

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

RIMFROST AS,
Petitioner,

v.

AKER BIOMARINE ANTARCTIC AS,
Patent Owner.

IPR2020-01533
Patent 9,816,046 B2

Before ERICA A. FRANKLIN, JON B. TORNQUIST, and
MICHAEL A. VALEK, *Administrative Patent Judges*.

TORNQUIST, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

A. *Background and Summary*

Rimfrost AS (“Petitioner”) filed a Petition (Paper 2, “Pet.”) requesting an *inter partes* review of claims 1–19 of U.S. Patent No. 9,816,046 B2 (“the ’046 patent”). Aker Biomarine Antarctic AS (“Patent Owner”) did not file a Preliminary Response to the Petition.

An *inter partes* review may not be instituted unless “the information presented in the petition . . . and any response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a) (2018). After considering Petitioner’s arguments and evidence, and for the reasons set forth below, we determine that the Petitioner has demonstrated a reasonable likelihood of prevailing with respect to at least one claim challenged in the Petition. Accordingly, we institute an *inter partes* review of all claims and grounds set forth in the Petition.

B. *Real Parties in Interest*

Petitioner identifies itself, Olympic Holding AS, Emerald Fisheries AS, Rimfrost USA, LLC, Rimfrost New Zealand Limited, and Bioriginal Food and Science Corp., as real parties in interest. Pet. 3. Out of an “abundance of caution,” Petitioner also names Stig Remøy, SRR Invest AS, Rimfrost Holding AS and Omega Protein Corporation as real parties in interest based on their ownership interests in the real parties in interest identified by Petitioner. *Id.*

Patent Owner identifies itself as a real party in interest. Paper 5, 1.

C. *Related Matters*

Petitioner and Patent Owner identify several related matters. Specifically, the parties identify *Aker Biomarine Antarctic AS v. Olympic*

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Holding AS, Case No. 1:16-CV-00035-LPS-CJB (D. Del.), which involved U.S. Patent Nos. 9,028,877 B2 (“the ’877 patent”) and 9,078,905 B2 (“the ’905 patent”). Pet. 3; Paper 5, 1. The parties further identify Investigation No. 337-TA-1019 by the United States International Trade Commission, which involved the ’877 and ’905 patents, as well as U.S. Patent No. 9,320,765 (“the ’765 patent”), U.S. Patent No. 9,375,453 (“the ’453 patent”), and U.S. Patent No. 9,072,752 (“the ’752 patent”). Pet. 3–4; Paper 5, 1–2.

The parties also identify the following Board proceedings as related matters:

- IPR2017-00745 and IPR2017-00747, which requested review of the ’905 patent (all challenged claims found unpatentable (Ex. 1103), decision affirmed on appeal (Ex. 1154));
- IPR2017-00746 and IPR2017-00748, which requested review of the ’877 patent (all challenged claims found unpatentable (Ex. 1104), decision affirmed on appeal (Ex. 1154));
- IPR2018-00295, which requested review of the ’765 patent (all challenged claims found unpatentable (Ex. 1129));
- PGR2018-00033, which requested review of U.S. Patent No. 9,644,170 (institution denied because the challenged patent was not eligible for post grant review);
- IPR2018-01178 and IPR2018-01179, which requested review of the ’453 patent (all challenged claims found unpatentable (Exs. 1157, 1158));
- IPR2018-01730, which requested review of the ’752 patent (all challenged claims found unpatentable (Ex. 1159)); and

- IPR2020-01532, which requested review of U.S. Patent No. 9,644,169 (pending).

Pet. 4–7; Paper 5, 2–4.

D. The '046 Patent

The '046 patent discloses extracts from Antarctic krill that include bioactive fatty acids. Ex. 1001, 1:24–25. The '046 patent explains that krill oil compositions, including compositions having up to 60% w/w phospholipid content and as much as 35% w/w EPA/DHA¹ content, were known in the art. *Id.* at 1:59–62. The '046 patent further explains that “[k]rill oil compositions have been described as being effective for decreasing cholesterol, inhibiting platelet adhesion, inhibiting artery plaque formation, preventing hypertension, controlling arthritis symptoms, preventing skin cancer, enhancing transdermal transport, reducing the symptoms of premenstrual symptoms or controlling blood glucose levels in a patient.” *Id.* at 1:51–57.

According to the '046 patent, lipases and phospholipases within krill can result in the decomposition of glycerides and phospholipids during transport of frozen krill from the Southern Ocean to a processing site. *Id.* at 2:8–18, 9:61–63. To avoid the problem of enzymatic decomposition of krill products, the '046 patent describes a method of thermally denaturing the lipases and phospholipases in fresh-caught krill prior to storage and processing. *Id.* at 9:63–10:11, 10:45–51. The '046 patent reports that these denaturing steps allow for the storage of krill material “for from about 1, 2,

¹ According to the '046 patent, “EPA” is 5,8,11,14,17-eicosapentaenoic acid and “DHA” is 4,7,10,13,16,19-docosahexanoic acid. Ex. 1001, 9:13–16.

3, 4, 5, 6, 8, 9, 10, 11, or 12 months to about 24 to 36 months prior to processing.” *Id.* at 10:36–44.

The ’046 patent describes an embodiment wherein krill oil is subsequently extracted from the stored krill product using a polar solvent and/or supercritical carbon dioxide. *Id.* at 10:2–4. In Example 7 of the ’046 patent, “[k]rill lipids were extracted from krill meal (a food grade powder) using supercritical fluid extraction with co-solvent.” *Id.* at 32:15–16.

Initially, 300 bar pressure, 333°K and 5% ethanol (ethanol:CO₂, w/w) were utilized for 60 minutes in order to remove neutral lipids and astaxanthin from the krill meal. Next, the ethanol content was increased to 23% and the extraction was maintained for 3 hours and 40 minutes. The extract was then evaporated using a falling film evaporator and the resulting krill oil was finally filtered.

Id. at 32:17–24.

In Example 8, krill oil prepared using the same method described in Example 7 was analyzed using ³¹P NMR analysis to identify and quantify the phospholipids in the oil. *Id.* at 32:48–51. It was determined that “[t]he main polar ether lipids of the krill meal [were] alkylacylphosphatidylcholine (AAPC) at 7-9% of total polar lipids, lyso-alkylacylphosphatidylcholine (LAAPC) at 1% of total polar lipids (TPL), and alkylacylphosphatidyl-ethanolamine (AAPE) at <1% of TPL.” *Id.* at 33:13–17.

E. Illustrative Claims

Petitioner challenges claims 1–19 of the ’046 patent. Of those, claims 1 and 13 are independent. Claims 2–12 depend, directly or indirectly, from claim 1 and claims 14–19 depend from claim 13. Claims 1 and 13 are illustrative of the challenged claims and are reproduced below:

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