PLC / UNILEVER NV Unilever House, Blackfriars/Weena 455 London EC4P 4BQ/3013 AL Rotterdam (GB)
Representative:	Askew, Sarah Elizabeth Unilever PLC Unilever Patent Group Bronland 14 6708 WH Wageningen (NL)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 13 December 2018 concerning maintenance of the European Patent No. 2526778 in amended form.**

Composition of the Board:

Chairman	A. Haderlein
Members:	M. Ansorge
	D. Rogers

Summary of Facts and Submissions

I. Appeals were filed by both parties against the opposition division's interlocutory decision holding the then auxiliary request 1 allowable. For simplicity, the board will continue to refer to them as the opponent and the proprietor.

II. With its notice of opposition, the opponent had requested that the patent be revoked on the grounds for opposition under Article 100(a) EPC (lack of novelty and lack of inventive step), Article 100(b) EPC and Article 100(c) EPC.

III. In the present decision, reference is made to the following documents:

D1: US 4,738,856
D3: US 6,083,549
D4: US 5,962,678
D10: "Effects of osmolarity on taste receptor cell size and function", V. Lyall et al., American Journal of Cell Physiology, vol. 277, issue 4, 1999, pages C800 to C813
E1: "Stevia, Nature's Zero-Calorie Sustainable Sweetener", M. Ashwell, Nutrition Today, volume 50, number 3, 2015, pages 129 to 134

IV. The opposition division decided, *inter alia*, that the claimed sweetener composition according to the main request lacked novelty in view of D1, but that the claimed subject-matter of the then auxiliary request 1 met the requirements of the EPC.

V. Claims 1 and 5 of the main request read as follows:

"1. A sweetener composition comprising at least one amino acid and rebaudioside A, wherein:
the rebaudioside A has a purity greater than 80% by weight on a dry basis;
the amino acid is present in an amount from 100 ppm to 15,000 ppm; and
the at least one amino acid is selected from the group consisting of aspartic acid, arginine, glycine, glutamic acid, proline, threonine, theanine, cysteine, cystine, alanine, valine, tyrosine, leucine, isoleucine, asparagine, serine, lysine, histidine, ornithine, methionine, carnitine, aminobutyric acid (alpha-, beta-, or gamma- isomers), glutamine, hydroxyproline, taurine, norvaline, sarcosine, salts thereof and combinations thereof."

"5. A sweetened composition comprising a sweetenable composition and a sweetener composition, the sweetener composition comprising at least one amino acid and rebaudioside A, wherein:
the rebaudioside A has a purity greater than 80% by weight on a dry basis;
the amino acid is present in an amount from 100 ppm to 15,000 ppm; and
the at least one amino acid is selected from the group consisting of aspartic acid, arginine, glycine, glutamic acid, proline, threonine, theanine, cysteine, cystine, alanine, valine, tyrosine, leucine, isoleucine, asparagine, serine, lysine, histidine, ornithine, methionine, carnitine, aminobutyric acid (alpha-, beta-, or gamma- isomers), glutamine, hydroxyproline, taurine, norvaline, sarcosine, salts thereof and combinations thereof."

VI. Claims 1, 5, 6 and 10 of auxiliary request 1 read as follows (the features added to the corresponding claims of the main request being underlined and the features deleted from the corresponding claims of the main request being struck-through):

"1. A sweetener composition comprising at least one amino acid and rebaudioside A, wherein:
the rebaudioside A has a purity greater than 80% by weight on a dry basis;
the amino acid is present in an amount from 100 ppm to 15,000 ppm; and
the at least one amino acid is selected from the group consisting of aspartic acid, arginine, glycine, glutamic acid, proline, threonine, theanine, cysteine, cystine, alanine, valine, tyrosine, leucine, isoleucine, asparagine, serine, lysine, histidine, ornithine, methionine, carnitine, aminobutyric acid (alpha-, beta-, or gamma- isomers), glutamine, hydroxyproline, taurine, norvaline, sarcosine; sodium, magnesium or acid salts thereof and combinations thereof."

"5. A sweetener composition comprising at least one amino acid and rebaudioside A, wherein:
the rebaudioside A has a purity greater than 80% by weight on a dry basis;
the amino acid is present in an amount from 100 ppm to 15,000 ppm; and
the at least one amino acid is selected from the group consisting of ~~aspartic acid,~~ arginine, glycine, glutamic acid, proline, threonine, theanine, cysteine, cystine, alanine, valine, tyrosine, leucine, isoleucine, asparagine, serine, lysine, histidine, ornithine, methionine, carnitine, aminobutyric acid (alpha-, beta-, or gamma- isomers), glutamine, hydroxy

proline, taurine, norvaline, sarcosine, salts thereof and combinations thereof."

