

The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Ex parte KRISHNA K. SUBRAMANYAN, JOSEPH R. FARYNIARZ, and
JOANNA H. ZHANG

Appeal 2006-3151
Application 10/767,679
Technology Center 1600

ON BRIEF

Before ADAMS, GRIMES, and GREEN, *Administrative Patent Judges*.

GRIMES, *Administrative Patent Judge*.

DECISION ON APPEAL

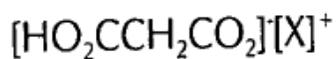
This is an appeal under 35 U.S.C. § 134 involving claims to a personal care composition comprising a terpenoid. The Examiner has rejected the claims as obvious. We have jurisdiction under 35 U.S.C. § 6(b). We affirm.

BACKGROUND

The building block of a terpene is isoprene, which has the following structure: $\text{CH}_2=\text{C}(\text{CH}_3)\text{-CH}=\text{CH}_2$. Hydrocarbon terpenes therefore have the molecular formula $(\text{C}_5\text{H}_8)_n$. (Specification 1.) The term “terpenoid”

encompasses both “terpenes and oxygen containing derivatives thereof having at least one C₅H₈ hydrocarbyl unit which may have one or more points of unsaturation and/or be part of a cyclic unit within the chemical structure.” (*Id.* at 2.) “Terpenoids are a fragrance raw material of many perfumes and scents.” (*Id.*)

The specification describes a personal care composition that includes a terpenoid-containing fragrance, a salt of malonic acid, and a carrier. (*Id.* at 3.) The specification states that “salts of malonic acid are effective at stabilizing terpenoid fragrance components against degradation.” (*Id.*) The malonic acid salts “may either be the half or fully neutralized malonic acid or combinations thereof as represented by general formulas (I) and (II):



I



II

wherein X is a cationic counterion.” (*Id.* at 3-4.)

DISCUSSION

1. CLAIMS

Claims 1-11 are pending and on appeal. Only claims 2, 3, and 11 have been separately argued and they have been argued as a group. (Br. 9-10.) We will focus on claims 1 and 2, which are representative. Claims 4-10 stand or fall with claim 1. Claims 3 and 11 stand or fall with claim 2. 37 C.F.R. § 41.37(c)(1)(vii).

Claims 1 and 2 read as follows:

1. A personal care composition comprising:
 - (i) from about 0.001 to about 10% of a fragrance by weight of the composition comprising from about 0.000001 to about 90% of a terpenoid by weight of the fragrance;
 - (ii) from about 0.0001 to about 30% by weight of the composition of a salt of malonic acid; and
 - (iii) from about 1 to about 99% by weight of the composition of a cosmetically acceptable carrier.
2. The composition according to claim 1 wherein the malonic acid is present as a half neutralized and a fully neutralized acid in a molar ratio ranging from about 1000:1 to about 1:1000, respectively.

Thus, claim 1 is directed to a personal care composition comprising:

(i) a specified amount of fragrance, a specified portion of which is a terpenoid; (ii) a specified amount of a salt of a malonic acid; and (iii) a specified amount of a cosmetically acceptable carrier.

Claim 2 depends from claim 1 and limits the composition to one that includes half neutralized malonic acid and fully neutralized malonic acid in a recited molar ratio.

2. OBVIOUSNESS

Claims 1-11 stand rejected under 35 U.S.C. § 103 as obvious over Jokura¹ in view of Guenin.² The Examiner states that Jokura “teaches a skin cosmetic causing little irritation and having an excellent moisturizing effect having (A) a ceramide or pseudoceramide, (B) a dicarboxylic acid, and (C) a salt of a dicarboxylic acid (see abstract, in particular)”;

¹ Jokura et al., U.S. Patent No. 5,641,495, issued June 24, 1997

² Guenin et al., U.S. Patent No. 6,180,121 B1, issued January 30, 2001

“dicarboxylic acid can comprise malonic acid (see column 3, lines 30-50, in particular)”; and “that water, ethanol and/or water-soluble polyhydric alcohols can be employed as a base (cosmetically acceptable carrier), and can be provided in an amount of from about 0.1 to about 90% by weight of the composition (see column 4, lines 16-34, in particular).” (Answer 5.)

