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BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte JOHN RATHMACHER, JOHN FULLER JR., SHAWN BAIER, STEVE NISSEN, and NAJI ABUMRAD

Appeal 2019-004167
Application 12/973,803
Technology Center 1600

Before RYAN H. FLAX, RACHEL H. TOWNSEND, and CYNTHIA M. HARDMAN, *Administrative Patent Judges*.

HARDMAN, *Administrative Patent Judge*.

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), Appellant[1] appeals from the Examiner's decision to reject claims 1–6, 9, 10, 15, 20, 22–26, 28–33, and 35–39. Final Act. 2. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm-in-part.

[1] We use the word "Appellant" to refer to "Applicants" as defined in 37 C.F.R. § 1.42(a). Appellant identifies the real party in interest as "Metabolic Technologies, Inc." Appeal Br. 1.

STATEMENT OF THE CASE

The claims are directed to methods of administering beta-hydroxy-beta-methylbutyric acid. Claim 1, reproduced below, is illustrative of the claimed subject matter:

> 1. A method of administering beta-hydroxy-beta-methylbutyric acid (HMB) comprising administering a composition to a human comprising between about 0.5 grams of HMB free acid (HMB-acid) to about 30 grams of HMB-acid to result in at least one of the following effects:
>
> (a) increased availability of HMB to tissue as compared to a similar dose of CaHMB; and
>
> (b) exposing tissue to higher levels of HMB as compared to a similar dose of CaHMB.

Appeal Br. 27 (Claims Appendix).

Claims 1–6, 9, 10, 15, 20, 22–26, 28–33, and 35–39 are on appeal. Final Act. 2. The claims stand rejected as follows:

Claims 1 and 2 are rejected under 35 U.S.C. § 102 as anticipated by Sparkman.[2] *Id.* at 9.

Claims 1–3, 5, 6, 9, 10, 15, 20, 22–26, 28–33, and 35–39 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Nissen[3] and Sparkman. *Id.* at 11.

Claim 4 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Nissen, Sparkman, and Ribnicky.[4] *Id.* at 14.

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[2] Sparkman, US 2008/0317886 A1, published Dec. 25, 2008 ("Sparkman").
[3] Nissen et al., WO 94/14429 A1, published July 7, 1994 ("Nissen").
[4] Ribnicky et al., US 2005/0069598 A1, published Mar. 31, 2005 ("Ribnicky").

ANALYSIS

We have considered those arguments made by Appellant in the Appeal Brief and properly presented in the Reply Brief; arguments not so presented in Appellant's briefs 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 bases for asserting error, whether factual or legal, that are not raised in the principal brief are waived.").

Appellant argues that the "Examiner's Answer shifts the position on unpatentability and states arguments and citations that are new and were never raised in the prior office actions," and that it is "inappropriate" for "Appellant to be forced to respond to rejections raised in the Final Office Action and new bases for the rejections raised solely in the Examiner's Answer." Reply Br. 2; *see also, e.g.*, Reply Br. 3–4, 15–16.

We disagree that the Examiner's Answer raised any new grounds of rejection. There is no new ground of rejection where, as here, the statutory basis for the rejection remains the same, and the evidence relied upon in support of the rejection remains the same, such that Appellant has been given a fair opportunity to react to the rejection. *See In re Kronig*, 539 F.2d 1300, 1302–03 (CCPA 1976). Moreover, any argument that the Examiner's arguments or citations are "new" or purportedly reflect a new ground of rejection is waived. Any request to seek review of an examiner's failure to designate a rejection as a new ground of rejection must be by way of petition to the Director. 37 C.F.R. § 41.40(a); Manual of Patent Examining Procedure (MPEP) § 1207.03(b). "Failure of appellant to timely file such a petition will constitute a waiver of any arguments that a rejection must be designated as a new ground of rejection." 37 C.F.R. § 41.40(a). Because we

see no evidence that Appellant timely filed a petition to reopen prosecution, the Examiner's determinations and analysis, including those set forth in the Answer, are properly before us for review.

