



University of Hawai'i at Mānoa

Hawai'i Natural Energy Institute

School of Ocean & Earth Science & Technology

Commercial Oil Production from Microalgae and "The Emperor's New Clothes"

Microalgae are prolific producers of triglyceride oils that can be used for a variety of purposes. Over the past 15 years, we have developed a large-scale fermentative production system for producing oils rich in omega-3 fatty acids including DHA for nutritional applications. We also developed high-value stable, -isotopically-labeled oils using photosynthetic microalgae and unique photobioreactors for use in the medical diagnostic field. The commercial-scale production of these algal oils required the development of a number of new technologies in harvesting, dewatering and oil extraction and purification, since processes generally applied to conventional plant-based oil production simply do not work for microalgae.

The high cost of production of microalgal oils can only be commercially justified if the oils themselves carry a value many times higher than conventional vegetable oil. The concept of production of algal oils for biofuel purposes has little basis in reality since the nutritional value of the algal oils far exceeds their combustion value. The fundamental economics and practical production issues will be reviewed to stimulate a discussion of whether or not biofuel production from microalgae will ever be feasible.

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Advanced BioNutrition Corporation

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