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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/007,520	11/05/2013	Veronique Chevalier	085507-536601	1077
30678	7590	03/03/2020	EXAMINER	
POL SINELLI PC (DC OFFICE) 1000 Louisiana Street Suite 6400 HOUSTON, TX 77002			RODRIGUEZ, RAYNA B	
			ART UNIT	PAPER NUMBER
			1628	
			NOTIFICATION DATE	DELIVERY MODE
			03/03/2020	ELECTRONIC

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* VERONIQUE CHEVALIER and SOFIANE OUATTARA

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Appeal 2019-000975<sup>1</sup>  
Application 14/007,520  
Technology Center 1600

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Before RYAN H. FLAX, DAVID COTTA, and  
CYNTHIA M. HARDMAN, *Administrative Patent Judges*.

HARDMAN, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134(a) involving claims related to compositions comprising, in a physiologically acceptable aqueous medium, the compound ethyl gingerone and an organic solvent having particular solubility parameters. The Examiner rejected the claims as obvious under 35 U.S.C. § 103(a). We heard oral argument on January 30, 2020. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

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<sup>1</sup> We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as L’OREAL. Appeal Br. 2.

### CLAIMED SUBJECT MATTER

The claims are directed to a composition comprising 4-(3-ethoxy-4-hydroxyphenyl)-2-butanone (“ethyl gingerone”). Claim 1, the only independent claim on appeal, is illustrative of the claimed subject matter.

Claim 1 reads:

1. A composition comprising, in a physiologically acceptable aqueous medium: 4-(3-ethoxy-4-hydroxyphenyl)-2-butanone and an organic solvent with solubility parameters in the Hansen solubility space such that  $14.5 < \delta_a < 30$  and  $15 < \delta_d < 22$ .

Appeal Br. 24 (Claims Appendix).

### REFERENCES

The Examiner relied on the following prior art references:

Name	Reference	Date
Weidner	US 2002/0051800 A1	May 2, 2002
A. Y. Berlin et al., <i>Derivatives of Zingerone. III</i> , J. Gen. Chem. of USSR, 1949; 19:1-10 (“Berlin”)		
L. A. Belcher et al., <i>Evaluating 1,3-Propanediol for Potential Skin Effects</i> , <i>Cosmetics &amp; Toiletries</i> , 2010: 125(5): 81-86, 2010 (“Belcher”)		

### REJECTIONS

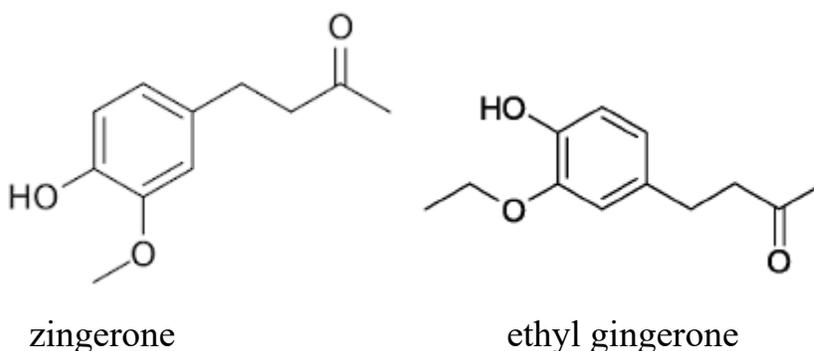
Claims 1–6, 9–20, 23, and 24 stand rejected under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over Berlin and Weidner. Final Act. 4.

Claims 20 and 21 stand rejected under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over Berlin, Weidner, and Belcher. Final Act. 10.

## OPINION

### *Examiner's Rejections*

The Examiner found that Berlin teaches both zingerone and ethyl gingerone (Compound (I) in Berlin), and that these compounds are homologs, because they differ by only a CH<sub>2</sub> group. Final Act. 5. For reference, the zingerone and ethyl gingerone structures are reproduced below:



The structure of zingerone is shown above on the left, and the structure of ethyl gingerone is shown above on the right. See Final Act. 5.