Anticipation

The Examiner rejected claims 1 and 2 as anticipated by Sparkman. Final Act. 9. According to the Examiner, Sparkman teaches that when runners were given either 3 g beta-hydroxy-beta-methylbutyrate ("HMB") per day or a placebo, supplementation with HMB showed a reduction in biomarkers of muscle damage. *Id.* (citing Sparkman ¶ 29). The Examiner further cited Sparkman as teaching beta-hydroxy-beta-methylbutanoic acid ("HMB-acid"[5]), among other forms of HMB. *Id.* (citing Sparkman ¶ 60). The Examiner also cited Sparkman Table 5, which shows dosages of HMB for humans ranging from 1–5 grams. Ans. 4.

We adopt the Examiner's findings of fact (*see, e.g.*, Final Act. 2–4, 9; Ans. 3–5), and agree that Sparkman anticipates claims 1 and 2. We address Appellant's arguments below.

Appellant argues that Sparkman does not anticipate because it does not disclose administration of HMB-acid in the claimed dosage range. Appeal Br. 11–14; Reply Br. 3–6. Specifically, Appellant argues that "Table 5 teaches administration of beta-hydroxy-beta-methylbutyrate which . . . is CaHMB. Table 5 does not teach administration of HMB-acid in the claimed ranges." Reply Br. 6. Appellant also argues that Sparkman's discussion of prior art clinical studies and administrations to humans relate to CaHMB,

[5] We follow Appellant's conventions of using "HMB-acid" to mean β-hydroxy-β-methylbutyric acid, and "Ca-HMB" to mean the calcium salt of beta-hydroxy-beta-methylbutyrate.

not HMB-acid. Appeal Br. 11–14 (citing Rathmacher and Kolb Declarations[6]); Reply Br. 3.

We are not persuaded by Appellant's arguments. Sparkman expressly identifies HMB-acid as one of the forms of HMB for administration. *See* Sparkman ¶ 60; *see also* Sparkman claims 73, 90 (teaching administration of HMB-acid as a source of HMB). Sparkman's Table 5 discloses dosages of HMB in free base (non-salt) form. Reply 4. We agree with the Examiner that when using HMB-acid (a non-salt) as the source of HMB, a person of ordinary skill in the art would have readily known to administer the same dosage of HMB-acid to achieve the dosages of HMB specified in Table 5. *Id.* In other words, in the context of Sparkman, disclosure of dosages of HMB is tantamount to disclosure of dosages of HMB-acid. The dosages in Table 5 are encompassed by the dosage range recited in Appellant's claims.

We are also not persuaded that a person of ordinary skill in the art would have read all references to "HMB" in Sparkman (including in Table 5) as referring to CaHMB. *See, e.g.*, Reply Br. 6; Rathmacher Decl. ¶ 8. This argument is inconsistent with the disclosure of Sparkman. Sparkman is not limited to CaHMB. *See, e.g.*, Sparkman ¶ 60, claim 73. Sparkman distinguishes the term "HMB," which is beta-hydroxy-beta-methylbutyrate, from the term "CaHMB," which it identifies as calcium beta-hydroxy-beta-methylbutyrate, and Sparkman broadly indicates that HMB *could be* CaHMB, suggesting that the reference would have limited its disclosure if and where desired, but did not. *See id.* ¶¶ 26, 28, 77.

[6] Declaration of John Rathmacher, dated November 6, 2017 ("Rathmacher Declaration" or "Rathmacher Decl."); Declaration of Larry Kolb, dated August 31, 2018 ("Kolb Declaration" or "Kolb Decl.").

Appellant also presents argument and evidence that the form of HMB that was actually administered to humans in the clinical studies discussed in Sparkman was Ca-HMB, not HMB-acid. *See*, *e.g.*, Appeal Br. 11–13. However, whether HMB-acid was actually administered to humans is not controlling, because "anticipation does not require actual performance of suggestions in a disclosure." *Bristol-Myers Squibb Co. v. Ben Venue Labs., Inc.*, 246 F.3d 1368, 1379 (Fed. Cir. 2001).

Accordingly, for the reasons discussed above, we affirm the rejection of claims 1 and 2 as being anticipated by Sparkman.

Obviousness

Because the same issues are dispositive of both obviousness rejections, we address them together. In relevant part, the Examiner found that Nissen teaches a method of protein sparing, comprising orally or intravenously administering to a human subject an effective amount of HMB, where the HMB can be in its free acid form, and is administered in an amount from 0.5–10 grams, preferably 2–6 grams. Final Act. 11. The Examiner further found that Sparkman "teaches a composition for treating acute inflammation and preventing or reducing the resulting symptoms of delayed onset muscle soreness following overuse of muscles," comprising a source of HMB, which can be HMB-acid. *Id.* at 13.

