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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte MARCO LUIGI FEDERICO GIUSEPPIN, CATRINUS VAN DER SLUIS, and MARC CHRISTIAAN LAUS (APPLICANT: COÖPERATIE AVEBE U.A.)

Appeal 2017-002239
Application 13/919,802[1]
Technology Center 1600

Before DONALD E. ADAMS, RICHARD J. SMITH, and DAVID COTTA, *Administrative Patent Judges*.

ADAMS, *Administrative Patent Judge*.

DECISION ON APPEAL

This Appeal under 35 U.S.C. § 134(a) involves claims 15–23, 27–32, and 34 (App. Br. 2; Ans. 3).[2] Examiner entered rejections under 35 U.S.C. § 101 and 35 U.S.C. § 103(a). We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

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[1] Appellants identify the real party in interest as "Coöperatie AVEBE, U.A." (Appellants' July 13, 2016 Response to Notification of Non-Compliant Appeal Brief (App. Br.) 2).

[2] Pending claim 25 stands withdrawn from consideration (App. Br. 2; Ans. 3).

STATEMENT OF THE CASE

Appellants disclose "a process for native potato protein isolation, to native potato protein isolates, to the use thereof, and to a food, nutraceutical and pharmaceutical product comprising a native potato protein isolate" (Spec. 1). Claims 15, 17, 22, 23, and 34 are representative and reproduced below.

> 15. A native potato protein isolate obtained by a process comprising
>
> - subjecting potato fruit juice to a flocculation by a divalent metal cation at a pH of 7-9;
>
> - centrifuging the flocculated potato fruit juice, thereby forming a supernatant;
>
> - subjecting the supernatant to expanded bed adsorption chromatography operated at a pH of less than 11 and a temperature of 5-35 C using an adsorbent capable of binding potato protein, thereby adsorbing the native potato protein to the adsorbent; and
>
> - eluting at least one native potato protein isolate from the adsorbent with an eluent, wherein said native potato protein isolate is essentially free from organic acids, amino acids, has a glycoalkaloid content of less than 400 parts per million, has solubility stability, and may be utilized as gelling agent, an emulsifier, foaming agent in a food product, or as a source of pharmaceutical and therapeutic enzymes.
>
> 17. Native potato protein patatin isolate according to claim 15 having an isoelectric point of below 5.8, a molecular weight of more than 30 kDa, and a glycoalkaloid concentration of less than 150 ppm.
>
> 22. Food product comprising a native potato protein isolate according to claim 15.

> 23. Personal care product comprising a native potato protein isolate according to claim 15.
>
> 34. A native potato protein isolate obtainable by a process comprising
>
> - subjecting potato fruit juice to a flocculation by a divalent metal cation at a pH of 7-9;
>
> - centrifuging the flocculated potato fruit juice, thereby forming a supernatant;
>
> - subjecting the supernatant to expanded bed adsorption chromatography operated at a pH of less than 11 and a temperature of 5-35 °C using an adsorbent capable of binding potato protein, thereby adsorbing the native potato protein to the adsorbent; and
>
> - eluting at least one native potato protein isolate from the adsorbent with an eluent, wherein said native potato protein isolate has a protein content of more than 75 %, and is essentially free from organic acids, amino acids, has a glycoalkaloid content of less than 400 parts per million, has solubility stability, and may be utilized as gelling agent, an emulsifier, foaming agent in a food product, or as a source of pharmaceutical and therapeutic enzymes.

(App. Br. 17–19.)

The claims stand rejected as follows:

Claims 15–23, 27–32, and 34 stand rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103 as obvious over Pots.[3]

Claims 15–23, 27–32, and 34 stand rejected under 35 U.S.C. § 101.

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[3] André M. Pots, et al., *Isolation and Characterization of Patatin Isoforms*, 47 J. Agric. Food Chem. 4587–92 (1999).

