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Datasheet for the decision of 8 February 2024

Case Number: T 1183/22 - 3.3.09

Application Number: 16737348.9

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Language of the proceedings: EN

Title of invention:
BEVERAGE CONTAINING FRUIT JUICE OF FLAVORFUL ACIDIC CITRUS FRUIT

Patent Proprietor:
Suntory Holdings Limited

Opponent:
Hammer, Jens

Headword:
Fruit juice/SUNTORY

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

Keyword:
Main Request: Sufficiency of disclosure; Novelty; Inventive step - (yes)

Decisions cited:

Catchword:

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Beschwerdekammern

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Case Number: T 1183/22 - 3.3.09

D E C I S I O N
of Technical Board of Appeal 3.3.09
of 8 February 2024

Appellant: (Opponent)	Hammer, Jens Leopoldstrasse 4 80802 München (DE)
Representative:	Grünecker Patent- und Rechtsanwälte PartG mbB Leopoldstraße 4 80802 München (DE)
Respondent: (Patent Proprietor)	Suntory Holdings Limited 1-40, Dojimahama 2-chome Kita-ku, Osaka-shi Osaka 530-8203 (JP)
Representative:	Vossius & Partner Patentanwälte Rechtsanwälte mbB Siebertstrasse 3 81675 München (DE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 7 February 2022 rejecting the opposition filed against European patent No. 3245879 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chairman	A. Haderlein
Members:	A. Veronese
	A. Jimenez

Summary of Facts and Submissions

I. The appeal was filed by the opponent (appellant) against the opposition division's decision to reject the opposition filed against the European patent.

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

III. Claim 1 as granted reads as follows:

"*1. A beverage comprising flavorful acidic citrus fruit juice and citrus fruit juice, wherein the beverage has a ratio of the amount of naringin to the total amount of naringin, hespendin, enocitrin, nanrutin, neohespendin, and rutin, which is in the range of 0.10 to 0.50, and has a fruit juice content of not less than 1% and not more than 30%, wherein the flavorful acidic citrus fruit is selected from yuzu (Citrusjunos), lemon (Citrus limon), lime (Citrus aurantiifolia), Citrus depressa, kabosu (Citrus sphaerocarpa), or sudachi (Citrus sudachi).*"

IV. The documents submitted during the opposition proceedings included:

D1: JP-A-H05-76326
D1a: English machine translation of D1
D2: Smart, M., Cooking light, 2010, "Citrusade with lemon, lime, and grapefruit, July 2010"
D4: US-A-2010/0196543 A1
D5: US-A-2006/0105089 A1

D7: USDA United States Department of Agriculture, Agricultural Research Service, Technical Bulletin Number 1856, December 1998

D9: Datasheet provided by the proprietor on 17 November 2021

V. In its decision, the opposition division essentially found that:

- The claimed invention was sufficiently disclosed because the patent provided sufficient information for preparing the claimed beverage and for determining its naringin content; the objections raised concerned at most the clarity of the claims.

- The claimed subject-matter was novel over D1 and D2 because these documents did not directly and unambiguously disclose the claimed naringin to total flavonoids ratio.

- The claimed subject-matter involved an inventive step starting from D1 or, alternatively, from D4 as the closest prior art.

VI. The appellant's arguments may be summarised as follows:

- The claimed invention was not sufficiently disclosed. The skilled person could not prepare a beverage containing the claimed naringin to total flavonoids ratio without an undue burden.

- The claimed subject-matter lacked novelty over D1 and D2. Relying on D7, which described typical amounts of flavonoids in citrus fruits, it could be established, by calculation, that the beverages in

D1 and D2 comprised the claimed flavonoid ratio. The claimed subject-matter could not be considered novel and at the same time sufficiently disclosed.