The Examiner found that

> It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to administer HMB in a gel form, as suggested by Sparkman, and use the free acid form of HMB, as taught by Sparkman or Nissen, and produce the instant invention.
>
> One of ordinary skill in the art would have been motivated to do this because Sparkman teaches that the gel form of HMB is

> used for compositions with HMB salts or essential amino salts, where gel form is a recognized dosage form in the art (p. 9, para [0077], lines 3-10, and p. 15, column 2, claim 87). A person of ordinary skill would be motivated to provide the oral form of HMB, as taught by Nissen in any conventional form, or taught by Sparkman to include HMB acid (p. 14, claim 66), including as a gel, to a subject in need thereof.

Final Act. 13–14.

With respect to claims 9 and 24, the Examiner found that Sparkman teaches a "commercial grade" of HMB-acid via its suggestion that HMB-acid is administered to humans. Final Act. 7. The Examiner also found that

> The fact that Sparkman, and Nissen teach a pharmaceutical preparation of HMB-acid and that it is . . . administered orally, would make it obvious to a person of ordinary skill that such an oral pharmaceutical preparation is carried in a vehicle that is part of common pharmaceutical practice, such as gel, tablet or capsule and that such a drug would be present commercial grade purity for human consumption as required by the standards set forth by the regulatory agencies that govern the land.

Id.

With respect to claims 20, 26, and 39, the Examiner found that the prior art teaches "isolated" and "purified" HMB-acid, because

> the teaching of [] Sparkman of administering β-hydroxy-β-methylbutanoic acid, by definition, inherently means that this compound has been isolated and purified. Regardless, it would have been obvious to one of ordinary skill in the art to isolate and purify any active therapeutic agent prior to administration to a human so as to achieve the desired therapeutic effect and to avoid any toxic side effects any impurities might have on the patient.

Ans. 7.

With respect to claims 22, 28–33, and 35, the Examiner found that Sparkman teaches administration of HMB in forms that include liquids, gels, and capsules. Final Act. 6 (citing Sparkman ¶ 77, claims 66, 87), 7, 13; Ans. 6–7.

With respect to whether the prior art teaches the limitations in claims 24–26 regarding greater improvements to lean body mass, muscle function, and muscle performance of administration of HMB-acid when compared to CaHMB, the Examiner stated:

> The prior art references clearly teach administration of [β-]hydroxyl-β-methylbutanoic acid to a human, which meets the functional active steps of the instant method claims. Therefore, the mechanism of action or resulting changes in the body will necessarily occur. Appellant has not provided any side-by-side comparison showing the increased lean body mass, muscle function, and muscle performance occurs only in the instant invention and not in Sparkman.

Ans. 7.

With respect to the "buffer" limitations in claims 23 and 36–38,[7] the Examiner found that Nissen teaches a physical and chemical buffer. Final Act. 12 (citing Nissen 9); Ans. 5–6. The Examiner also found that "it is obvious for one of ordinary skill in the art to use a buffer, absent a showing of unexpected results, in a pharmaceutical composition, as deemed necessary, because of the well-known properties of minimizing harmful pH

[7] Appellant asserts that the Examiner did not address claim 23 with respect to "buffered," even though this claim includes a limitation directed to "buffered." Appeal Br. 17 n.4; Reply Br. 7 n.4. Despite the Examiner's failure to note claim 23 on page 12 of the Final Action, claim 23 is included in the Examiner's rejection over Sparkman and Nissen (Final Act. 11), and the Examiner has provided a rationale for why the prior art teaches a buffer. Final Act. 7, 12; Ans. 5–6. This rationale applies to claim 23.

changes and maintaining the integrity of the compound from chemical changes resulting from drastic changes in pH." Ans. 6.

We adopt the Examiner's findings of fact regarding claims 1–6, 9, 10, 15, 20, 22–26, 28–33, 35–37, and 39 (*see, e.g.*, Final Act. 4–16; Ans. 3–10), and agree that these claims would have been obvious over the cited prior art for the reasons articulated by the Examiner. With respect to claim 38, which recites a "chemical buffer," we determine that the Examiner has not set forth a prima facie case of obviousness, as discussed further below.