The rejection under 35 U.S.C. §§ 102(b)/103:

ISSUE

Does the preponderance of evidence on this record support: Examiner's finding that Pots teaches, or in the alternative, Examiner's conclusion that Pots makes obvious, Appellants' claimed invention?

ANALYSIS

Examiner finds that Pots teaches or, in the alternative, makes obvious Appellants' claimed invention (Ans. 4–6).

Claim 15:

Appellants' claim 15 is directed to a native potato protein isolate that is essentially free from organic acids, amino acids, has a glycoalkaloid content of less than 400 parts per million, and has solubility stability (App. Br. 17). In addition, Appellants' claim 15 identifies the intended use of the native potato protein isolate, wherein the isolate may be utilized as gelling agent, an emulsifier, foaming agent in a food product, or as a source of pharmaceutical and therapeutic enzymes (*id.*). As Examiner recognizes, although Appellants' claim 15 identifies properties associated with the claimed native potato protein isolate and its intended use, neither Appellants' claim 15 nor Specification identifies a specific structural feature that distinguishes the claimed native potato protein isolate from a prior art native potato protein isolate, such as that disclosed by Pots (*see* Ans. 5). To the contrary, Appellants' claim 15 is a product-by-process claim, which defines the product, native potato protein isolate, by the process used to obtain the isolate. Specifically, Appellants' claim 15 requires that the native potato protein isolate is obtained by a process that comprises the following

steps: (a) subjecting potato fruit juice to a flocculation by a divalent metal cation at a pH of 7-9; (b) centrifuging the flocculated potato fruit juice, thereby forming a supernatant; (c) subjecting the supernatant to expanded bed adsorption chromatography operated at a pH of less than 11 and a temperature of 5-35 C using an adsorbent capable of binding potato protein, thereby adsorbing the native potato protein to the adsorbent; and (c) eluting at least one native potato protein isolate from the adsorbent with an eluent (App. Br. 17).

An understanding of the scope of Appellants' claim 15, is aided by Appellants' dependent claims, e.g., Appellants' claim 17, which requires that the scope of Appellants' claim 15 encompasses, *inter alia*, a native protein isolate that has: (i) an isoelectric point below 5.8, (ii) a molecular weight of more than 30 kDa, and (iii) a glycoalkaloid concentration of less than 150 ppm (*id.*).

Pots discloses the "[i]solation and [c]haracterization of [p]atatin [i]soforms" and a process for obtaining these isoforms (Pots, Title; *see also id.* at 4587: Abstract ("All isoforms of the patatin family contained proteins with two molecular masses of approximately 40.3 and 41.6 kDa, respectively"); *id.* at 4587–88; Ans. 5). Pots discloses three isoforms, isoforms A, B, and C, having a molecular weight of more than 30 kDa and an isoelectric point below 5.8, which are encompassed by the native potato protein isolate of Appellants' claim 15 (*see* Pots 4588: Table 1; Ans. 5). Although Pots does not disclose the glycoalkaloid concentration of the patatin isolates, Examiner finds that because Appellants' "claimed native potato protein isolate shares the same physical/structural properties including: isoelectric point and molecular weight with the potato protein

isolate/patatin taught by Pots, [] the claimed properties of a glycoalkaloid concentration of less than 150 ppm . . . is presumed to be inherent" (Ans. 5). We find no error in Examiner's rationale. As Appellants recognize, "Examiner correctly points out that the determination of a product by process claim is based on the product itself, and not the process" (Reply Br. 3). *See In re Best,* 562 F.2d 1252, 1255 (CCPA 1977) ("Where, as here, the claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes, the PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his claimed product").