The Examiner argues that Jokura teaches:

that the dicarboxylic acid and dicarboxylic acid salt have a percent by weight in the composition of from 0.01 to 20% (see column 3, lines 53-56, in particular), and that the ratio of the carboxylic acid to the dicarboxylic acid salt in the composition can be from 1/9 to 9/1 (see column 3, lines 55-60, in particular.) Accordingly, Jokura et al. meets the limitation of comprising a salt of malonic acid in from “about” 0.0001 to “about” 30% by weight of the composition, as recited in claim 1.

(Answer 5.) In addition, the Examiner states that Jokura “also teaches that the composition can further comprise other components that are commonly used in cosmetic[s], such as perfumes (see column 5, lines 20-34, in particular),” but that it does not specifically teach “the percent weight of fragrance having the percent weight of terpenoid as recited in claim 1.”

(Answer 6.)

The Examiner states that Guenin “teaches fragrance enhancing compositions for cosmetic products”; “that the exemplary Deo-Key™ fragrance compositions can be combined in an amount of about 3% by weight (see column 8 [sic, 6], line 63 through column 7, line 7, in particular)”; “that the fragrance composition can be made by combining at least three components from a group of listed fragrances that includes terpenoids such as d-limonene, citral and geraniol, and terpenoid containing fragrances such as Iso Methyl Cedryl Ketone A and Pelargonyl (see

column 2, line 20 through column 3, line 35 . . .)”; and “exemplifies Deo-Key™ fragrance compositions comprising a terpenoid in the recited percent by weight of the fragrance composition, such as for example Orange Oil Morocco (limonene) in a percent by weight of 2.00-8.00 . . . (see column 7, line 10 through column 8, lines 36 . . .).” (Answer 6-7.)

Thus, the Examiner argues that:

one of ordinary skill in the art at the time the invention was made would have found it obvious to combine the fragrance composition of Guenin et al. into the skin care composition of Jokura et al. to devise the personal care composition of claim 1, because Jokura et al. teaches that the skin care composition comprising the dicarboxylic acid salt such as a salt of malonic acid can comprise conventional cosmetic additives such as a perfume, and Guenin et al. teaches a fragrance composition (perfume) that can be combined into cosmetic compositions comprising a terpenoid as claimed.

(Answer 7-8.) The Examiner argues that “the fact that Appellants have recognized another advantage [that is, oxidative stability of terpenoids] which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).” (Answer 13.)

We conclude that the Examiner has set forth a prima facie case that the composition of claim 1 would have been obvious. As noted by the Examiner, Jokura describes a skin cosmetic comprising a ceramide or pseudoceramide, a dicarboxylic acid, and a salt of a dicarboxylic acid (col. 2, ll. 6-39), and specifically identifies malonic acid as an example of a dicarboxylic acid (col. 3, ll. 33-37). Jokura states that preferably “the total

content of [the dicarboxylic acid] and [dicarboxylic acid salt], in terms of the acid, in the skin cosmetic . . . falls within a range of from 0.01 to 20% by weight” and “the molar ratio of the [dicarboxylic acid] to [dicarboxylic acid salt] falls within a range of from 1/9 to 9/1.” (Col. 3, ll. 51-60.) Thus, Jokura describes a composition in which the amount of dicarboxylic acid salt is between about 0.0001 to about 30% by weight.

Jokura also describes including water, ethanol, or water-soluble polyhydric alcohols as a base and that the preferred content of these components in the skin cosmetic “ranges from 0.01 to 95% by weight, still [more] preferably from 0.1 to 90% by weight.” (Col. 4, ll. 16-34.) Based on these teachings, we conclude that the Examiner has set forth a prima facie case that including from about 1 to about 99% by weight cosmetically acceptable carrier in the composition of Jokura would have been obvious.