On appeal, Appellant argues that the prior art fails to teach or suggest various limitations recited in the claims, and that the claimed subject matter demonstrates unexpected results. In general, however, we find that many of Appellant's arguments are directed to establishing that CaHMB "has been widely adopted as the preferred form for administering to humans." Appeal Br. 3. However, whether or not CaHMB was the form of HMB in actual use is irrelevant, because as Appellant acknowledges in the Specification, "use of HMB-acid has previously been stated" in the prior art. Spec. ¶ 36.

The Specification states that "[d]ifferences in the effectiveness of HMB-acid and HMB salts were not previously tested." *Id.* Thus, Appellant is here attempting to patent observations it made when comparing HMB-acid and Ca-HMB. But, as will be discussed below, "[i]t is a general rule that merely discovering and claiming a new benefit of an *old* process cannot render the process again patentable." *In re Woodruff*, 919 F.2d 1575, 1578 (Fed. Cir. 1990).

We address each of Appellant's arguments in turn below, generally using the organization set forth in Appellant's Appeal Brief.

A. Dosage range (all claims)

Appellant argues that the prior art fails to teach or suggest the dosage range of about 0.5 g to about 30 g of HMB-acid, which is recited in each of the appealed independent claims (1, 9, 10, 15, 20, and 24–26). Appeal Br. 14–16.

We have already addressed Sparkman's disclosure of dosages of HMB-acid within the claimed range, which is equally pertinent here. We will not restate our conclusions on the issue, but they also apply here.

While disclosure of the claimed dosage range in Sparkman is sufficient for obviousness, we also address Appellant's arguments regarding Nissen. With regard to Nissen, Appellant argues that "the Examiner inappropriately combines the generic description HMB-acid as one of several forms of HMB with specific amounts of 'HMB.'" Appeal Br. 15; *see also* Reply Br. 8–9. Appellant further argues that the ranges of HMB taught in Nissen (on page 7 and in the claims) "are on a <u>calcium HMB basis</u>," and, thus, are not dosages for HMB-acid. Appeal Br. 15; *see also* Reply Br. 8–9.

We are not persuaded by these arguments. We agree with the Examiner that Nissen discloses the claimed dosage range. Final Act. 5. For example, Nissen claim 4 recites dosages for the forms of HMB recited in claim 1. The forms of HMB recited in claim 1 include HMB-acid. Nissen claim 4 provides a dosage range for the HMB, expressed on the basis of the calcium salt. A person of ordinary skill in the art would have readily known the equivalent dosage of HMB-acid, simply by accounting for the molecular weight of the calcium ion.

Accordingly, we are not persuaded that the cited prior art fails to disclose the dosage range cited in the appealed claims.

B. Bioavailability (all claims); "greater improvements" in lean body mass, muscle function, or muscle performance compared to a "similar dosage" of CaHMB composition (claims 24–26)

Appellant argues that because the "cited prior art does not describe[] increased bioavailability when comparing HMB-acid to CaHMB, the obviousness rejections as applied to any claim involving bioavailability (ie, all pending claims) should be withdrawn." Appeal Br. 16–17; *see also* Reply Br. 12–13. With respect to claims 24–26, Appellant similarly argues that the prior art does not teach or suggest the recited limitations of improvements in muscle mass, function, and performance as compared to a similar dose of CaHMB. Appeal Br. 21–22.

We are not persuaded by Appellant's arguments. We agree with the Examiner that

> Administration of HMB-acid is construed to intrinsically have the pharmacokinetic effects (that of increased availability of HMB to tissue, as compared to CaHMB) that are described in the [Rathmacher] declaration, regardless of whether or not Sparkman and Nissen were cognizant of this effect at the time the invention was made.