The Examiner further found that Weidner teaches a composition comprising zingerone and a cosmetically acceptable vehicle, such as propylene glycol. Final Act. 6. The Examiner found that, given the structural similarity between zingerone and ethyl gingerone, “one of skill in the art would expect such compounds to possess similar properties,” thus it would have been obvious “to make and use the claimed compound[] in a cosmetic composition with a reasonable expectation of success, absent factual evidence to the contrary.” Final Act. 5–6.

With respect to the claimed solvent, the Examiner further found that: since Weidner teaches that propylene glycol is a suitable vehicle for compositions comprising zingerone, at the time of the invention it would have been *prima facie* obvious for a

person of ordinary skill in the art to utilize the vehicles taught as suitable for compositions comprising zingerone as a vehicle for compositions comprising Compound I with an expectation of success, since the prior art establishes that Compound I is a known homologue of zingerone and compounds which are homologs are generally of sufficiently close structural similarity that there is a presumed expectation that such compounds possess similar properties, resulting in the composition of claims 1-3 and 23 with a reasonable expectation of success.

Final Act. 6–7.

With respect to the rejection of claims 21 and 22 over Berlin, Weidner, and Belcher, the Examiner found that Belcher teaches the recited species of organic solvent (1,3-propanediol), and teaches that 1,3-propanediol is structurally similar to propylene glycol, but causes fewer skin reactions. Final Act. 10–11. Accordingly, the Examiner found that

it would have been *prima facie* obvious for a person of ordinary skill in the art to substitute 1,3-propanediol for propylene glycol as the aqueous solvent in the cosmetic composition comprising Compound I rendered obvious by Berlin and Weidner with an expectation of success, since the 1,3-propanediol is taught to be less likely to cause skin irritation responses compared to propylene glycol, thus resulting in the composition of the claims 21 and 22, with a reasonable expectation of success.

Final Act. 11.

*Findings of Fact*

The following findings of fact highlight certain evidence of record.

FF1. Berlin discloses zingerone and ethyl gingerone (compound (I)).

Berlin 1.

FF2. Winter<sup>2</sup> discloses zingerone (compound (XVII)) and ethyl gingerone (compound (XVIII)). Winter 2112.

FF3. The chemical structures of zingerone and ethyl gingerone differ by a single CH<sub>2</sub> group. Final Act. 5.

FF4. Weidner discloses pharmaceutical, dietary supplement, and cosmetic compositions that treat or prevent inflammation, hypersensitivity reactions, or pain, which comprise certain fatty acids and zingerone. *See* Weidner ¶¶ 1, 2, 36, claim 2. The compositions can include vehicles such as water, polyethylene glycol, ethanol, and propylene glycol, “which can be used singly or as mixtures.” *Id.* ¶¶ 104–06.

FF5. Berlin teaches that zingerone has a biting taste, whereas homologs of zingerone (including ethyl gingerone, compound (I)) “had almost no biting taste.” Berlin 3.

FF6. Winter teaches that zingerone (compound XVII) has a weak raspberry flavor, whereas ethyl gingerone (compound XVIII) does not. Winter 2112, 2115.

FF7. Winter teaches that all of its reported test compounds—including zingerone and ethyl gingerone—“have pleasant aromatic odors,” although the odor of zingerone is more intense than that of ethyl gingerone. Winter 2115.

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<sup>2</sup> M. Winter, *Odeur et constitution sur des homologues et analogues de la p-hydroxyphenyl-1-butanone-3 (cetone de framboise)*, 44 *Helvetica Chimica Acta* 2110–21 (1961) (partial translation) (“Winter”). Appellant cited Winter as evidence that zingerone and the claimed compound do not possess the same or similar properties. Appeal Br. 7.

FF8. The Chevalier 2015 Declaration<sup>3</sup> states that ethyl gingerone is “solubilized in the solvents ethanol, 1-3-propanediol, [and] 1,2-propylene glycol without recrystallization after storage for 2 months at room temperature (25 °C).” Chevalier 2015 Declaration ¶ 7. The Chevalier 2015 Declaration does not provide solubility data for any compound other than ethyl gingerone.

FF9. The Chevalier 2017 Declaration<sup>4</sup> shows that zingerone and ethyl gingerone are each soluble in 0.5% and 1% glycerin,<sup>5</sup> but that only zingerone, and not ethyl gingerone, is soluble in 3% glycerin. Chevalier 2017 Declaration ¶¶ 6–9.