In addition, Jokura describes including perfumes. (Col. 5, ll. 19-34.) Guenin states that fragrance (i.e., perfume) is usually included in cosmetic products “in the range of 0.1-10% by weight based on the total weight of the cosmetic composition.” (Col. 2, ll. 30-34.) Based on these teachings, we conclude that the Examiner has set forth a prima facie case that including from about 0.001 to about 10% by weight fragrance in the composition of Jokura would have been obvious.

Guenin also describes fragrances that include terpenoids. See, for example, Floral Wood Deo-Key™ Fragrance Enhancer, which includes 2-8% Orange Oil Morocco. (Col. 7, ll. 45-56.) (Orange Oil Morocco is “predominantly d-limonene” (col. 2, ll. 42-43), which is a terpene (specification 8).) Based on this teaching, we conclude that the Examiner

has set forth a prima facie case that including from about 0.000001 to about 90% by weight terpenoid in the fragrance would have been obvious.

Appellants state that Jokura discloses “a skin cosmetic requiring a combination of three elements” – “ceramide (A), a dicarboxylic acid (B) and a salt of a dicarboxylic acid (C). . . . Malonic acid is listed among eight other dicarboxylic acids. See column 3, lines 33-37.” (Br. 6.) “The term fragrance or perfume is mentioned only once in [Jokura]. See column 5, line 33. ‘Perfumes’ is the very last generic adjunct compound among a long list of other possible components. . . . There is no mention of perfume concentration or any materials which might constitute the perfumes.” (Br. 7.) In addition, “[n]one of the Examples include any perfume, either generically or specifically. Neither do any of the Examples itemize a malonic acid or salt thereof as representative of the dicarboxylic acids.” (*Id.*)

Appellants also argue that “the general conditions of the claim are not disclosed in a single reference. There is simply no issue in the present application concerning the discovery of any optimum or workable ranges that could be determined by routine experimentation. Instead the Examiner presents two references unrelated to one another, with unrelated problems/solutions and through hindsight chooses claim elements selectively from each of these references.” (Br. 9.)

We are not persuaded by these arguments. Jokura lists malonic acid among a list of only eight dicarboxylic acids. (Col. 3, ll. 31-37.) In addition, Jokura specifically recites that perfumes are “commonly used in cosmetics.” (Col. 5, lines 19-34.) Thus, even though Jokura does not

exemplify a composition comprising a malonic acid salt or a perfume, we conclude that the Examiner has set forth a prima facie case that a composition containing a malonic acid salt and a perfume would have been obvious based on the teachings of Jokura. In addition, in view of the teachings of Guenin, we conclude that the Examiner has set forth a prima facie case that it would have been obvious for the perfume to include a terpenoid.

With regard to the amounts of each component recited in claim 1, we conclude that that the Examiner has set forth a prima facie case of obviousness for the reasons discussed above. We do not agree that selection of values within the broad ranges recited in claim 1 requires hindsight reconstruction, particularly in view of the substantial overlap between the component ranges recited in Jokura and Guenin and the ranges recited in claim 1.

Appellants also argue that “[t]here is a need for an agent that will prevent oxidative breakdown of the terpenoids” and that Appellants have “found that salts of malonic acid are effective stabilizers of terpenoids.” (Br. 6.) Appellants argue that “[u]nlike the present invention, Jokura et al. is not concerned with the problem of fragrance component instability, and particularly that of terpenoids. The only concern of the reference is to provide sufficient moisturizing effect while avoiding excessive skin irritation. Absent any appreciation of the problem, [Jokura] could not possibly suggest a solution.” (Br. 6-7.) In particular, Appellants argue that “[a]nyone skilled in the art seeking to stabilize terpenoid ingredients of

perfumes or fragrances would not be given the faintest hint in Jokura et al. of any advantage in the combination of malonate and terpenoid.” (Br. 7.)