Final Act. 8–9; *see also* Ans. 7 ("The prior art references clearly teach administration of [β-]hydroxyl-β-methylbutanoic acid to a human, which meets the functional active steps of the instant method claims. Therefore, the mechanism of action or resulting changes in the body will necessarily occur."). Appellant has not disputed these findings. Indeed, the Specification indicates that the better bioavailability of HMB-acid as compared to CaHMB is an inherent property of the doses of HMB-acid that

are disclosed in the prior art, stating: "[a]n effective amount of HMB-acid will result in a greater increase in plasma levels of HMB and/or will result in a faster time to reach peak plasma levels of HMB relative to administration of a similar dosage of CaHMB." Spec. ¶ 32. The Specification indicates that "effective amounts" of HMB-acid include "from about 0.5 grams to about 30 grams of HMB-acid per day." *Id.* As discussed above, the prior art discloses the administration of amounts of HMB-acid that fall within this range.

Accordingly, even though neither Sparkman nor Nissen disclose the claimed "bioavailability" and "greater improvement" limitations compared to CaHMB, Sparkman and Nissen render obvious the claimed method of administration of HMB-acid in the claimed dosages. The "bioavailability" and "greater improvement" benefits compared to CaHMB are inherent in the prior art method, and, thus, these claim limitations add nothing of patentable consequence. *See, e.g.*, *In re Kao*, 639 F.3d 1057, 1070 (Fed. Cir. 2011) (finding that claimed food effect added nothing of patentable consequence where the food effect was an inherent property of the drug).

C. "buffered" or "buffer" (claims 23, 36–38)

Appellant argues that the cited prior art references do not teach or suggest administering buffered HMB-acid to a human. Appeal Br. 17–18. Relying on the Rathmacher Declaration ¶ 12, Appellant argues that Nissen describes use of a buffer in connection with running an HPLC purity assay, not with respect to administering HMB to a human. *Id.*; *see also* Reply Br. 10. Appellant further argues that the Examiner's reliance on buffers being well-known in pharmaceutical compositions fails, because only claim 37 recites a pharmaceutical composition. Reply Br. 9–10.

We begin our analysis as to the meaning of the term "buffered." During prosecution, Appellant provided an expansive definition of this term, stating:

> In the context of this application, "buffered" means a chemical buffer, a physical buffer (such as a hard shell capsule, softgel capsule, gel capsule, or other capsule surrounding the HMB-acid; or adding HMB-acid to a liquid medium; or adding HMB-acid to a gel matrix), or any way of preparing HMB-acid that allows HMB-acid to be orally consumed.

Amendment filed March 27, 2017, at 17. In view of Appellant's supplied definition, which we adopt, we affirm the rejection of claims 23, 36, and 37. Claim 23 depends from claim 1 and recites that "the HMB-acid is buffered to allow for oral consumption." Claim 36 depends from claim 23 and recites that the "buffer comprises a physical buffer." Claim 37 depends from claim 36, and recites that the "physical buffer is a pharmaceutical carrier." As noted by the Examiner (and not disputed by Appellant), "pharmaceutical carriers are taught by the cited prior art references." Ans. 6; *see also* Sparkman ¶ 77; Nissan 7–9. This finding is sufficient to render obvious claims 23, 36, and 37.

We find, however, that the Examiner has not established a case of prima facie obviousness of claim 38. Claim 38 depends from claim 23, and recites that the "buffer comprises a chemical buffer." The Examiner relied on Nissen for disclosure of this limitation (Final Act. 12), but we agree with Appellant that the cited section of Nissen discloses use of a phosphate buffer in connection with an HPLC assay, not in connection with administration of HMB-acid to a human. Appeal Br. 17–18. The Examiner also asserted that it is obvious to use a buffer "because of the well-known properties of minimizing harmful pH changes and maintaining the integrity of the

compound from chemical changes resulting from drastic changes in pH." Ans. 6. The Examiner's rationale does little more than recite the function of a buffer. Because the Examiner has not supported the rejection of claim 38 with evidence that a chemical buffer was known to be used in the prior art with compounds having a similar chemical structure or provided a reasoned analysis, we reverse the rejection of this claim. *See, e.g., Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1363 (Fed. Cir. 2016) (noting that in general common sense should not be used as a wholesale substitute for reasoned analysis and evidentiary support).

