

June 15, 2021

Certification

Welocalize Translations

This is to certify that the attached translation is, to the best of my knowledge and belief, a true and accurate translation from Norwegian into English of the file "Oppsummering Fresenius Kabi 26.06.06_427_Words."



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Project Number: CAJO_2106_P0014

Summary from Meeting with Fresenius Kabi 06.26.06

Present Ulf Håkansson and Peter Svendsson from FK, Finn - Arne Lorentsen and Snorre Tilseth from Aker.

Peter Svendsson summarized the extraction attempts.

The Extraction

3,150 kg krill flour produced onboard the Atlantic Navigator 05.06.06 were extracted with ethanol in the first step of the extraction process. The content of solid matter in the flour was estimated to 91.1%. The extraction was run in 10 x 320 kg part extraction.

The yield was 620 L phospholipids or approximately 500 kg.

The extraction lasted for two (2) hours and was run at room temperature, approximately 18 Centigrade. In some of the extractions a cake was formed, which had to be dissolved, and in these the extraction lasted for 6 hours.

Problems with coating in a pump was assumed to be caused by the shell fraction.

After the extraction, the krill flour was dried to 89.1% solid matter. Towards the end of the drying, fine powder was swirling up, and further removal of ethanol was stopped due to the risk of explosion. The remaining flour will contain a rest of water and ethanol. This will be analyzed.

The extraction was characterized by Svendsson as successful, the problems that occurred could obviously easily be handled.

The phospholipids are heavy flowing, but not viscous, with strong color of Astaxanthin with a faint, fresh odor of shellfish.

After extraction, the flour is a faint reddish color, with very good flow. Register odor of ethanol. Estimates rest fat of 5%. This will be analyzed.

The products are packed in 16 x 25 L and 44 x 5 L plastic canisters, respectively, and the flour in 6 x 400 kg sacks.

Analysis:

Fresenius will analyze fat classes and fatty acid profiles in the rest fat on the flour, the same plus peroxides, anisidin values, FFA, ethanol and water in phospholipids extracted.

FK will consider the possibility of removing EQ from the oil so we can test the product in the market.

FK will in their pilot plant, perform a complete extraction of the phospholipids, as well as separation of the pl's; this will probably be done by a research fellow working at the facility.

We have agreed to share the oil 50/50. We will take all the flour back to FF.

FK thinks that the oil can be uses directly as it is, and that it can easily be concentrated so special capsules may be designed with a size much smaller than AstaOmega, but with the same content of EPA and DHA.

The first impression from FK is very optimistic. If we manage to do this, establishing a separate line is considered. Among other things, this would depend on how extensive the cleaning process will be. (Asta is a strong pigment, which colored the glass equipment after the extraction.)

Analysis at FF:

The same as FK, and in addition analyze content of EQ and Asta in flour and oil. The flour will also be analyzed for content of protein, rest fat and ash.

I have already managed to get FF to consider whether EQ could possibly be removed from the oil at their pilot facility.

FF will also be able to remove the ethanol rests and micronize the protein powder. Content of fluorine will be analyzed.

If we manage to remove EQ, and the F content is not too high, we would be able to test the products for enhanced feed for cod, bass, bream and shrimp. This will be followed up.