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BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte KEIJITSU TANAKA, YUSUKE AMAKI, MOTOKI TANAKA, and MUTSUMI MIYAZAKI

Appeal 2019-000262
Application 14/363,013
Technology Center 1600

Before DONALD E. ADAMS, RICHARD M. LEBOVITZ, and FRANCISCO C. PRATS, *Administrative Patent Judges*.

LEBOVITZ, *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 6 and 10–19 based on 35 U.S.C. §§ 112 and 103. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM-IN-PART.

[1] We use the word "Appellant" to refer to "applicant" as defined in 37 C.F.R. § 1.42(a). Appellant identifies the real party in interest as SDS Biotech K.K. Br. 2.

STATEMENT OF THE CASE

Claims 6 and 10–19 stand finally rejected by the Examiner as follows:

Claims 10–18 under 35 U.S.C. § 112(a) (2012) or 35 U.S.C. § 112 (2006), first paragraph, as failing to comply with the written description requirement. Ans. 4; Final Act. 4.

Claims 6 and 10–19 under 35 U.S.C. § 103(a) (2006) as obvious in view of Ramarathnam et al. (Rajesh Ramarathnam et al., *Molecular & biochemical detection of fengycin- and bacillomycin D-producing Bacillus spp., antagonistic to fungal pathogens of canola & wheat*, 53 CAN. J. MICROBIAL. 901–11 (2007)) ("Ramarathnam"), Thasana et al. (Nopporn Thasana et al., *Bacillus subtilis SSE4 produces subtulene A, a new lipopeptide antibiotic possessing an unusual C15 unsaturated β-amino acid*, 584 FEBS LETTERS 3209–214 (2010)) ("Thasana"), Choudhary et al. (Devendra K. Choudhary & Bhavdish N. Johri, *Interactions of Bacillus spp. & plants With special reference to induced systemic resistance (ISR)*, 164 MICROBIOLOGICAL RESEARCH 493–513 (2009)) ("Choudhary"), Moyne et al. (US 6,183,736 B1, issued Feb. 6, 2001) ("Moyne '736"), and Tabbene et al. (Olfa Tabbene et al., *Anti-Candida effect of bacillomycin D-like lipopeptides from Bacillus subtilis B38*, 316 FEMS MICROBIOLOGICAL LETTERS 108–14 (2011)) ("Tabbene"). Ans. 8; Final Act. 7.

Independent claim 6 is representative and reproduced below:

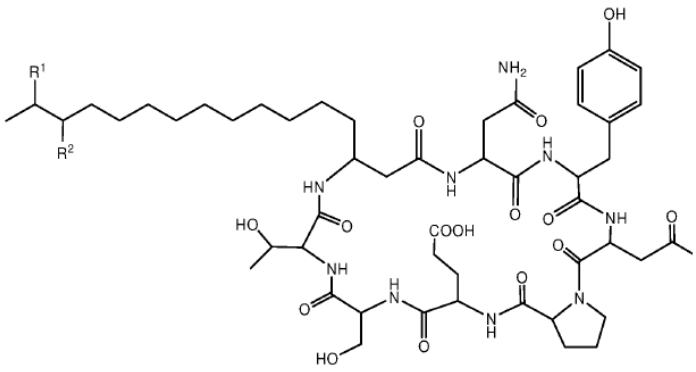
6. A plant disease controlling method, wherein said method comprises applying, to at least leaves of a diseased plant, a plant disease control composition,

wherein said applying is by a technique selected from (a) and (b):

(a) spraying said plant with said composition; and

(b) watering said plant with water containing said composition,

wherein said composition comprises, as an active ingredient, a compound represented by formula (1) or a salt thereof,



(1)

and wherein R^1 and R^2 represents a hydrogen atom or a methyl group but excepting cases where R^1 and R^2 are the same.

WRITTEN DESCRIPTION REJECTION

Dependent claim 10 recites "plant disease controlling method as claimed in claim 6, wherein the plant disease control composition comprises 10 ppm or higher of the compound represented by formula (1)." Independent claim 13 is also directed to a plant controlling method comprising applying a composition to plant leaves "wherein said composition comprises, as an active ingredient, 10 ppm or higher of a compound represented by formula (1) or a salt thereof." The Examiner found that there is no support in the originally filed disclosure for the

claimed range of 10 ppm or higher (e.g., including 1000 ppm, 10,000 ppm, etc.). Ans. 4–5. The Examiner found there is a single static number of 10 ppm disclosed in paragraph 55 of the Specification, but no discussion of ranges of ppm. *Id.* The Examiner also stated that the "disclosure of static numbers does not implicitly or inherently support a range with an *unbounded* upper limit that is not literally disclosed on record or inherently exemplified by other examples." Ans. 5.