D. "commercial grade" (claims 9 and 24)

Appellant disputes the Examiner's argument that because Sparkman and Nissen teach a pharmaceutical preparation of HMB-acid, it would have been obvious to use commercial grade HMB. Appeal Br. 18. Specifically, Appellant argues that "neither Nissen nor Sparkman teach a pharmaceutical preparation of HMB-acid, as they each only describe HMB-acid in a list of chemical forms of HMB," without "anything specific about administering HMB-acid to a human." *Id.* Appellant further argues that "'pharmaceutical' does not equate to 'commercial grade,' nor does the administration of any composition to a human require that that substance be 'commercial grade.'" *Id.* (citing Kolb Decl. ¶ 8); *see also* Reply Br. 10–11. Appellant additionally argues that "the direct statement [in Nissen] that HMB (in any form) was not commercially available at the time even teaches away from the 'commercial grade' limitation." Appeal Br. 19.

We again begin our analysis with an understanding of the claims. In relevant part, claims 9 and 24 are directed to administering certain amounts of HMB-acid that is "commercial grade for human consumption." Neither

the Specification nor the prosecution history appear to reflect an express definition for this term. Based on the Appeal Brief, Appellant appears to understand the term to mean that "the compositions have met the standards for commercial sales." Appeal Br. 18. The Specification, however, lacks any information on what those standards are. Thus, on this record, the term "commercial grade" does not impart any specific structural limitations to the claim. At most, the plain language of the claims indicates that "commercial grade" is tied to marketability for "human consumption," which implies, at a minimum, some level of purity. Accordingly, on this record, we agree with the Examiner that teachings in the prior art of administering HMB-acid to humans suggests that the drug should meet purity standards set by regulatory agencies (Final Act. 7), which on this record, satisfies the claim limitation "commercial grade for human consumption."

In response, Appellant argues that neither Nissen nor Sparkman "teaches anything specific about administering HMB-acid to a human." Appeal Br. 18. This argument is not persuasive because it is contrary to the express disclosure of the prior art. For example, Nissen claim 1 clearly recites the oral or intravenous administration of HMB-acid to a human. Nissen 13 (claim 1).

Appellant further argues that compositions that are administered to humans are not necessarily commercial grade. Appeal Br. 18 (citing Kolb Decl. ¶ 8); *see also* Reply Br. 10–11. Even if true, this argument misses the point that the teachings of Nissen and Sparkman of administering HMB-acid to a human sufficiently suggests to a person of ordinary skill in the art that the HMB-acid should be of sufficient purity for human consumption.

Indeed, Nissen expressly exemplifies assessing the purity of Ca-HMB prior to administering it to humans. Nissen 9.

Appellant additionally argues that "the direct statement [in Nissen] that HMB (in any form) was not commercially available at the time even teaches away from the 'commercial grade' limitation." Appeal Br. 19 (referencing Nissen 6–7). We are not persuaded by this argument, because it misconstrues the law of teaching away. The prior art teaches away "when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken" in the claim. *Galderma Labs., L.P. v. Tolmar, Inc.*, 737 F.3d 731, 738 (Fed. Cir. 2013). Appellant has not explained how the mere statement that HMB was not commercially available as of the publication of Nissen would have discouraged a person of ordinary skill in the art from administering commercial grade, as we have interpreted that term, HMB-acid. Further, there is no evidence to support the proposition and we do not find that *not commercially available* equates to *not commercial grade*. A compound can still be "commercial grade for human consumption," even if it is not being commercially sold.

In support of its arguments based on the "commercial grade" limitation, Appellant suggests that *Ex Parte Garmier*, 2012 WL 9171833 (BPAI Aug. 24, 2012), is controlling due to "highly similar" facts. Appeal Br. 19. We disagree. In *Garmier*, the claims at issue were directed to a "food grade lubricant composition," whereas the cited prior art was directed to a different use, namely lubricants useful for "engines, transmissions, gear boxes," etc. 2012 WL 9171833, at *1, 2. Thus, in *Garmier*, nothing in the cited prior art suggested the "food grade" limitation, given that the prior art

was directed to a different use than the claims. Here, in contrast, both the cited prior art and claims at issue are directed to HMB compositions for human administration. As such, the lack of express disclosure of "commercial grade" in the prior art is not controlling here, because the prior art nevertheless suggests this limitation, as discussed above.