#### *Analysis*

The same issues are dispositive of both of the Examiner’s obviousness rejections; thus, we address the rejections together. *See* Appeal Br. 22 (Appellant did not offer separate arguments for the rejection of claims 21 and 22 over Berlin, Weidner, and Belcher).

“[S]tructural similarity between claimed and prior art subject matter, proved by combining references or otherwise, where the prior art gives reason or motivation to make the claimed compositions, creates a *prima facie* case of obviousness, and [] the burden (and opportunity) then falls on an applicant to rebut that *prima facie* case.” *In re Dillon*, 919 F.2d 688, 692 (Fed. Cir. 1990); *see also* MPEP § 2144.09 (II) (“Compounds which are . . . homologs (compounds differing regularly by the successive addition of the

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<sup>3</sup> Declaration Under 37 CFR § 1.132 by Veronique Chevalier, dated Sept. 8, 2015, (“Chevalier 2015 Declaration”).

<sup>4</sup> Declaration Under 37 CFR § 1.132 by Veronique Chevalier, dated March 3, 2017, (“Chevalier 2017 Declaration”).

<sup>5</sup> The terms “glycerin” and “glycerol” are interchangeable.

same chemical group, e.g., by -CH<sub>2</sub>- groups) are generally of sufficiently close structural similarity that there is a presumed expectation that such compounds possess similar properties.”). Under such circumstances, an applicant’s rebuttal can consist of

a comparison of test data showing that the claimed compositions possess unexpectedly improved properties or properties that the prior art does not have, that the prior art is so deficient that there is no motivation to make what might otherwise appear to be obvious changes, or any other argument or presentation of evidence that is pertinent.

*In re Dillon*, 919 F.2d at 692–93 (citations omitted).

Under the facts of this case, we conclude that the Examiner has established a prima facie case of obviousness. Zingerone and ethyl gingerone were both known in the prior art. FF1, FF2. The compounds differ by a single methylene (CH<sub>2</sub>) group, and thus are adjacent homologs. FF3; *In re Dillon*, 919 F.2d at 703 n.6 (defining adjacent homologs as compounds that differ by a single methylene group). Weidner discloses cosmetic compositions comprising zingerone, as well as compositions comprising solvents including ethanol and propylene glycol, which fall within claim 1. FF4; *see also* Appeal Br. 24 at claim 2 (reciting ethanol and 1,2-propylene glycol as options for the organic solvent of claim 1). Weidner discloses that its compositions treat or prevent inflammation, hypersensitivity reactions, or pain. FF4. We agree with the Examiner that a person of ordinary skill in the art would have been motivated to substitute zingerone with ethyl gingerone in Weidner’s compositions, because given the close structural similarity between zingerone and ethyl gingerone, a person of ordinary skill in the art would have had a reasonable expectation that ethyl gingerone-containing compositions, like Weidner’s zingerone-

containing compositions, would also treat or prevent inflammation, hypersensitivity reactions, or pain.

In rebuttal, Appellant argues that the record reflects actual differences in the properties of zingerone and ethyl gingerone that undercut an expectation of similar properties, and that the claimed subject matter embodies unexpected results. *See, e.g.*, Appeal Br. 6–8. We address each argument in turn.

*Differences Between the Properties of Zingerone  
and Ethyl Gingerone*

Appellant asserts that zingerone and ethyl gingerone demonstrate actual differences in properties, and thus a person of ordinary skill in the art would not expect the two compounds to “to possess similar properties and behave in a similar manner.” Appeal Br. 8; *see also id.* at 19 (“[A]ll of the actual evidence presented herein teaches . . . that zingerone and [ethyl gingerone] do not have similar properties with respect to the properties actually tested, including those properties reported by the prior art.”). Specifically, Appellant argues that Berlin and Winter both disclose that the compounds taste different. Appeal Br. 7; *see also id.* at 19. Appellant also asserts that the compounds have different solubilities in 3% glycerin. Appeal Br. 8 (citing Chevalier 2017 Declaration); *see also id.* at 19–20 (citing Heuser (EP 2,327,393) for the proposition that “zingerone is apparently soluble in glycerol, as it is used in all of [Heuser’s] examples”).