Similarly, absent evidence to the contrary, a person of ordinary skill in this art would have reasonably expected that the native potato protein isolates disclosed by Pots, and produced by the method disclosed by Pots, are inherently essentially free from organic acids, amino acids, and have solubility stability. In this regard, Pots recognizes that "patatin, like all other proteins, is prone to an irreversible heat precipitation," performs experiments with the patatin protein, and recognizes that "soluble potato protein [] can be used in food or alternative applications" (Pots 4587: left column, first paragraph; *id.* at 4587–91; *see also* Ans. 5–6). In addition, Appellants concede that Pots' "potato protein . . . does not suffer from the instability which isolated protein normally has" (Reply Br. 4). In this regard, we find no limitation in Appellants' claim 15 that requires Appellants' native potato protein isolate to exist as something other than in a solution (*see* App. Br. 17). Therefore, we are not persuaded by Appellants' contention that their native potato protein isolate differs from Pots, because the "potato protein in

Pots is present in solution and therefore does not suffer from the instability which isolated protein normally has" (Reply Br. 4).

For the foregoing reasons, we find no error in Examiner's finding that Pots anticipates Appellants' claim 15.

For the foregoing reasons, we are not persuaded by Appellants' contention that "Pots does not disclose a potato protein which is essentially free from organic acids and amino acids, and has a glycoalkaloid content of less than 400 parts per million" (App. Br. 15; *see also* Reply Br. 3). Appellants fail to provide persuasive evidence or argument to support a finding or conclusion that Pots' isolates do not meet the requirements of Appellants' claimed invention. In this regard, we are not persuaded by Appellants' contention that Pots' potato protein isolates are "not isolated" (Reply Br. 4; *cf.* Pots 4587–90).

Appellants' claim 15 is directed to a product not a method of using the product. Therefore, we are not persuaded by Appellants' contentions regarding their intended use of the claimed product (*see* App. Br. 15; *see also id.* at 16; Reply Br. 3). *See In re Spada*, 911 F.2d 705, 708 (Fed. Cir. 1990) ("The discovery of a new property or use of a previously known composition, even when that property and use are unobvious from prior art, can not impart patentability to claims to the known composition").

For the same reasons we are not persuaded by Appellants' contention that Pots' isoforms would not "have the advantages described in [Appellants'] . . . application, including elimination or substantial decrease in fat and fatty acids of a potato protein isolate; increased efficiency of expanded bed adsorption separation process, and a potato protein isolate

solution resulting from the inventive process which has substantially decreased turbidity" (App. Br. 15–16).

Claims 22 and 23:

Appellants' claims 22 and 23 are reproduced above.

Based on Pots, Examiner concludes that, at the time Appellants' invention was made, it would have been prima facie obvious

> to use the native potato protein isolate in food and personal care product[s] because Pots teaches the use of soluble potato protein in food (page 4587, left column, line 11++) thus the inclusion of native potato protein isolate in food and personal care products is well-known and routinely done with [a] reasonable expectation of success.

(Ans. 5–6.)

Appellants claims 22 and 23 do not require the use of "patatin isoforms as a gelling agent, an emulsifier, foaming agent in a food product, or as a source of pharmaceutical and therapeutic enzymes;" therefore, we are not persuaded by Appellants' contention that Pots does not disclose these specific uses of patatin isoforms (App. Br. 15; *see id.* at 15–16).

For the foregoing reasons, we find no error in Examiner's conclusion of obviousness with respect to Appellants' claims 22 and 23.

In addition, the products of Appellants' claims 22 and 23 comprise the native potato protein isolate according to claim 15, which, as discussed above, is anticipated by Pots. The only difference between Appellants' claim 15 and Appellants' claims 22 and 23 is the intended use of the product, food and personal care, respectively, set forth in the preamble of Appellants' claims. "Where[, as here, Appellants] . . . define[] a structurally complete invention in the claim body and use[] the preamble only to state a

purpose or intended use for the invention, the preamble is not a claim limitation." *Rowe v. Dror*, 112 F.3d 473, 478 (Fed. Cir. 1997); *See Bettcher Indus., Inc. v. Bunzl USA, Inc.*, 661 F.3d 629, 654 (Fed. Cir. 2011) ("Where all structural elements of a claim exist in a prior art product, and that prior art product is capable of satisfying all functional or intended use limitations, the claimed invention is nothing more than an unpatentable new use for an old product"); *see also In re Schreiber*, 128 F.3d 1473, 1477–1479 (Fed. Cir. 1997). Thus, for the reasons set forth above, having found that Pots anticipates Appellants' claim 15, we also find that Pots anticipates Appellants' claims 22 and 23.