Appellant's Appeal Brief notes several purported "obstacles" to development of commercial grade HMB-acid. Appeal Br. 3, 19 (citing Specification). For the first time in reply, Appellant argues that these obstacles "precluded" use of HMB-acid. Reply Br. 13 (emphasis omitted). Any argument that the prior art did not enable manufacture or use of HMB-acid is waived. 37 C.F.R. § 41.41(b)(2) ("Any argument raised in the reply brief which was not raised in the appeal brief, or is not responsive to an argument raised in the examiner's answer, including any designated new ground of rejection, will not be considered by the Board for purposes of the present appeal, unless good cause is shown."). However, even if we were to consider this argument, we find that it is not persuasive. "[A] prior art printed publication cited by an examiner is presumptively enabling barring any showing to the contrary by a patent applicant or patentee." *In re Antor Media Corp.*, 689 F.3d 1282, 1288 (Fed. Cir. 2012). Nothing in the record establishes that prior to Appellant's patent application, any of these purported obstacles "precluded" manufacture or administration of HMB-acid. Indeed, Nissen teaches that HMB could be synthesized from commercially available starting materials and recovered in free acid form (Nissen 6–7), and both Nissen and Sparkman disclose and claim use of HMB-acid, as discussed above.

E. "a liquid, a gel or a capsule" (claims 22, 28–33, and 35)[8]

Appellant argues that "HMB-acid is not *specifically* described in any cited reference as being administered with a gel, capsule or liquid carrier." Appeal Br. 20 (emphasis added); *see also* Reply Br. 11. We are not persuaded by this argument. Despite the lack of teaching of a specific embodiment of HMB-acid in a liquid, gel, or capsule, we agree with the Examiner that Sparkman "clearly teaches that the compositions of the present invention may be administered via any route, including orally, intraperitoneally, and intravenously, as well in all common dosage forms, including liquids, gels, and capsules." Ans. 6 (citing Sparkman ¶ 77). Even if Appellant is correct that not every form of HMB disclosed in Sparkman can be administered in every listed dosage form (Appeal Br. 20), one of ordinary skill in the art would have used his or her ordinary skill, creativity, and common sense to make the necessary adjustments to result in a properly functioning composition. *See, e.g.*, *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) ("[A] court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.").

F. "purity that allows for oral ingestion" (claim 10)

Appellant acknowledges that "[b]oth Nissen and Sparkman indicate that 'HMB' can be administered orally or intravenously," but asserts that the

[8] Appellant asserts that "[t]he examiner does not include claims 3 or 15 in the rejection related to gels, even though both claims positively recite these carriers." Appeal Br. 20 n.5. It is unclear what Appellant means regarding "the rejection related to gels." Nevertheless, claims 3 and 15 are included in the Examiner's rejection over Sparkman and Nissen, and the Examiner provided a rationale for where Sparkman and Nissen teach a gel. *See, e.g.*, Final Act. 6, 7, 11. That rationale applies to claims 3 and 15.

references do not expressly state that HMB-acid can be administered via both of these routes. Appeal Br. 20–21. We are not persuaded by this argument. We find that the prior art sufficiently teaches the oral administration of HMB-acid. For example, Nissen claim 1 clearly recites the oral or intravenous administration of HMB-acid to a human. Nissen 13 (claim 1). This is more than sufficient to teach or suggest *both* the oral *and* intravenous administration of HMB-acid.

G. "isolated," "purified" (claims 20, 26, and 39)

Appellant suggests that the obviousness rejection should be reversed for claims 20, 26, and 39, because the limitations directed to "isolated" or "purified" HMB-acid are "not disclosed explicitly or inherently in the prior art." Appeal Br. 21. This argument is not persuasive. We agree with the Examiner that "the teaching of the Sparkman of administering β-hydroxy-β-methylbutanoic acid, by definition, inherently means that this compound has been isolated and purified." Ans. 7. Moreover, the test for obviousness is not whether the claimed invention is expressly identified in any one or all of the references, but whether the claimed subject matter would have been obvious to those of ordinary skill in the art in light of the combined teachings of the prior art. *See In re Keller*, 642 F.2d 413, 425 (CCPA 1981). Thus, contrary to Appellant's suggestion, the prior art need not expressly recite "isolated HMB-acid" or "purified HMB-acid" to render the claims unpatentable as obvious.