“[T]he appealed claims must be considered in light of all the evidence, and the resulting decision, that the claimed invention would or would not have been obvious, is to be made in such light.” *In re May*, 547 F.2d 1082, 1089 (CCPA 1978); *see also In re Papesch*, 315 F.2d 381, 391 (CCPA

1963) (“An assumed similarity based on a comparison of formulae must give way to evidence that the assumption is erroneous.”). Actual differences in the properties of the compounds must be considered, but “a single variance in the properties of new chemical compounds will [not] necessarily tip the balance in favor of patentability where otherwise closely related chemical compounds are involved.” *In re De Montmollin*, 344 F.2d 976, 978 (CCPA 1965) (where claimed compound and structurally-similar prior art compound shared ability to dye wool, the additional ability of the claimed compound to dye cotton was insufficient to render the subject matter unobvious); *see also In re Crouse*, 363 F.2d 881, 884 (CCPA 1966) (where claimed compound and prior art isomer both acted as dyestuffs, court held that difference in dye shade was insufficient to rebut prima facie case based on structural similarity). Similarities in the properties of the compounds must also be considered, because “[t]he similarity of properties of a reference compound as compared with a claimed compound gives rise to an even stronger inference of obviousness than that of structural similarity alone . . . .” *In re Mehta*, 347 F.2d 859, 864 (CCPA 1965).

With such standards of law in mind, we analyze the similarities and differences of record between zingerone and ethyl gingerone. As discussed above, the compounds share pleasant aromatic odors and solubility in 0.5% and 1% glycerin. FF7, FF9. The compounds diverge with respect to a biting and raspberry flavor, and with respect to solubility in at least 3% glycerin. FF5, FF6, FF9.

Appellant has shown some differences in taste profile (different taste, same odor) and in solubility in glycerin (both soluble up to 1%, but only one soluble up to 3%). However, these differences are consistent with an

expected, gradual variance in properties between members of a homologous series. *See, e.g., In re Norris*, 179 F.2d 970, 972 (CCPA 1950) (noting that “chemists understand that members of a homologous series of chemical compounds possess the same principal characteristics which vary gradually from member to member”); *In re Merck & Co.*, 800 F.2d 1091 (Fed. Cir. 1986) (affirming obviousness despite “some differences in degree between the properties of” two isomers, noting that “a difference in structure, although slight, would have been expected to produce some difference in activity”). Further, Appellant has not identified persuasive evidence in the record showing that these differences would have suggested to a person of ordinary skill in the art that substituting zingerone with ethyl gingerone would have rendered Weidner’s compositions unsuitable for their intended use. Weidner teaches that compositions comprising fatty acids and Zingiber Officinale Roscoe extracts, such as zingerone, exhibit synergistic effects in the treatment of hypersensitivity reactions. Weidner ¶¶ 32–34. Appellant has not argued that ethyl gingerone’s additional methylene group, or the observed differences in taste or solubility in 3% glycerin, actually alter this activity. Indeed, the additional methylene group did not alter the shared pleasant aromatic odors or solubility in 0.5% and 1% glycerin. FF7, FF9.

Accordingly, in view of the similarities and differences of record, we determine that Appellant has not rebutted that it would have been obvious to substitute zingerone with ethyl gingerone in Weidner’s compositions, with a reasonable expectation that the claimed composition (comprising ethyl gingerone) would have similar properties as the zingerone-containing compositions taught in Weidner.

*Unexpected Results*

Appellant argues that ethyl gingerone “is only very sparingly soluble in commonly used diluents, such as water and glycerol.” Appeal Br. 6, *see also id.* at 10, 15; Spec. 8. Appellant asserts that “it has surprisingly and unexpectedly been found that use of at least one organic solvent with solubility parameters in the Hansen solubility space such that  $4.5 < \delta_a < 7$  and  $14 < \delta_d < 22$  overcomes the solubility problems and drawbacks of the prior art,” and thus enables ethyl gingerone “to be incorporated in a long-lasting solubilized form.” Appeal Br. 6 (citing Chevalier 2015 Decl.); *see also* Appeal Br. 12–13 (addressing solubility).