- The claimed subject-matter lacked an inventive step starting from D1 or, alternatively, from D4 as the closest prior art. The claimed beverage differed from those in D1 and D4 on account of the claimed naringin to total flavonoids ratio. The tests in the patent did not provide evidence that this ratio was associated with any improvement in taste. Therefore, the problem was to provide an alternative beverage. D5 and D7 provided the incentive to modify the naringin to total flavonoids ratio and to prepare the beverage defined in claim 1.

VII. The proprietor's (respondent's) arguments can be summarised as follows:

- The claimed invention was sufficiently disclosed. Relying on the patent and on common general knowledge, the skilled person was able to prepare the claimed beverage.

- The claimed subject-matter was novel over D1 and D2, which did not disclose a beverage comprising the claimed naringin to total flavonoids ratio. The appellant's calculations were based on wrong assumptions.

- The claimed subject-matter involved an inventive step starting from D1 as the closest prior art. The claimed beverage differed from that in D1 on account of the claimed naringin to total flavonoids ratio. The tests in the patent showed that this

ratio induced superior freshness and taste and an optimised balance between citrus qualities and a slight bitter taste. The problem was to provide a beverage having these optimised characteristics. Neither D1 alone nor its combination with D5 or D7 provided an incentive to select the claimed ratio for obtaining this effect. D4 was not the closest prior art. Even if it had been considered the closest prior art, the same conclusions would have been drawn.

The requests

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 or, alternatively, that the patent be maintained on the basis of one of auxiliary requests 1 to 9 filed with the reply to the statement setting out the grounds of appeal.

Reasons for the Decision

1. *Sufficiency of disclosure*

1.1 The appellant contested the opposition division's finding that the claimed invention was sufficiently disclosed. It argued that, without an undue burden, the skilled person would not have been able to prepare a beverage containing the claimed ratio of naringin to the total amount of naringin, hesperidin, eriocitrin, narirutin, neohesperidin and rutin, hereinafter the "naringin to total flavonoid ratio". The amount of flavonoids obtained from citrus fruits varied considerably depending on the species, origin and

processing conditions of the fruits. The patent did not teach which fruits had to be used and how they had to be processed to obtain the claimed ratio. Therefore, the claimed beverage could only be obtained by conducting a large number of experiments while adopting a trial-and-error approach.

1.2 These arguments fail to convince.

1.3 The patent teaches that the amount of flavonoids in the claimed beverage can be adjusted by selecting fruits from different species. Methods for determining the amount of flavonoids are mentioned, e.g. high-performance liquid chromatography-mass spectrometry. The patent also refers to literature indicating the amounts of flavonoids present in different citrus fruits; see paragraphs [0015] to [0020] and [0037] of the patent. D7, a technical bulletin which can be considered to represent common general knowledge, confirms that the amount of flavonoids in different citrus fruits could be determined by routine analytical methods and that their amounts in several citrus species were known well before the relevant date.

1.4 Furthermore, the patent discloses numerous examples of beverages according to the invention. These beverages, prepared by mixing various fruit juices in varying proportions, contain a naringin to total flavonoid ratio of from 0.1 to 0.48%, i.e. across the whole claimed range.

1.5 This means that, relying on the information disclosed in the patent and on common general knowledge, on the filing date the skilled person would have had sufficient information available to prepare beverages according to the invention. Although some testing might

have been required, this would not have amounted to an undue burden. The appellant's allegation of lack of sufficiency has not been substantiated and is based on pure speculation.

1.6 For these reasons, it is concluded that the claimed invention is sufficiently disclosed.

2. *Novelty*

2.1 The appellant contested the opposition division's finding that the claimed subject-matter is novel over documents D1 and D2.

Novelty over D1

2.2 The appellant considered example 5 of D1 to fall within the scope of claim 1.

2.3 Example 5 discloses a beverage comprising 9.3% grapefruit juice and 1.4% lemon juice. The appellant conceded that the naringin to total flavonoid ratio was not explicitly mentioned in D1; however, it submitted that this ratio could be calculated assuming:

- the lemon in example 5 to be of the type "Santa Teresa #1",

- the grapefruit to be of the type "CRC #343" and

- the content of the different flavonoids in these fruits to be that set out in D7.

