Peer-Reviewed Salmonid Study Evaluates AlgaeAsta® as a Natural Alternative to Synthetic Astaxanthin

AlgaeAsta® microalgal powder achieved the highest numerical astaxanthin retention among supplemented diets in a peer-reviewed rainbow trout study.

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TORONTO, ONTARIO, CANADA, August 14, 2026 /EINPresswire.com/ -- TORONTO, Ontario - August, 2026 - Iconthin Biotech Corp., a Canadian biotechnology company specializing in microalgae cultivation and processing, announced the publication of a peer-reviewed rainbow trout feeding study evaluating its AlgaeAsta® natural astaxanthin ingredients alongside synthetic and bacterial astaxanthin sources.

Published in Elsevier's Aquaculture, the study found that trout fed microalgal and synthetic astaxanthin diets achieved the highest white-muscle astaxanthin concentrations. Among the astaxanthin-supplemented treatments, the AlgaeAsta® microalgal powder also achieved the highest numerical net apparent retention of astaxanthin, an indicator of how efficiently dietary astaxanthin was retained in fish muscle.

The research provides aquafeed manufacturers and salmonid producers with peer-reviewed performance data on microalgae-derived astaxanthin in both wall-broken powder and concentrated oil formats.

Evaluating Astaxanthin Source and Ingredient Format

The study examined microalgal, bacterial and synthetic astaxanthin sources in salmonid diets. Researchers evaluated two AlgaeAsta® ingredients derived from Haematococcus pluvialis: a microalgal powder containing 1% natural astaxanthin and Astaxanthin Oil containing 10%

natural astaxanthin.

The feeding trial assessed growth performance, fillet colouration, nutrient retention, antioxidant capacity, tissue astaxanthin accumulation and gut microbiome composition.

AlgaeAsta, leading with pure astaxanthin

Results showed that astaxanthin source and formulation both influence biological outcomes in salmonid nutrition. The AlgaeAsta® microalgal powder recorded a net apparent retention, or NAR, of 5.80%—the highest numerical value among the astaxanthin-supplemented treatments evaluated. By comparison, NAR was 4.39% for synthetic astaxanthin, 3.65% for microalgal oil and 2.88% for bacterial astaxanthin.

NAR measures the proportion of dietary astaxanthin retained in fish tissue after accounting for intake, providing an indicator of ingredient utilization efficiency. For aquafeed formulators, this metric can help inform decisions around ingredient selection and formulation strategy.

> “Aquafeed companies need more than a natural-origin claim - they need credible performance data. This study provides peer-reviewed data to assess natural microalgal astaxanthin.”
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> *Dr. Alvin Cheng, Founder and CEO, Iconthin Biotech*

The study also found that the microalgal powder influenced the gut microbial community of rainbow trout, suggesting that astaxanthin source and formulation may have biological effects extending beyond pigmentation. Further research will be needed to determine the functional and commercial significance of these microbiome changes.

“Aquafeed companies need more than a natural-origin claim—they need credible performance data,” said Dr. Alvin Cheng, founder and CEO of Iconthin Biotech and a co-author of the study. “The net apparent retention result is particularly encouraging because ingredient utilization is an important consideration when evaluating the commercial value of astaxanthin. This study gives feed manufacturers peer-reviewed data they can use to assess natural microalgal astaxanthin alongside established synthetic sources.”

Commercial Relevance for Aquafeed Formulation

Astaxanthin is a naturally occurring red carotenoid and antioxidant widely used in feed for salmonids, including salmon and rainbow trout. Because these fish cannot synthesize astaxanthin in sufficient quantities on their own, it must be supplied through their diet to support characteristic flesh colouration.

Synthetic astaxanthin currently accounts for much of the astaxanthin used in commercial aquafeed. However, demand for traceable, naturally derived and biologically produced feed ingredients is increasing interest in astaxanthin sourced from microalgae.

One of the principal formulation challenges associated with H. pluvialis is its rigid cell wall, which can limit access to the astaxanthin accumulated inside the cells. AlgaeAsta® H. pluvialis powder is processed to disrupt this physical barrier and improve ingredient accessibility. AlgaeAsta® Astaxanthin Oil provides natural astaxanthin in a concentrated oil-based format for flexible use in aquafeed and animal-nutrition formulations.

The high numerical retention recorded for the wall-broken microalgal powder supports continued research into how cell-wall processing, formulation and dietary composition can improve the utilization and cost competitiveness of natural astaxanthin.

Advancing Regulatory and Commercial Adoption

The publication follows another important commercialization milestone for AlgaeAsta®. In 2026, Iconthin Biotech received authorization from the Canadian Food Inspection Agency for its microalgae-based astaxanthin ingredient for fish-feed applications in Canada.

Together, regulatory authorization and peer-reviewed feeding-trial data establish a stronger foundation for the commercial evaluation and adoption of AlgaeAsta® in aquaculture and animal nutrition.

Iconthin Biotech continues to advance its microalgae production and processing platform to increase cultivation efficiency, improve ingredient performance and support greater cost competitiveness at commercial scale.

Aquafeed manufacturers and animal-nutrition companies interested in technical specifications, samples or formulation discussions may contact Iconthin Biotech at info@iconthin.com.

Study Information

The study was conducted in collaboration with researchers at the University of Guelph and Iconthin Biotech, including Samantha Bezner, Mya Gowanlock, Alvin (Xiang) Cheng, Marcia Chiasson and David Huyben, with support from Mitacs.

Study title: “Replacement of Synthetic Astaxanthin With Microalgal and Bacterial Sources: Effects

on Growth, Colouration, Nutrient Retention, Antioxidant Capacity, and Gut Microbiome of Rainbow Trout”

Journal: Aquaculture, Volume 626, Article 744418

Full study: View the research in Aquaculture

AlgaeAsta®: Learn more about AlgaeAsta® natural astaxanthin

About AlgaeAsta®

Developed through advanced R&D by Iconthin Biotech in Canada, AlgaeAsta® is a premium natural astaxanthin ingredient derived from Haematococcus pluvialis microalgae. Produced using third-generation closed bioreactor cultivation technology, AlgaeAsta® delivers high-quality, naturally sourced astaxanthin with exceptional productivity, purity, and sustainability for nutraceutical, food, and aquaculture applications.

About Iconthin Biotech Corp.

Iconthin Biotech Corp. is a Canadian biotechnology company specializing in algae-based health products, natural astaxanthin innovation, and microalgae research.About Iconthin Biotech Corp.

Founded in Toronto in 2016, Iconthin Biotech Corp. develops microalgae cultivation, processing and extraction technologies for aquaculture, animal nutrition, dietary supplements, functional foods and personal care.

Through its AlgaeAsta® ingredient platform, the company supplies natural astaxanthin in powder and oil-based formats designed for commercial formulation. Iconthin Biotech’s brands include AlgaeAsta®, Astadaily® and AstaDermis®.

For more information, visit iconthin.com.

Angela Ce
Iconthin Biotech Corp.
+1 888-730-6668
info@iconthin.com
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