"6. A sweetened composition comprising a sweetenable composition and a sweetener composition, the sweetener composition comprising at least one amino acid and rebaudioside A, wherein:
the rebaudioside A has a purity greater than 80% by weight on a dry basis;
the amino acid is present in an amount from 100 ppm to 15,000 ppm; and
the at least one amino acid is selected from the group consisting of aspartic acid, arginine, glycine, glutamic acid, proline, threonine, theanine, cysteine, cystine, alanine, valine, tyrosine, leucine, isoleucine, asparagine, serine, lysine, histidine, ornithine, methionine, carnitine, aminobutyric acid (alpha-, beta-, or gamma- isomers), glutamine, hydroxy proline, taurine, norvaline, sarcosine; sodium, magnesium or acid salts thereof and combinations thereof."

"10. A sweetened composition comprising a sweetenable composition and a sweetener composition, the sweetener composition comprising at least one amino acid and rebaudioside A, wherein:
the rebaudioside A has a purity greater than 80% by weight on a dry basis;
the amino acid is present in an amount from 100 ppm to 15,000 ppm; and
the at least one amino acid is selected from the group consisting of ~~aspartic acid,~~ arginine, glycine, glutamic acid, proline, threonine, theanine, cysteine, cystine, alanine, valine, tyrosine, leucine, isoleucine, asparagine, serine, lysine, histidine, ornithine, methionine, carnitine, aminobutyric acid

(alpha-, beta-, or gamma- isomers), glutamine, hydroxyproline, taurine, norvaline, sarcosine, salts thereof and combinations thereof."

Claims 2 to 4 and 7 to 9 of auxiliary request 1 are dependent claims.

VII. The board issued a communication pursuant to Article 15(1) RPBA indicating its preliminary opinion that the claimed sweetener composition according to the main request lacked novelty over D1, but that the subject-matter claimed in auxiliary request 1 met the requirements of the EPC, including the conclusion that the claimed subject-matter involved an inventive step in view of D3 as the closest prior art.

VIII. The opponent announced that it would not attend the oral proceedings.

IX. The proprietor withdrew its request for oral proceedings on the condition that the patent be maintained on the basis of auxiliary request 1, i.e. on the condition that the board would not change its preliminary assessment of this claim request.

X. The oral proceedings were cancelled.

XI. The parties' relevant arguments submitted in writing are reflected in the reasoning below.

XII. Requests

The opponent requested that the decision be set aside and that the patent be revoked in its entirety.

The proprietor requested that the decision under appeal be set aside and that the patent be maintained on the basis of the main request or one of auxiliary requests 1 to 19, all filed with the grounds of appeal.

Reasons for the Decision

MAIN REQUEST

1. Interpretation of claim 1

1.1 Claim 1 of the main request relates to a sweetener composition comprising at least one specific amino acid or salts thereof in a specific amount and rebaudioside A (REBA), which is characterised as having a purity greater than 80% by weight on a dry basis.

1.2 The patent does not give a precise definition of exactly what "purity" of REBA means. In paragraph [0069] of the patent, it is explained that purity represents the weight percentage of a relevant NHPS compound (natural high-potency sweetener) present in an NHPS extract, in raw or purified form. This paragraph further explains that a steviol glycoside extract comprises a particular steviol glycoside in a particular purity, with the remainder of the steviol glycoside extract comprising a mixture of other steviol glycosides.

1.3 In claim 1, REBA is only defined by way of its purity. Due to the open wording ("comprising"), the sweetener composition may contain further components, including "impurities" typically present in REBA-containing extracts or even other "impurities". The claimed

composition may be in the form of a solid or a liquid and may include bulking agents, anti-caking agents or flow agents, water, etc. (see paragraphs [0144] to [0150] of the patent).

In view of the open wording of claim 1, the feature "purity greater than 80% by weight on a dry basis" cannot be acknowledged as limiting the claimed sweetener composition with respect to the cited prior art. The same applies to claim 5 of the main request, which is directed to a sweetened composition comprising a sweetener composition having wording identical to that in claim 1.

2. Novelty

2.1 The opposition division decided that the subject-matter of claim 1 of the main request lacked novelty in view of Example II of D1.

2.2 In this context, the proprietor argued that D1 did not directly and unambiguously disclose that the REBA used in Example II of D1 had a purity of greater than 80% by weight on a dry basis. As evidence that REBA did not necessarily have this purity level, the proprietor referred to D4 (Examples 3 and 4), which, in its view, leads to the conclusion that the claimed sweetener composition is novel in view of D1.