To the extent Appellant suggests that *Schering Corp. v. Geneva Pharms.*, 339 F.3d 1373 (Fed. Cir. 2003) compels reversal of the obviousness rejections (Appeal Br. 9, 21), we disagree. In *Schering*, the court found claims to a metabolite inherently anticipated, where a prior art

process necessarily resulted in formation of the metabolite in the body. 339 F.3d at 1376. In view of its holding, the court's decision suggested ways that patent protection could still be available for metabolites of known drugs. *Id.* at 1381. The facts of *Schering* find no parallel here. Further, contrary to Appellant's suggestion, *Schering* did not establish a bright-line rule that including the terms "isolated" or "purified" in a claim automatically renders that claim nonobvious over purported "generic descriptions" of the drug in the prior art.

H. Secondary Considerations

a. Teaching away

Appellant argues that Sparkman teaches away from HMB-acid because it "teaches that the best way to increase absorption of HMB is to use a salt form." Reply Br. 15; Appeal Br. 22–23 (citing Sparkman ¶¶ 28, 77).

We disagree. "The prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed [appellant's] application." *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004). Sparkman merely touts a benefit of salt forms of HMB. Appellant has not pointed to anything in the prior art of record that criticizes, discredits, or otherwise discourages use of HMB-acid.

b. Unexpected results

Relying on the Specification and Rathmacher Declaration, Appellant asserts that the claimed methods demonstrate unexpected results, arguing:

> When given in molar equivalents, HMB-acid results in double the plasma level of HMB in about 1/4th of the time when compared to CaHMB. The greater clearance and differences in peak plasma levels has a physiological effect as evidenced in

> Example 2 which demonstrates that HMB-acid is more protective than CaHMB when muscle is subjected to acute exercise.

Appeal Br. 23; *see also id.* at 24–26.

We are not persuaded that Appellant has demonstrated unexpected results sufficient to demonstrate nonobviousness of the claimed subject matter. Purported 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). Appellant relies on Examples 1 and 2 in the Specification, which tested HMB-acid against CaHMB. But, CaHMB is not the closest prior art, because as discussed above, both Sparkman and Nissen disclose administration of HMB-acid in amounts that are encompassed by the Appellant's claims.

Moreover, as noted above, the Specification admits that "use of HMB-acid has previously been stated." Spec. ¶ 36. As noted above, "[i]t is a general rule that merely discovering and claiming a new benefit of an *old* process cannot render the process again patentable." *In re Woodruff*, 919 F.2d at 1578; *see also Bristol-Myers Squibb Co. v. Ben Venue Labs., Inc.*, 246 F.3d 1368, 1376–77 (Fed. Cir. 2001) ("However, the claimed process . . . consists of the same steps as described by [the cited art]. Newly discovered results of known processes directed to the same purpose are not patentable because such results are inherent."). Here, the purported unexpected results that Appellant seeks to rely on are merely latent benefits inherent in an old method, as discussed above. These latent benefits cannot render the method disclosed in both Sparkman and Nissen again patentable. *In re Baxter Travenol Labs.*, 952 F.2d at 392 ("Mere recognition of latent properties in the prior art does not render nonobvious an otherwise known invention.").

Accordingly, for the reasons discussed above, we affirm the Examiner's obviousness rejections.

CONCLUSION

We affirm the rejection of claims 1 and 2 under 35 U.S.C. § 102 as anticipated by Sparkman.

We affirm the rejection of claims 1–3, 5, 6, 9, 10, 15, 20, 22–26, 28–33, 35–37, and 39 under 35 U.S.C. § 103(a) as being unpatentable over Nissen and Sparkman.

We reverse the rejection of claim 38 under 35 U.S.C. § 103(a) as being unpatentable over Nissen and Sparkman.

We affirm the rejection of claim 4 under 35 U.S.C. § 103(a) as being unpatentable over Nissen, Sparkman, and Ribnicky.

In summary:

Claims Rejected	Basis	Affirmed	Reversed
1, 2	§ 102 over Sparkman	1, 2	
1–3, 5, 6, 9, 10, 15, 20, 22–26, 28–33, and 35–39	§ 103 over Nissen and Sparkman	1–3, 5, 6, 9, 10, 15, 20, 22–26, 28–33, and 35–37, 39	38
4	§ 103 over Nissen, Sparkman, and Ribnicky	4	
Outcome		1–6, 9, 10, 15, 20, 22–26, 28–33, and 35–37, 39	38

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