2.4 Relying on these assumptions and on the amounts of juice used to prepare the beverage of example 5, the appellant calculated a flavonoid ratio falling within

the claimed range. It further argued that similar results would be obtained using some of the other types of fruit mentioned in D7.

2.5 These arguments are not convincing. As noted by the opposition division and by the respondent, D1 refers generically to grapefruit and lemon juice, but does not mention the species of the fruits used for their preparation. The assumption that a lemon type "Santa Teresa #1" and a grapefruit type "CRC #343" were used to prepare the beverage of example 5 is no more than an unsupported speculation.

2.6 D7 demonstrates that several species of lemon and grapefruit exist and that the amounts of flavonoids contained in their juices vary considerably. The data sheet D9 presented by the respondent confirms that, when certain lemon and grapefruit species that are different from "Santa Teresa #1" and "CRC #343" are selected from those described in D7, a naringin to total flavonoid ratio falling outside that claimed is obtained.

2.7 Since example 5 does not indicate the type of lemon and grapefruit species used to prepare the juices, D1 does not provide a direct and unambiguous disclosure of a beverage comprising the claimed naringin to total flavonoid ratio. Hence, the claimed subject-matter is novel over the teaching of D1.

Novelty over D2

2.8 The same conclusions can be drawn in respect of D2. In the same way as D1, D2 does not directly and unambiguously disclose the claimed naringin to total flavonoid ratio.

2.9 D2 describes a "citrusade", i.e. a beverage containing grapefruit juice, lemon juice and lime juice, as well as grated lemon rind; however, it does not indicate the specific species of lemon, lime and grapefruit used. The appellant calculated an alleged naringin to total flavonoid ratio assuming the lemon and the grapefruit to be of the type "Santa Teresa #1" and "CRC #343", respectively.

2.10 Yet, as in the case of D1, these assumptions are based on speculation. Therefore, the "citrusade" in D2 does not provide a direct and unambiguous disclosure of the beverage defined in claim 1 of the opposed patent.

2.11 Hence, the claimed subject-matter is novel over D2.

Further considerations concerning the assessment of novelty and sufficiency of disclosure

2.12 The appellant expressed the opinion that it would not be logical to consider the claimed subject-matter novel and in the meantime to consider the claimed invention to be sufficiently disclosed.

2.13 This argument fails to convince.

2.14 The evaluation of sufficiency of disclosure relates to the issue of whether, relying on the information in the patent application and on common general knowledge, the skilled person would be able to carry out the claimed invention. In the present case, this depends on whether it would be technically possible for that person to prepare the claimed beverage relying on the teaching of the patent and on common general knowledge available on the filing date.

2.15 Conversely, the evaluation of novelty concerns the issue of whether the prior art directly and unambiguously discloses the claimed subject-matter. In cases like this, in which some distinguishing features are not explicitly disclosed in the prior art, the relevant issue is whether the skilled person would inevitably arrive at the claimed invention, here, the beverage in claim 1, when following the teaching of the prior art.

2.16 The issues involved in the assessment of novelty and sufficiency of disclosure are therefore different. In the present case, there is no contradiction between the aforementioned findings that the claimed invention fulfils the requirement of sufficiency of disclosure, and that the claimed subject-matter is novel over the prior art.

3. *Inventive step*

3.1 The claimed invention relates to a beverage containing a flavourful acidic citrus fruit juice and a citrus fruit juice which makes the user perceive the fresh sensation and flavour typical of citric fruits. In particular, the invention aims to enhance the refreshing and peel-like sensation induced by citrus fruits, while minimising the acidic and bitter taste of acidic fruit juice. The composition comprises naringin and other flavonoids, in a specific ratio; see paragraphs [0001], [0003], [0005], [0006], [0012], [0026] and [0029], and the claims of the opposed patent.