2.3 For the following reasons, the board does not agree with the proprietor in this respect.

2.3.1 Example II of D1 discloses a beverage (354 ml) comprising, *inter alia*, 20 meq of calcium aspartate, 4 meq potassium aspartate and 1.93 g of REBA. Accordingly, D1 discloses a sweetener composition

comprising aspartic acid salts as the amino acid salts in the required amount and REBA. The only contentious point between the parties was whether Example II of D1 also disclosed the purity of REBA as mentioned in claims 1 and 5 of the main request.

2.3.2 As outlined under point 1 above, in this specific case the feature "purity greater than 80% by weight on a dry basis" in claim 1 of the main request does not limit the claimed sweetener composition in a meaningful manner, and therefore does not distinguish the claimed sweetener composition from that described in Example II of D1. The same applies to claim 5 of the main request.

2.3.3 Moreover, D4 relates to a method of extracting REBA from a mixture of REBA and stevioside obtained from the *Stevia rebaudiana* plant and purifying it. The samples as e.g. shown in Examples 3 and 4 of D4 relate to the purification of stevia extracts and do not support the fact that commercially available REBA or something simply called "REBA" (as in D1) might have a purity of below 80%, as alleged by the proprietor. D4 does not support that REBA as used in D1 might have a purity of 80% or less. The same applies to the post-published document E1, which relates to stevia and not to REBA.

2.3.4 In its line of argument, the proprietor also referred to T 1085/13, which deals with the issue of purity of low molecular chemical compounds; however, as concluded in point 1 above, in this case the feature "purity greater than 80% by weight on a dry basis" cannot be acknowledged as limiting the claimed sweetener composition with respect to the cited prior art. Moreover, since T 1085/13 relates to the issue of purity of low molecular chemical compounds as such and not a case of purity of one component present in a

composition comprising numerous ingredients, it cannot support the proprietor's case.

In view of the above, the board concludes that the opposition division correctly assessed the question of novelty of claim 1 of the main request.

The subject-matter of claim 1 of the main request is not novel in view of Example II of D1. The same applies to claim 5 of the main request.

AUXILIARY REQUEST 1

3. Article 123(2) EPC

3.1 The opponent argued that the subject-matter of claim 1 of auxiliary request 1 did not meet the requirement of Article 123(2) EPC. In its view, page 6, lines 1 to 3, page 52, lines 18 to 29, and page 119, lines 19 to 22, of the application as filed did not provide a basis for the specific combination of features in claim 1. In particular, it stressed that the application as filed contained a large number of different embodiments and it did not provide a basis for the specific combination of features as claimed.

3.2 For the following reasons, the board does not agree.

3.2.1 The first relevant point of disclosure in the application as filed is the following, on page 119, lines 19 to 22:

"In one embodiment, a composition comprising REBA in combination with at least one **sweet taste improving** amino acid additive is provided. In a particular embodiment, the at least one sweet taste improving

amino acid additive is present in an amount from about 100 to about 15,000 ppm **of the composition**." (emphasis added)

In the board's view, the above-mentioned passage on page 119 of the application as filed provides a basis for a sweetener composition comprising REBA and at least one amino acid being present in an amount of 100 to 15,000 ppm. In this context, the board does not interpret these two sentences on page 119 as separate embodiments. Instead, both sentences are considered to provide a basis for the combination of REBA and the specific amount of amino acid(s).

3.2.2 Page 6, lines 1 to 3, of the application as filed discloses that the sweetener composition may comprise rebaudioside A in a purity greater than about 80% by weight on a dry basis. Therefore, the feature of claim 1 directed to the purity of REBA is disclosed as well.

3.2.3 Page 52, lines 18 to 29, of the application as filed discloses the specific amino acids or salts thereof as sweet taste improving amino acid additives. In this context, the board considers that the text passage on page 52, lines 26 to 29, of the application as filed not only relates to combinations of amino acids, but also specifies the amino acids individually mentioned in the same paragraph before. The deletion from one list only, i.e. from the list "sodium, ~~potassium~~, ~~calcium~~, magnesium salts ~~or other alkali or alkaline earth metal salts thereof,~~ or acid salts", is also in line with Article 123(2) EPC.

3.2.4 The latter passages on pages 6 and 52 (see points 3.2.2 and 3.2.3 above) are disclosed in the general context

of the description and not only in the context of separate specific embodiments. These passages merely further specify the purity of REBA and the list of possible amino acids or salts thereof and do not relate to separate specific embodiments. Therefore, the claimed combination of features is disclosed in the application as filed when considering the disclosure as a whole.

Therefore, the subject-matter of claim 1 of auxiliary request 1 meets the requirement of Article 123(2) EPC. In the absence of any objections to the other claims, the board did not see any reason to believe that these claims might violate Article 123(2) EPC.

4. Sufficiency

4.1 The opponent argued that claim 1 specified that the rebaudioside A (REBA) had a purity greater than 80% by weight on a dry basis, but that the patent failed to allow the person skilled in the art to calculate this purity. In its view, the parameter "purity" was so ill-defined in the patent that a skilled person could not carry out the invention.