Appellants also state that Guenin “avers an extended series of objects addressed by the invention. See column 1 (line 62) bridging to column 2 (line 15). Among those objects or problems are to control malodor, improve fragrance efficiency (i.e. reduce the amount of material), limit irritation and enhance masking ability against underarm odor. None of the objects of the invention are directed at combating oxidative instability.” (Br. 7.)

Appellants argue that:

A combination of Jokura et al. in view of Guenin et al. would not render the instant invention obvious. Neither of the references is concerned with the problem of oxidative instability of fragrance components, and certainly not of terpenoids. . . . There is neither teaching nor suggestion nor incentive for fortifying terpenoid fragrance compositions with a malonate anti-oxidative agent. For all these reasons, a combination of Jokura et al. in view of Guenin et al. would not render the instant invention obvious.

(Br. 8.)

This argument is also unpersuasive. The fact that neither Jokura nor Guenin describe that the combination of a terpenoid fragrance and a malonic acid salt would provide a composition having oxidative stability is not relevant to whether the Examiner has set forth a prima facie case of obviousness. Prima facie obviousness does not require prior art references to recognize or even suggest the problem that Appellants attempted to solve. In addition, the prior art does not have to teach combining references for the reason that Appellants combined them. *In re Dillon*, 919 F.2d 688, 692-93, 16 USPQ2d 1897, 1901 (Fed. Cir. 1990, en banc). Furthermore, Appellants

have not rebutted the prima facie case of obvious with evidence of unexpectedly superior results.

For these reasons, we conclude that the Examiner has set forth a prima facie case that claim 1 would have been obvious over Jokura in view of Guenin, which Appellants have not rebutted. We therefore affirm the rejection of claim 1 under 35 U.S.C. § 103. Claims 4-10 fall with claim 1.

With regard to claim 2, the Examiner argues that Jokura “teaches that the salt of the dicarboxylic acid can be formed by the addition of an alkali to for[m] the aimed salt via neutralization in the system (see column 3, lines 45-50, in particular), which would form a mixture of half-neutralized and fully neutralized acid according to the amount of alkali added.” (Answer 8.) In particular, the Examiner argues that “the ‘free acid,’ ‘partially neutralized’ acid (formula I), and ‘fully neutralized[’] acid (formula II), exist in solution in equilibrium with one another, with the concentration of the different forms being governed by the individual K_a of each ‘neutralization’ reaction.” (Answer 16.)

The Examiner also argues that “the ratio of partially neutralized acid to fully neutralized acid will be dependent upon the concentration of H^+ in solution. In other words, the ratio of partially neutralized to fully neutralized acid is governed by the pH of the solution.” (Answer 18 (emphasis in original).) Thus, the Examiner concludes that “solutions having the same pH should have the same or similar ratios of partially neutralized to fully neutralized salts.” (*Id.*)

In addition, the Examiner states that Jokura “teaches that a desirable pH range is from 3 to 10 and preferably from 3 to 9, and exemplifies

compositions having a pH of 4.1 (see column 3, lines 60-65 and Table 2).” (Answer 18.) The Examiner argues that “cosmetic products that are used for application to the skin” generally have a pH about 7, that is, neutral pH. (*Id.*) Thus, “absent evidence to the contrary,” the Examiner takes the position that “Appellants’ personal care composition is also provided in a pH range about 7, such as in a range that is at least close to or even overlaps with the pH of from 3 to 10, as taught by Jokura.” (Answer 19.) The Examiner concludes that “as Jokura et al. teaches a pH range that is at least close to and/or overlaps with that of the instantly claimed composition having the ratio of partially to fully neutralized salt, it is considered that the composition of Jokura et al. does indeed have an amount of ‘fully neutralized’ acid salt form present in the solution.” (*Id.*)