Appellant identifies literal support for the value of 10 ppm in Table 2 of the Specification. Br. 7. Appellant also states that the dilutions of 1,000 and 2,000 in Table 3 of the Specification correspond to 50 ppm and 25 ppm, respectively. *Id.* at 8.

To satisfy the written description requirement, the inventor must "convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention." *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1563–64 (Fed. Cir. 1991). In describing the claimed invention, there is no requirement that the wording be identical to that used in the Specification as long as there is sufficient disclosure to show one of skill in the art that the inventor "invented what is claimed." *Union Oil Co. v. Atlantic Richfield Co*., 208 F.3d 989, 997 (Fed. Cir. 2000).

Appellant has not provided adequate evidence that the inventors had possession of the claimed *range* of 10 ppm or higher. *Vas-Cath*, 935 F.2d at 1563–64. Appellant identifies three values in the Specification of 10, 25, and 50 ppm, but does not providence evidence that the inventors possessed the range of 10 ppm or higher. As discussed by the Examiner, there is no discussion in the Specification of a range of values, particularly not higher than the 50 ppm (said by Appellant to be disclosed in Table 3), such as 55

ppm, 100 ppm, 1,000 pm, etc. The written description "need not recite the claimed invention in haec verba but [it] must do more than merely disclose that which would render the claimed invention obvious." *ICU Med., Inc. v. Alaris Med. Sys., Inc*., 558 F.3d 1368, 1377 (Fed. Cir. 2009). Therefore, the Specification must expressly convey to one of ordinary skill in the art that the inventors "invented" a range of values higher than 10 ppm, with no upper limit. *Union Oil Co.*, 208 F.3d at 997.

The facts resemble those in *In re Wertheim*, 541 F.2d 257, 263 (CCPA 1976) where the Appellant sought to establish possession of the claimed range of "at least 35%." The court found PTO met its burden of "presenting evidence or reasons why persons skilled in the art would not recognize in the disclosure a description of the invention defined by the claims . . . [b]y pointing to the fact that claim 1 reads on embodiments outside the scope of the description." *Id.* The Examiner did just that here (Final Act. 4–6), and in response Appellant identified three "static" ppm numbers, but did not meet the burden of explaining how one of ordinary skill in the art would have recognized that the inventors had possession of the claimed *range* of "10 ppm or higher," which has no recited upper limit and includes values not described in the Specification.

For the foregoing reasons, the written description rejection of claims 10–18 is affirmed.

SECTION 103 REJECTION

The claims in this appeal are directed to a plant disease controlling method comprising applying a compound of formula (1), or a salt thereof, to a plant. The Examiner found that the compound of formula (1) recited in the

claims comprises the iso-C17 or anteiso-C17 species of Bacillomycin D. Ans. 3.

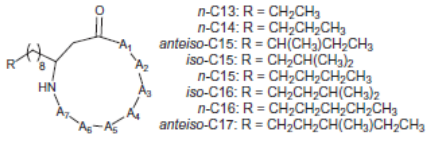
The Examiner cited Ramarathnam "to establish that C17 Bacillomycin homologs were known in the art circa 2007," specifically identifying "Fig. 3a on 908, showing Bacillomycin D having peaks at m/z = 1069.5, 1083.7, 1097.6, and 1111.6, which are explicitly identified as corresponding to C14-C17 *bacillomycin D* species." Ans. 8. The Examiner concluded that "[t]herefore, in view of the primary reference, an artisan would be aware that C17 Bacillomycin D homologs occurred naturally, could be isolated from Bacillus species, and would be aware that such compounds would be expected to have applications in the plant disease control arts." Ans. 9.

However, the Examiner acknowledged that Ramarathnam "does not explicitly identify the exact methods of plant disease control recited at claims 6 and 10-19 utilizing the Bacillomycin D homologs recited at claims 6 and 10-19 (*i.e.*, iso-C17 and/or anteiso-C17 species of Bacillomycin D)." Ans. 9.