Claim 34:

Appellants' claim 34 is reproduced above. As Appellants explain, Appellants' claim 34 . . . differs from [Appellants'] claim 15[, discussed above,] by the feature that the native potato protein isolate has a protein content of more than 75%" (App. Br. 16).

According to Appellants, "Pots does not describe any isolate[] . . . with a protein content of more than 75%" (App. Br. 16). Although Pots discloses that the "[p]rotein content [of its patatin isolates] was determined with the Bradford assay . . . using bovine serum albumin . . . as a standard," Pots does not appear to disclose an isolate with a protein content of more than 75% (Pots 4588: left column, first full paragraph). We find, however, that the concentration of patatin in any of Pots' isolates, would have been a matter of routine optimization or design choice, e.g., the choice of maintaining a dilute or more concentrated composition. In this regard, we note that "'it is not inventive to discover the optimum or workable ranges by

routine experimentation.'" *In re Geisler*, 116 F.3d 1465, 1470 (Fed. Cir. 1997) (quoting *In re Aller*, 220 F.2d 454, 456 (CCPA 1955).

For the foregoing reasons, we find no error in Examiner's conclusion of obviousness with respect to Appellants' claim 34.

CONCLUSION OF LAW

The preponderance of evidence on this record supports: Examiner's finding that Pots teaches, or in the alternative, Examiner's conclusion that Pots makes obvious, Appellants' claimed invention. The rejection of claims 15, 22, 23, and 34 under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103 as obvious over Pots is affirmed. Claims 16–21 and 27–32 are not separately argued and, therefore, fall with claim 15.

The rejection under 35 U.S.C. § 101:

ISSUE

Does the evidence of record support Examiner's finding that Appellants' claimed invention is directed to non-statutory subject matter?

ANALYSIS

The scope of 35 U.S.C. § 101 "is subject to an implicit exception for 'laws of nature, natural phenomena, and abstract ideas,' which are not patentable." *Intellectual Ventures I LLC v. Capital One Financial Corp.*, 850 F.3d 1332, 1338 (Fed. Cir. 2017), citing *Alice Corp. Pty. Ltd. v. CLS Bank Int'l.*, 134 S. Ct. 2347, 2355 (2014); *see also Mayo Collaborative Services v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1293 (2012) ("'[L]aws of nature, natural phenomena, and abstract ideas' are not patentable" (citation omitted, alteration original)).

Alice, sets forth the following two-step analysis for determining patent eligibility under Section 101:

> First, we determine whether the claims at issue are directed to one of those patent-ineligible concepts [e.g., a law of nature, natural phenomenon, or abstract idea]. If so, we then ask, what else is there in the claims before us? . . . We have described step two of this analysis as a search for an inventive concept—i.e., an element or combination of elements that is sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the ineligible concept itself.

Alice, 134 S. Ct. at 2355 (alterations, citations, and quotation marks omitted). Examiner finds that Appellants' claimed native potato protein isolate "is directed to a judicial exception . . . without significantly more" (Ans. 3).

With respect to *Alice*'s first step, Examiner finds that, when considered as a whole, Appellants' claimed "native potato protein isolate is a product of nature with no markedly different characteristic based on structure/function/ properties of its naturally occurring counterpart" (Ans. 4; *see also id.* at 7). In this regard, Examiner finds that "[t]he native potato protein isolate itself (with its inherent properties) is not changed by the purification/isolation process, especially in light of the definition for 'native potato protein' . . . [set forth in Appellants' Specification,] which recites the potato protein without any significant physical or biochemical modification or inactivation" (Ans. 4 (citing Spec. 3)).