The Examiner also argues that it would have been obvious “to vary and/or optimize the pH and/or the ratio of salt form to free acid form as taught by Jokura et al. (column 3, lines 50-65) and thus simultaneously vary and/or optimize the ratio of partially neutralized to fully neutralized salt.” (*Id.*)

We conclude that the Examiner has set forth a prima facie case that the composition of claim 2 would have been obvious. Jokura does not state that malonic acid is present as a half neutralized acid and as a fully neutralized acid in a molar ratio ranging from about 1000:1 to about 1:1000, respectively. However, Jokura describes regulating “the pH value of the skin cosmetic . . . to pH 3 to 10, still [more] preferably to pH 3 to 9,” and exemplifies a pH of 4.1. (Col. 3, ll. 60-63, & Table 2.)

The Examiner concludes that the molar ratio of claim 2 would have been obvious. In reaching this conclusion, the Examiner takes the position that Appellants' personal care composition, which has the claimed molar ratio, has a pH close to or within the pH range described in Jokura.

(Answer 19.) This position, which is not rebutted by Appellants, appears to be reasonable based on the teaching in Jokura that compositions having "a pH value less than 3 or exceeding 10" would be irritating to the skin.

(Col. 3, ll. 63-65.) In addition, the Examiner has asserted that "the ratio of partially neutralized acid to fully neutralized acid will be dependent upon the concentration of H⁺ in solution" and that therefore "solutions having the same pH should have the same or similar ratios of partially neutralized to fully neutralized salt." (Answer 18.) The Examiner has supported these assertions with scientific reasoning. (Answer 15-18.) Thus, we conclude that Examiner has set forth a prima facie case that the broad molar ratio recited in claim 2 would have been obvious based on the teachings of Jokura.

Appellants argue that Jokura "discloses the unneutralized acid (component B) and the partially neutralized acid (component C). The free acid can only co-exist with a partially neutralized salt because of pKa considerations. There is thus no disclosure of a fully neutralized malonic acid (see formula II at page 3 [of the specification])." (Br. 9.)

We are not persuaded by this argument. We find that the Examiner has set forth adequate scientific reasoning to support the conclusion that Jokura discloses mixtures of partially and fully neutralized acid.

In particular, the Examiner argues that “the ‘free acid,’ ‘partially neutralized’ acid (formula I), and ‘fully neutralized[?]’ acid (formula II), exist in solution in equilibrium with one another, with the concentration of the different forms being governed by the individual K_a of each ‘neutralization’ reaction.” (Answer 16.) In support of this position, the Examiner points to equilibrium equations that are well known in the art, as evidenced by the attached excerpt from a Chemistry textbook.³ These equations support the Examiner’s conclusion that malonic acid, at pHs in the range disclosed by Jokura, provides a solution containing “fully neutralized acid” and “partially neutralized acid” in equilibrium with one another (“fully neutralized acid”/“partially neutralized acid” = $K_{a2}/[H^+]$) and “partially neutralized acid” and “free acid” in equilibrium with one another (“partially neutralized acid”/“free acid” = $K_{a1}/[H^+]$) and therefore provides a solution containing “fully neutralized acid,” “partially neutralized acid,” and “free acid.”

Appellants provide no support for the allegation that “free acid can only co-exist with a partially neutralized salt.” We conclude that this unsupported allegation is insufficient to rebut the Examiner’s prima facie case that claim 2 would have been obvious. Therefore, we affirm the rejection of claim 2 under 35 U.S.C. § 103. Claims 3 and 11 fall with claim 2.

³ Ronald J. Gillespie et al., *Chemistry* 516-520, 524-525, & 550-551 (1986) (copy attached).

SUMMARY

The Examiner's position is supported by the preponderance of the evidence of record. We therefore affirm the rejection of claims 1-11 under 35 U.S.C. § 103.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED

DONALD E. ADAMS)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
ERIC GRIMES)	
Administrative Patent Judge)	APPEALS AND
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)	INTERFERENCES
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LORA M. GREEN)	
Administrative Patent Judge)	

EBG/MLM

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