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Eco-friendly algae oil could finally solve palm oil's drawbacks

From food to cosmetics, **palm oil** can be found in countless products today, making it the world's most widely used vegetable oil. As you may know, though, palm oil is far from environmentally friendly. Additionally, experts have raised concerns about palm oil's effects on our health. Soon, however, we could have a greener and healthier alternative in the form of oil made from algae.

What's palm oil used for?

Palm oil is found in **about 50 percent of the products** on supermarket shelves, from pizza dough to shampoo. In these products, it serves as a stabilizing additive that keeps food ingredients together, and it also gives processed foods a creamy consistency. Plus, people use it as a cooking oil in many regions of the world.

What's wrong with palm oil?

Unfortunately, because it is so cheap and efficient to produce, palm oil's demand continues to grow rapidly. This fuels **deforestation** rates in countries that produce palm oil like **Indonesia** and Malaysia, where huge swaths of rainforest are cleared to make space for palm tree agriculture. The ensuing negative effects on biodiversity and carbon sequestration are self-evident.

Additionally, while palm oil *is* cholesterol-free and has some claimed health benefits, it *does* contain 52 percent saturated fats, which can increase your risk of heart disease or stroke.

Algae oil to the rescue

In a bid to come up with a better alternative to palm oil, scientists at Singapore's **Nanyang Technological University** and Malaysia's University of Malay turned to **microalgae** called *Chromochloris zofingiensis*.

As part of the study, the researchers mixed pyruvic acid — an organic acid that occurs in all living cells — with a microalgae solution and a liquid growth medium. The team then shone ultraviolet light over the concoction to encourage photosynthesis. And voila: the production of oil. After two weeks, they removed the algae and treated it with methanol in order to separate the algae proteins from the oils.

Similar properties, minus the bad stuff

According to the researchers, the harvested oil had similar qualities to those of palm oil, minus the high concentration of saturated fatty acids. In its current state, the technology can produce enough oil out of 160 grams of algae to make a 100-gram chocolate bar.

To increase the sustainability of the process, the scientists have also developed a technique that can produce the pyruvic acid out of fermented organic waste. On top of that, the authors state that the artificial ultraviolet light could be substituted with sunlight at a larger-scale production facility. As such, the algae could also capture carbon from the air as it grew.

"We are capitalizing on the concept of establishing a circular economy, finding uses for would-be waste products and re-injecting them into the food chain," says the lead scientist, Nanyang's Prof. William Chen. "In this case, we rely on one of nature's key processes, fermentation, to convert that organic matter into nutrient-rich solutions, which could be used to cultivate algae, which not only reduces our reliance on palm oil, but keeps carbon out of the atmosphere."

Source study: *Journal of Applied Phycology* — **Screening and effect evaluation of chemical inducers for enhancing astaxanthin and lipid production in mixotrophic *Chromochloris zofngiensis***

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