Association for Molecular Pathology v. Myriad Genetics, Inc., 133 S. Ct. 2107 (2013), is controlling. In *Myriad*, the Court considered claims directed to isolated DNA encoding the BRCA1 polypeptide and fragments of at least 15 nucleotides of that DNA. *Id.* at 2113. The Court held that "Myriad did not create anything. To be sure, it found an important and

useful gene, but separating that gene from its surrounding genetic material is not an act of invention." *Id.* at 2117. "Myriad found the location of the BRCA1 and BRCA2 genes, but that discovery, by itself, does not render the BRCA genes 'new . . . composition[s] of matter,' § 101, that are patent eligible." *Id.* "Nor are Myriad's claims saved by the fact that isolating DNA from the human genome severs chemical bonds and thereby creates a nonnaturally occurring molecule." *Id.* at 2118. Similarly, on this record, Appellants' did not create anything by separating, or isolating, native potato protein from its native environment. To the contrary, Appellants' native potato isolate is a product of nature.

With respect to *Alice*'s second step, the search for an inventive concept, Examiner finds that Appellants' "native potato protein isolate does not . . . acquir[e] new properties [that] it [did] not have on its own as a natur[al] product by being isolated/purified" according to the process set forth in Appellants' claims (Ans. 4; *see also id.* at 7). As Pots, discussed above, makes clear, methods of obtaining a native potato protein isolate were well-known in this art at the time of Appellants' claimed invention. *See Genetic Techs. Ltd. v. Merial L.L.C.*, 818 F.3d 1369, 1376 (Fed. Cir. 2016) (Appellants "must provide something inventive, beyond mere well-understood, routine, conventional activity").

Appellants provide no persuasive evidence or argument to support a finding that potato protein, a natural product, would not naturally exhibit the solubility and stability characteristics observed by Appellants. Therefore, we are not persuaded by Appellants' contention that the act of isolating potato protein from its natural environment, without more, imputes properties unto Appellants' potato protein, itself, that differ from the

naturally occurring potato protein (*see* App. Br. 12–14; Reply Br. 1–2). *See Myriad*, 133 S.Ct. at 2117 ("separating [a natural product] from its [natural environment] is not an act of invention"). In addition, as Pots makes clear, methods of isolating native potato protein that preserve its solubility and stability characteristics were known in the art prior to Appellants' filing date. *See Genetic Techs. Ltd.*, 818 F.3d at 1376. Therefore, we are not persuaded by Appellants' contention that their "natural protein in fact, cannot be isolated without the characteristic changes noted, i.e., due to its instability" (Reply Br. 2; *cf.* Pots 4587–4590).

We are not persuaded by Appellants' contentions regarding the "purity" of their claimed potato protein isolate. In this regard, we note that neither of Appellants' independent claims, claims 15 and 34, require a particular degree of purity (*see* App. Br. 12; *cf. id.* at 17 and 18–19). Further, we find no persuasive evidence or argument to support a finding that isolated potato protein "comprises many compounds which prevent application of the protein in food products" (Reply Br. 2). In this regard, we note that neither of Appellants' independent claims, claims 15 and 34, are drawn to a method of using isolated potato protein as a food, or other, product, alone or in combination with other ingredients (*see id.*).

Further, as discussed above, Appellants failed to establish that native potato protein isolate, produced by routine, convention, and well-known methods, does not inherently contain a glycoalkaloid content of less than 400 parts per million; therefore, we are not persuaded by Appellants' contentions to the contrary (App. Br. 13–14; Reply Br. 2).

CONCLUSION OF LAW

The evidence of record supports Examiner's finding that Appellants' claimed invention is directed to non-statutory subject matter. The rejection of claims 15 and 34 under 35 U.S.C. § 101 is affirmed. Claims 16–23 and 27–32 are not separately argued and, therefore, fall with claim 15.

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).

AFFIRMED