We are not persuaded that Appellant has demonstrated unexpected results. Unexpected results “must be shown to be unexpected compared with the closest prior art.” *In re Baxter Travenol Labs.*, 952 F.2d 388, 392 (Fed. Cir. 1991). The Chevalier 2015 Declaration addresses only the solubility of ethyl gingerone in the claimed solvents; there is no data comparing the solubility of ethyl gingerone to that of zingerone. FF8. The Chevalier 2017 Declaration does compare the solubility of ethyl gingerone to zingerone, but the provided data lacks a nexus to the claimed subject matter. *See, e.g., In re GPAC Inc.*, 57 F.3d 1573, 1580 (Fed. Cir. 1995) (“For objective evidence to be accorded substantial weight, its proponent must establish a nexus between the evidence and the merits of the claimed invention.”). The tested solvent is glycerin alone, but none of the appealed claims recite glycerin alone as the solvent. Moreover, the Chevalier 2017 Declaration does not demonstrate that ethyl gingerone is markedly superior; if anything, ethyl gingerone’s more limited solubility in 3% glycerin compared to zingerone is a drawback, rather than an unexpected result. *See,*

*e.g.*, *In re Papesch*, 315 F.2d at 392 (“A mere difference in degree is not the marked superiority which ordinarily will remove the unpatentability of adjacent homologues of old substances.”). Thus, the Chevalier 2017 Declaration does not demonstrate unexpected results.

We additionally note another shortcoming in the Chevalier 2015 Declaration. Paragraph 7 of the Declaration asserts that the results “surprisingly and unexpectedly show that [ethyl gingerone] is solubilized in the solvents ethanol, 1,3-propanediol, [and] 1,2-propylene glycol without recrystallization after storage for 2 months at room temperature (25 °C).” *See* Chevalier 2015 Declaration ¶ 7. The declaration, however, provides no basis or analysis to support the assertion that these results were surprising or contrary to expectations. As such, we accord the witness’s conclusory opinion little probative weight. *See In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1368 (Fed. Cir. 2004) (“[T]he Board is entitled to weigh the declarations and conclude that the lack of factual corroboration warrants discounting the opinions expressed in the declarations.”). Under the circumstances, like the Examiner, we are “unable to ascertain from the data provided if the solubility of Compound I [in the claimed solvents] is in fact unexpected and unobvious and of both statistical and practical significance.” Ans. 24.

We agree with the Examiner that Appellant “has not provided sufficient data to establish that the claimed compound dissolves unexpectedly better than zingerone in any solvent possessing the claimed solubility parameters.” Ans. 26. Accordingly, on this record, we determine that Appellant has not carried its burden of showing unexpected results.

*Remaining Arguments*

Appellant argues that “Berlin is not concerned with the problem of solubility addressed by the present invention,” and thus skilled artisans “would not even look to Berlin.” Appeal Br. 6–7. We are not persuaded by this argument. The Examiner relied on Berlin “to establish that Compound I was a known compound and a known homologue of zingerone.” Ans. 13. Accordingly, it is not necessary to the rejection that Berlin address solubility. Moreover, to render an invention obvious, the prior art does not have to address the same problem addressed by a patent applicant. *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 419 (2007) (“In determining whether the subject matter of a patent claim is obvious, neither the particular motivation nor the avowed purpose of the patentee controls. What matters is the objective reach of the claim. If the claim extends to what is obvious, it is invalid under § 103.”). Here, Weidner discloses pharmaceutical, dietary supplement, and cosmetic compositions comprising fatty acids and zingerone, which are taught to suppress hypersensitivity and/or inflammatory reactions. *See, e.g.*, Weidner ¶¶ 2–3, claim 2. The expectation that one would obtain similar activity by substituting zingerone with the ethyl gingerone homolog is sufficient motivation to render the claims obvious, regardless of whether a skilled artisan would have been motivated to make the substitution based on any concern about solubility.

