

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

RIMFROST AS,
Petitioner,

v.

AKER BIOMARINE ANTARCTIC AS,
Patent Owner.

IPR2020-01532
Patent 9,644,169 B2

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

TORNQUIST, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

A. *Background and Summary*

Rimfrost AS (“Petitioner”) filed a Petition (Paper 2, “Pet.”) requesting an *inter partes* review of claims 1–20 of U.S. Patent No. 9,644,169 B2 (Ex. 1001, “the ’169 patent”). Aker Biomarine Antarctic AS (“Patent Owner”) did not file a Preliminary Response to the Petition. Upon review of Petitioner’s arguments and evidence, we instituted an *inter partes* review of all claims and grounds asserted in the Petition (Paper 6, “Institution Decision” or “Inst. Dec.”).

Patent Owner subsequently filed a Response (Paper 9, “PO Resp.”), to which Petitioner filed a Reply (Paper 15, “Pet. Reply”), and Patent Owner filed a Sur-Reply (Paper 18, “Sur-Reply”). With authorization, Patent Owner also filed a paper identifying arguments and evidence in Petitioner’s Reply that it considers to be improper (Paper 19), to which Petitioner filed a response (Paper 21).

Petitioner also filed a motion to exclude certain evidence relied upon by Patent Owner (Paper 25), to which Patent Owner filed an opposition (Paper 26), and Petitioner filed a reply (Paper 28).

In support of their respective positions, Petitioner relies upon the declaration and reply declaration of Dr. Stephen J. Tallon (Exs. 1006, 1086), and Patent Owner relies upon the declaration of Dr. Jacek Jaczynski (Ex. 2015).

An oral hearing was held on January 12, 2022, and a transcript of the hearing is included in the record (Paper 32, “Tr.”).

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. Based on various ownership interests, and out of “an abundance of caution,” Petitioner also identifies Stig Remøy, SRR Invest AS, Rimfrost Holdings AS, and Omega Protein Corporation as real parties-in-interest. *Id.*

Patent Owner identifies itself as the real party-in-interest in this proceeding. Paper 5, 1.

C. Related Matters

The parties identify as a related matter *Aker Biomarine Antarctic AS v. Olympic Holding AS*, 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. 3–4; 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. 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));

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- 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
- IPR2020-01533, which requested review of U.S. Patent No. 9,816,046 B2 (pending).

Pet. 4–7; Paper 5, 2–4.

D. The '169 Patent

The '169 patent discloses extracts from Antarctic krill that include bioactive fatty acids. Ex. 1001, 1:22–23. The '169 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 1:57–60. The '169 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

¹ According to the '169 patent, “EPA” is 5,8,11,14,17-eicosapentaenoic acid and “DHA” is 4,7,10,13,16,19-docosahexanoic acid. Ex. 1001, 9:12–16.

symptoms of premenstrual symptoms or controlling blood glucose levels in a patient.” *Id.* at 1:49–55.

According to the ’169 patent, frozen krill are typically transported from the Southern Ocean to a processing site, but lipases and phospholipases within the krill can result in the decomposition of glycerides and phospholipids during transport. *Id.* at 2:6–16, 9:61–10:8. To avoid the problem of enzymatic decomposition of krill products, the ’169 patent describes a method of thermally denaturing the lipases and phospholipases in fresh-caught krill prior to storage and processing. *Id.* at 10:5–10, 10:45–50. The ’169 patent reports that these denaturing steps allow for the storage of krill material “for from about 1, 2, 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.

After denaturation, the krill can be subject to extraction processes either on board the ship or at a remote location. *Id.* at 10:38–40. In one embodiment, krill oil is extracted from krill meal in two stages. *Id.* at 9:54–55. In the first stage, a neutral fraction is extracted using either neat supercritical CO₂ or CO₂ in combination with 5% ethanol. *Id.* at 9:55–57. In the second stage, polar lipids (phospholipids) are extracted by adding at least 20% ethanol to the supercritical CO₂ extraction medium. *Id.* at 9:58–60. The ’169 patent reports that “[k]rill oil extracted from denatured krill meal by supercritical fluid extraction even 19 months after the production of the meal contained virtually no decomposed phospholipids.” *Id.* at 11:3–6. The ’169 patent further reports that the novel krill oil compositions of the invention are “characterized by containing high levels of astaxanthin, phospholipids, includ[ing] enriched quantities of ether phospholipids, and omega-3 fatty acids.” *Id.* at 9:46–49.

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