The Examiner further cited Thasana "to establish that the genus of Bacillomycin D was understood to comprise aliphatic side chains ranging from C13 to C17 (*see, e.g.*, Thasana at Table 1 on 3210, showing general variation observed for the iturin family, including Bacillomycin D, including linear, iso-, and anteiso- aliphatic chains)." Ans. 9

Table 1 of Thasana is reproduced below:

Table 1
Amino acid composition of the iturin family and compositional differences of the β-amino acid.[a]



Entry	Antibiotic	Amino acid sequences L-A1-D-A2-D-A3-L-A4-L-A5-D-A6-L-A7
1	Iturin A	Asn-Tyr-Asn-Gln-Pro-Asn-Ser
2	Iturin C	Asp-Tyr-Asn-Gln-Pro-Asn-Ser
3	Bacillomycin D	Asn-Tyr-Asn-Pro-Glu-Ser-Thr
4	Bacillomycin F	Asn-Tyr-Asn-Gln-Pro-Asn-Thr
5	Bacillomycin L	Asp-Tyr-Asn-Ser-Glu-Ser-Thr
6	Bacillomycin Lc	Asn-Tyr-Asn-Ser-Glu-Ser-Thr
7	SCP[b]	Asp-Tyr-Asn-Ser-Glu-Ser-Thr
8	Mycosubtilin	Asn-Tyr-Asn-Gln-Pro-Ser-Asn
9	Subtulene A[c]	Asn-Tyr-Asn-Gln-Pro-Asn-Ser

[a] Normal β-amino acid side chain (C13 to C17).
[b] SCP is the synthetic cyclopeptide (β-amino acid = Ala).
[c] β-Amino acid side chain is 3-amino 13-methyltetradec-8-enoic acid ($R = (CH_2)_3CH{=}CH(CH_2)_3CH(CH_3)_2$).

Table 1 of Thasana, reproduced above, shows Bacillomycin D (entry 3) and R group anteiso-C17. While the table lists eight different R-groups for the nine listed members of the iturin family, the table does not indicate where each species is obtained. The Examiner also did not point to disclosure in Thasana where the specifically claimed Bacillomycin D species having the anteiso-C17 R-group could be isolated (e.g., from what bacterial species) or evidence that it had been previously isolated.

The Examiner also relied upon Moyne '736 for its teaching that Bacillomycin D species comprising C15 and C16 were known, as well as iso-C15 and anteiso-C15 variants. Ans. 9–10. The Examiner found that Moyne '736 discloses that the C15 and C16 species can vary by 1–3 carbon atoms. *Id.* However, the Examiner did not find that Moyne '736 expressly discloses the iso-C17 or anteiso-C17 species of Bacillomycin D recited in the rejected claims.

Appellant contends that none of Ramarathnam, Thasana, and Moyne '736 teach the claimed Bacillomycin D species. Br. 9–10, 12. Appellant also argues that neither Thasana nor Moyne '736 "serve as evidence that the claimed C17 Bacillomycin D homologs were known in the art at the time of the invention because there is no specific teaching is either publication of such homolog species. Br. 11–12.

The Examiner responds that "Thasana provides a disclosure pertinent to $C_{13 \text{ to } 17}$ Bacillomycin D homologs, which specifically includes anteiso-C_{17} Bacillomycin D." Ans. 24. To the extent Appellant is arguing that the cited publications are not enabled "to make and use the C_{17} Bacillomycin D species as disclosed by Ramarathnam and Thasana, then Examiner notes that the prior art is presumed to be fully enabled and 'the burden is on applicant to rebut the presumption of operability' (*see, e.g.*, MPEP § 2121(I), (III))." Ans. 33.

Discussion

An examiner bears the initial burden of presenting a prima facie case of obviousness. *In re Huai-Hung Kao*, 639 F.3d 1057, 1066 (Fed. Cir. 2011). To establish prima facie obviousness of the rejected claims in this appeal, the Examiner has the burden of establishing that the cited publications Ramarathnam, Thasana, Moyne '736 put the public in possession of the claimed species of formula (1). *In re Hoeksema*, 399 F.2d 269 (CCPA 1968). It is necessary to establish that the public had possession of the claimed iso-C17 or anteiso-C17 species of Bacillomycin D of formula (1) because all of the rejected method claims require it to spray on plants.