Appellant further argues that “[s]ince Weidner seems to rely upon the pungency of ginger,” and because ethyl gingerone “does not have taste characteristics similar to zingerone,” skilled artisans would not look to Weidner or be led to substitute zingerone with ethyl gingerone. Appeal Br. 9. We are not persuaded. We agree with the Examiner that “Weidner

does not teach that the pungency is required for the disclosed compositions.”  
Final Act. 16. As noted above, Weidner teaches that compositions comprising fatty acids and Zingiber Officinale Roscoe extracts, such as zingerone, exhibit synergistic effects in the treatment of hypersensitivity reactions. Weidner ¶¶ 32–34. Appellant has not pointed to persuasive evidence in Weidner or in the record suggesting that this synergy or the desired activity of Weidner’s compounds—i.e., suppression of hypersensitivity and/or inflammatory reactions—is correlated with or depends upon the property of pungency.

Appellant concedes that Weidner “suggests solvents that are of the type employed according to the present invention,” but argues that “Weidner also discloses those that are outside the scope of and not capable of achieving the results of the present invention,” such as water and glycerol, and “does not distinguish between them.” Appeal Br. 10. Appellant further argues that the only example in Weidner that employs a solvent uses water. Appeal Br. 10. We are not persuaded by these arguments. As noted above and conceded by Appellant, Weidner discloses solvents that fall within claim 1. We agree with the Examiner that “[i]t would have been prima facie obvious to a person of ordinary skill in the art, to have selected propane-1,2-diol or propylene glycol from the list of vehicles disclosed as suitable for formulating a composition comprising compound I in view of the unambiguous disclosure of each particular species of vehicle as suitable vehicles for formulating a composition comprising zingerone.” Ans. 17–18. Moreover, even if the only example that employs a solvent uses water, “a reference is not limited to the disclosure of specific working examples.” *In re Mills*, 470 F.2d 649, 651 (CCPA 1972).

Appellant's assertion that water and glycerol are "outside the scope of and not capable of achieving the results of the present invention" (Appeal Br. 10) does not comport with the appealed claims. Claim 1 specifically recites an "aqueous medium," which includes water. *See, e.g.*, Spec. 11 (Example 4 includes water). Similarly, dependent claim 24 recites that the compositions further comprise water or glycerol. Thus, water and glycerol, when paired with an appropriate organic solvent, are in fact within the scope of the present invention.

Appellant additionally argues that Berlin and Weidner are non-analogous art, because "neither is concerned with addressing the solubility problems" of ethyl gingerone. Appeal Br. 11. We are not persuaded by this argument. A prior art reference is analogous art if it is within the inventor's field of endeavor. *See In re Dillon*, 919 F.2d at 694 (explaining that analogous art includes art in the same field as the inventor's endeavor). Here, the inventor's field of endeavor is cosmetic compositions. Spec. 1:4–5. We agree with the Examiner that Berlin and Weidner are analogous art because "Berlin teaches the claimed compound and Weidner is directed to cosmetic compositions comprising a structural homolog of the instantly claimed compound which is also useful for cosmetic compositions." Ans. 19. Although "cosmetics" encompasses a broad technology area, we agree with the Examiner that Weidner's compositions are within the same field of endeavor "not only because they are cosmetic compositions but also because they comprise structurally similar compounds." Ans. 19.

Appellant further argues that "Weidner does not teach selecting zingerone from the innumerable possibilities therein along with selecting the claimed solvents from the larger group of possibilities therein," particularly

because “the only solvent disclosed in an actual example is water and zingerone is not even mentioned in the particular examples therein.” Appeal Br. 11. We are not persuaded by this argument. Rather, we agree with the Examiner that although Weidner

may not be anticipatory insofar as one must select zingerone from various possible components of the plant *Zingiber officinale* Roscoe and propane-1,2-diol and propylene glycol from various solvents as taught in Weidner, it remains that it would have been obvious to a person of ordinary skill in the art, to have selected this particular compound detailed supra from the list of components of the plant *Zingiber officinale* Roscoe, and propane-1,2-diol and propylene glycol from the solvents taught. The skilled person would have been motivated to do so by the unambiguous disclosure of each particular species of components of the plant *Zingiber officinale* Roscoe and solvents individually and alternatively as equally useful in formulating a composition comprising zingiber.

Ans. 21.