3.2 The appellant contested the opposition division's finding that the claimed beverage involves an inventive

step starting from D1 or, alternatively, from D4 as the closest prior art.

3.3 The appellant's arguments are, however, not persuasive.

The closest prior art

3.4 The appellant considered D1 or, alternatively, D4 as the closest prior art.

3.5 D4 aims to provide beverages containing citrus juices such as lemon, lime, grapefruit and orange juice. These beverages are fortified with health-improving citrus phytochemicals including flavonoids such as naringin, hesperidin neohesperidin, narirutin and rutin. The aim of the invention is to provide a beverage which has health-promoting properties and which also induces a pleasant taste experience. Furthermore, D4 teaches that the bitter taste of the phytochemicals can be concealed when they are microencapsulated; see paragraphs [0001], [0018], [0031] and [0047], and claims 1, 16 and 26.

3.6 D1 relates to beverages containing sake lees extracts and fruit juices which are rich in nutrients and have a delicious taste; see page 1. A beverage containing sake lees extract, grapefruit juice and lemon juice is described in example 5. It was not contested that this beverage contains an amount of fruit juice which falls within the claimed scope; however, as already established above when discussing novelty, D1 does not disclose a beverage comprising the naringin to total flavonoid ratio specified in claim 1. These flavonoids are actually not even mentioned in this document. The problem of reducing bitterness is not mentioned either.

3.7 Since, like the opposed patent, D4 focuses specifically on the preparation of a beverage comprising citrus juice having a good taste, in which the bitter taste of flavonoids is minimised, this document represents the closest prior art, rather than D1.

Distinguishing features and technical effect

3.8 The claimed beverage differs from the beverages disclosed in D4 at least on account of the naringin to total flavonoid ratio specified in claim 1.

3.9 The opposed patent describes tests showing that beverages comprising this flavonoid ratio have improved taste characteristics; see tables 1 to 3.

3.10 The appellant disputed the relevance of these tests, arguing that the claimed flavonoid ratio was not associated with any improvement in taste. In its opinion, the sensory properties of the beverages according to the invention were similar to, or even worse than, those of the comparative beverages.

3.11 Referring to the beverages in examples 14, 19, 24 and 27 according to the invention, and to the comparative beverages in examples 11, 14, 18 and 20, it argued that:

- the beverages according to the invention scored lower values, namely not more than 3 ("perceived"), for acidity and bitterness than the comparative beverages, which scored 4 ("fairly perceived"),

- beverages 14 and 19 according to the invention scored only 2 ("hardly perceived") for acidity and bitterness and

- beverage 19 according to the invention scored 3 for fresh sensation and pleasantness, like several comparative examples, and in particular comparative examples 13 and 14.

3.12 In its opinion these results demonstrated that the selection of the claimed naringin to total flavonoid ratio was not associated with an improvement in the sensory properties of citrus beverages.

3.13 These arguments are not convincing, because they are based on a misinterpretation of the invention disclosed in the patent. The appellant assumes that higher scores for acidity and bitterness are preferred. This is not true. As indicated in paragraphs [0010] and [0012] of the patent, the invention aims to provide a beverage which retains the flavourful acidic citrus fruit-like qualities, but reduces the acidic and bitter taste of acidic citrus juice. This means that the sensory properties of the beverage are improved when the scores relating to "Sense of Citrus sphaerocarpa" and "Fresh sensation" and "Pleasantness" in tables 1 to 3 are maximised and those relating to "Acidity" and "Bitter taste" are reduced. This is important to achieve an "optimal balance between flavourful acidic citrus fruit-like qualities and a slightly bitter taste".

3.14 The overall pattern of the results in tables 1 to 3 indicates that the beverages comprising the claimed naringin to total flavonoid ratio score higher for "Sense of Citrus sphaerocarpa" and "Fresh sensation" but lower for "Acidity" and "Bitter taste".