4.2 While it is true that the definition of the purity of the natural high-potency sweeteners (NHPS) such as REBA in the patent (see e.g. paragraph [0069] of the patent) is vague, this at most amounts to a lack of clarity, and not to a lack of sufficiency of disclosure. As outlined under point 1 above, the feature "rebaudioside A has a purity greater than 80% by weight on a dry basis" is interpreted in a broad manner.

It follows that the requirement of sufficiency of disclosure is met, as correctly held by the opposition division.

5. Inventive step

5.1 The opponent raised an inventive-step objection using D3 as the closest prior art in combination with D10.

5.2 For the following reasons, this attack is not successful.

5.2.1 D3 relates to a composition comprising one or more sweet, bitter and astringent components and a taste improving effective amount of specific (synthetically modified) amino acid derivatives (see claim 14, the abstract and column 2, line 18, to column 4, line 38, of D3).

5.2.2 The subject-matter of claim 1 of auxiliary request 1 differs from D3 in that at least one amino acid selected from the group consisting of aspartic acid, arginine, glycine, glutamic acid, proline, threonine, theanine, cysteine, cystine, alanine, valine, tyrosine, leucine, isoleucine, asparagine, serine, lysine, histidine, ornithine, methionine, carnitine, aminobutyric acid (alpha-, beta-, or gamma-isomers), glutamine, hydroxyproline, taurine, norvaline, sarcosine, sodium, magnesium or acid salts thereof and combinations thereof is used instead of specific synthetically modified amino acid derivatives. The same applies to claim 6 of auxiliary request 1.

5.2.3 In a similar manner, the subject-matter of claim 5 of auxiliary request 1 differs from D3 in that at least one amino acid selected from the group consisting of

arginine, glycine, glutamic acid, proline, threonine, theanine, cysteine, cystine, alanine, valine, tyrosine, leucine, isoleucine, asparagine, serine, lysine, histidine, ornithine, methionine, carnitine, aminobutyric acid (alpha-, beta-, or gamma-isomers), glutamine, hydroxyproline, taurine, norvaline, sarcosine, salts thereof and combinations thereof is used instead of specific synthetically modified amino acid derivatives. The same applies to claim 10 of auxiliary request 1.

5.2.4 The sweetener compositions according to claims 1 and 5 consequently differ from D3 in substantially the same manner, i.e. in that specific amino acids or specific salts thereof are used (claim 1) or in that specific amino acids (not including aspartic acid) or salts thereof (in general) are used (claim 5). Therefore, the inventive step of claims 1 and 5 is assessed at the same time.

5.2.5 As noted in point 5.7 of the decision under appeal, the problem underlying the opposed patent is that of providing a sweetening composition comprising a natural high-potency sweetener (NHPS) in which the sugar-like temporal profile is improved, i.e. sweetness linger is reduced.

5.2.6 The opposition division found that this problem is credibly solved. The opponent did not contest this finding, but submitted that the claimed subject-matter was obvious when considering D10.

5.2.7 Consequently, it is hereinafter assessed whether it was obvious for a skilled person to arrive at the claimed subject-matter in view of the above problem.

5.2.8 The board shares the opposition division's conclusion that D3 teaches away from using amino acids or the given salts thereof. In this context, it is noted that the core of the invention underlying D3 is the use of the specific synthetically modified amino acid derivatives. Replacing these specific amino acid derivatives with underivatised amino acids or salts thereof goes against the teaching of D3. Consequently, for this reason, an inventive step is to be acknowledged when taking D3 as the closest prior art.

Moreover, D10 fails to motivate a skilled person to contemplate replacing the specific amino acid derivatives according to D3 with underivatised amino acids or salts thereof. D10 relates to the issue of how osmotic effects affect the taste of salt rather than sweeteners (such as REBA) and it focuses on investigating the effect of mannitol and cellobiose, rather than amino acids, on the taste of salt. Even when considering D10 there is no indication of how the posed technical problem might be solved.

In view of the above, the subject-matter of claims 1 and 5 of auxiliary request 1 involves an inventive step in view of D3 as the closest prior art, taken alone or in combination with D10. The same applies to claims 2 to 4 and 6 to 10 of auxiliary request 1, which contain all the features of claim 1 or claim 5, either explicitly or by reference.

6. Since auxiliary request 1 is allowable, there is no need to comment on the lower-ranking auxiliary requests.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the opposition division with the order to maintain the patent with the following claims and a description to be adapted thereto:

Claims:
No. 1 to 10 according to auxiliary request 1 filed with the grounds of appeal dated 23 April 2019.

The Registrar: The Chairman:

A. Nielsen-Hannerup A. Haderlein

Decision electronically authenticated