#### *Dependent Claims*

Appellant argues that claim 24, which depends from claim 1 and recites that the composition further comprises water and/or glycerol, “distinguishes over the cited art.” Appeal Br. 15, 21. Appellant argues that water and glycerol are not suitable solvents for ethyl gingerone, but by including a solvent with the recited solubility parameters, the invention allows for compositions containing these solvents. Appeal Br. 21. We are not persuaded. Weidner expressly discloses water, glycerol, and solvents that meet the claimed solubility parameters, such as polyethylene glycol, ethanol, and propylene glycol, and teaches that these vehicles can be used singly or as mixtures. Weidner ¶¶ 104–06. Thus, because Weidner’s

vehicles overlap with the solvents recited in claim 24, this claim does not distinguish over the cited art.

Appellant also asserts that various dependent claims “demonstrate[] the unexpected results concerning solubility achieved from employing” the recited amounts of solvent (claims 4, 9, and 10), the recited amounts of ethyl gingerone (claims 5, 15, and 16), and the specific recited compounds (claims 21, 22, and 23). Appeal Br. 21, 22. We are not persuaded by these arguments because, as discussed above, Appellant has not demonstrated unexpected results.

With respect to claims 6 and 17–20, in the Appeal Brief, Appellant asserts that “the Examiner has not explained in the Office Action a basis that the claimed ratio between the claimed solvents and [ethyl gingerone] is rendered obvious by the cited art.” Appeal Br. 22. We disagree. In the Final Action, the Examiner asserted that a person of ordinary skill in the art would have arrived at the claimed ratio as follows:

Weidner teaches glyceryl monostearate and propane-1,2-diol are alternatively useful vehicles that can be included in the composition and teaches a cosmetic composition comprising an extract of Zingiber Officinale Roscoe and glyceryl monostearate, wherein glyceryl monostearate is in the amount of 2.0% [0118].

...

[I]t would [have been] obvious to utilize the amounts of glyceryl monostearate (e.g. 2.0%) as a starting point for optimizing the amount of propane-1,2-diol which is equivalent to 1,2-propylene glycol and to utilize the amount of Zingiber officinale Roscoe or parts and component thereof such as zingerone as a starting point for optimizing the amount of Compound I (e.g. 2.5%). An amount of 2.0% of 1,2 propylene glycol and an amount of 2.5% of Compound I would give a composition with a solvent/Compound ratio of 0.8 which is less

than or equal to 10. It would [have been] obvious to one of ordinary skill in the art to utilize the ratio of solvent/ Zingiber officinale Roscoe or parts and component thereof such as zingerone as a starting point to optimize the ratio of solvent/Compound I, based on the fact that the prior art establishes that Compound I is a known homologue of zingerone and compounds which are homologs are generally of sufficiently close structural similarity that there is a presumed expectation that such compounds possess similar properties.

Final Act. 7, 8–9.

For the first time in the Reply Brief, Appellant asserts that the Examiner's reasoning is "not deemed tenable since the glyceryl monostearate relied upon is not a solvent but instead is an emollient," and because Weidner "does not even remotely allude to the ratio of solvent and Zingiber Officinale Roscoe." Reply Br. 8. Appellant did not raise these arguments in its Appeal Brief, and has not identified any specific Examiner findings presented for the first time in the Answer that necessitate these new arguments in rebuttal in the Reply Brief. Thus these arguments are waived. *See* 37 C.F.R. § 41.37(c)(1)(iv) (2015); *see also Ex Parte Borden*, 93 USPQ2d 1473, 1474 (BPAI 2010) (informative).

Any remaining points of Appellant not specifically addressed above have been addressed by the Examiner in the Answer, and we adopt the Examiner's responses as our own.

For the above reasons, we affirm the Examiner's obviousness rejections.

### CONCLUSION

We affirm the rejection of claims 1–6, 9–20, 23, and 24 under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over Berlin and Weidner.

We affirm the rejection of claims 20 and 21 under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over Berlin, Weidner, and Belcher.

### DECISION SUMMARY

<b>Claims Rejected</b>	<b>35 U.S.C. §</b>	<b>Reference(s)/Basis</b>	<b>Affirmed</b>	<b>Reversed</b>
1–6, 9–20, 23, 24	103(a)	Berlin, Weidner	1–6, 9–20, 23, 24	
20, 21	103(a)	Berlin, Weidner, Belcher	20, 21	
<b>Overall Outcome:</b>			1–6, 9–21, 23, 24	

### TIME PERIOD FOR RESPONSE

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv).

**AFFIRMED**