3.15 During the oral proceedings the appellant focused on the comparison between beverage 19 according to the

invention and comparative beverages 13 and 14; however, in this case too, an improvement is seen in terms of a reduction in acidity and bitterness, compared with comparative example 14, and in terms of sense of *Citrus depressa* compared with comparative beverage 13.

3.16 The appellant has also held that the lower acidity of beverage 19 compared with comparative beverage 14 could be due to a reduction in the total amount of naringin or fruit juice from *Citrus depressa*, rather than to the naringin to total flavonoid ratio.

3.17 This explanation is not convincing. As countered by the respondent, the variations in acidity and bitterness are very modest in beverages 19 to 23 according to the invention, although their amount of naringin and *Citrus depressa* varies substantially; for example, beverage 23 contains an amount of naringin which is more than 13 times higher than that of beverage 19.

3.18 For these reasons, it is concluded that the results in the patent make it credible that the selection of the claimed naringin to total flavonoid ratio induces an improvement in the sensory properties of beverages comprising acidic citrus fruits.

Underlying technical problem

3.19 Taking into account the aforementioned technical effect, as suggested by the respondent, the underlying problem can be considered to be that of providing a beverage having a good balance between citrus fruit-like qualities and a slightly bitter taste characteristic of flavourful acidic citrus fruit peel, and having authentic flavourful acidic citrus fruit-

like qualities; see also paragraph [0007] of the patent.

Non-obviousness of the claimed solution

3.20 Neither D4 nor the other cited documents provide any incentive to adjust the naringin to total flavonoids ratio to improve the taste of a beverage comprising acidic citric fruit juice.

3.21 The appellant submitted that, by following the teaching of D4, the skilled person would have considered preparing beverages comprising the claimed ratio of naringin to total flavonoids. In particular, by referring to the following parts of D4:

- claim 1, defining a beverage comprising an amount of unencapsulated naringin of 0 to 150 mg per oz serving,

- paragraph [0017], stating that "In certain exemplary embodiments, the total amount of unencapsulated citrus phytochemicals in the beverage is at most 100 mg per oz serving ..." and

- paragraph [0031], stating that "In certain exemplary embodiments, the amount of unencapsulated hesperidin is in the range of 0-60 mg per 8 oz serving of the beverage ...",

the appellant made some calculations allegedly demonstrating that the skilled person would have considered preparing a beverage comprising a naringin to total flavonoids ratio of 0.4, within the claimed range. Further calculations were provided which combined the teaching of D4 with that of D5, a document

teaching decreasing the bitterness of juices by reducing their flavonoid content; see paragraphs [0021], [0029] and [0053].

3.22 However, the appellant's arguments are not persuasive because: 1) D4 does not disclose the specific flavonoids which define the ratio specified in claim 1, 2) only the amount of unencapsulated flavonoids is mentioned in the cited passages of D4 and 3) the appellant's calculations are based on a purposive selection of separate embodiments disclosed D4 and D5 which is clearly tainted by hindsight.

3.23 The fact that the skilled person could possibly have prepared the claimed composition is irrelevant. What counts is only whether the skilled person, confronted with the underlying technical problem, would have found the incentive to do so in these documents. The answer to this question is in the negative.

3.24 It is also noted that, to reduce bitterness of citrus beverages, these documents teach:

- encapsulating the flavonoids in microcapsules (according to D4) and

- subjecting the beverage to filtration on certain resins to reduce the content of bitter compounds, including e.g. naringin (according to D5).

3.25 These steps aim to reduce the amount of free flavonoids in the beverage. Yet, neither D4 nor D5 provides any prompting to adjust the ratio between flavonoids, let alone to select the claimed naringin to total flavonoid ratio.

3.26 For these reasons, it is concluded that the subject-matter of claim 1, as well as that of the dependent claims, which are more limited in scope, involves an inventive step starting from D4 as the closest prior art.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

K. Götz-Wein A. Haderlein

Decision electronically authenticated