The burden of establishing prima facie obviousness was not met by the Examiner. As found by the Examiner, Ramarathnam shows a mass spectroscopy spectra of C17 species of Bacillomycin D (Ramarathnam 908 (Fig. 3a)), but the Examiner made no finding that this species was one of the same species of formula (1) recited in all the rejected claims, and in fact, acknowledged that it was not. Ans. 8–9.

Moyne '736 is cited by the Examiner for its general disclosure C15 and C16 variants of Bacillomycin D, and the iso-C15 and anteiso-C15 structural species, but the Examiner did not establish that Moyne '736 described the claimed iso-C17 or anteiso-C17 species of formula (1) or where they would be obtained. Ans. 9–10.

While Table 1 of Thasana arguably lists one of the claimed species of Bacillomycin D when the specific choice of the C17 R-group is made, the Examiner did not identify a source of it or evidence that it had been obtained by the cited prior art. Ans. 9. When Appellant argued to the Examiner that the cited publications did not disclose the claimed species, the Examiner did not explain how the publications *enabled* one of ordinary skill in the art to obtain them for application to plants as required by all the rejected claims.

Contrary to the Examiner's statement about Appellant's burden of showing lack of enablement, the Examiner, in this case, where it was admitted that Ramarathnam and Moyne '736 do not expressly describe the claimed species of formula (1) (Ans. 9), and Thasana only show it in a table as a possible species, had the burden to establish that one of ordinary skill in the art had possession of the claimed species to apply to the plant as recited in all the claims. *Hoeksema*, 399 F.2d at 272–73. The Examiner stated that the "prior art is presumed to be enabling" and Appellant is "attacking

references individually" (Ans. 22), but the Examiner did not identify the existence of the species in a bacteria. Appellant is not attacking the references individually as asserted by the Examiner, but rather is addressing the disclosure in each publication to establish that there is no enabling disclosure in Ramarathnam, Thasana, and Moyne '736 of the claimed iso-C17 or anteiso-C17 species of Bacillomycin D if formula (1). Consistently, the Specification states that the recited compounds ("Compounds 1 and 2") "have never been reported in the above-mentioned previous researches, let alone the activity thereof." Spec. 8:19–21. The mentioned previous searches included Ramarathnam (document 22), Moyne '736 (document 1), and Tabbene (document 20). Spec. 6–7.

The Examiner states that the rejection is not based on Ramarathnam alone, Moyne '736 alone, or Thasana alone (Ans. 22, 24), but when neither of the publication *alone* describe the species, how does the combination of references do so?

As held in *Hoeksema*:

> In effect, appellant agrees that since the claimed product is a homolog of a known compound, it would be prima facie "obvious" under 35 U.S.C. § 103. But this agreement is conditioned on the proviso that there is in the prior art an "obvious" process by which to make that compound.
>
> . . .
>
> Thus, as we apply the statute to the present invention, we must ask first, what is the invention as a whole? Necessarily, by elementary patent law principles, it is the claimed compound, but, so considered, unless there is some known or obvious way to make the compound, the invention is nothing more than a mental concept expressed in chemical terms and formulae on a paper.
>
> We are certain, however, that the invention as a whole is the claimed compound and a way to produce it, wherefore

> appellant's argument has substance. There has been no showing by the Patent Office in this record that the claimed compound can exist because there is no showing of a known or obvious way to manufacture it; hence, it seems to us that the "invention as a whole," which section 103 demands that we consider, is not obvious from the prior art of record.

Hoeksema, 399 F.2d at 272–73.

> Thus, upon careful reconsideration it is our view that if the prior art of record fails to disclose or render obvious a method for making a claimed compound, at the time the invention was made, it may not be legally concluded that the compound itself is in the possession of the public.[] In this context, we say that the absence of a known or obvious process for making the claimed compounds overcomes a presumption that the compounds are obvious, based on close relationships between their structures and those of prior art compounds.

Hoeksema, 399 F.2d at 274.

Hoeksema is applicable to the rejection because Thasana, the only cited publication which arguably lists, or makes obvious the structure of the claimed species, does not disclose a source of it or a method isolating it, and therefore, it cannot be concluded "that the compound itself is in the possession of the public." *Id.*

The rejection of claims 6 and 10–19 as obvious is reversed.

DECISION SUMMARY

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
10–18	112	Written description	10–18	
6, 10–19	103	Ramarathnam, Thasana, Choudhary, Moyne '736, Tabbene		6 and 10–19
Overall Outcome			10–18	6, 19

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-IN-PART