

Alligator fat could be used to make biodiesel

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Oil extracted from alligator fat meets nearly all of the official standards for high-quality biodiesel. Image credit: US Fish and Wildlife Service

(PhysOrg.com) -- In addition to being a novelty food, alligators could also provide a feedstock for biodiesel. Every year, the alligator meat industry disposes of about 15 million pounds of alligator fat in landfills. Now scientists have found that oil can be extracted from the fat and used to make a high-quality biodiesel.

The researchers, Rakesh Bajpai and coauthors from the University of Louisiana, have published their study on the possibility of using alligator fat as fuel in a recent issue of the American Chemical Society journal *Industrial & Engineering Chemistry Research*.

In 2008, the US produced about 700 million gallons of biodiesel to help supply some of the 45 billion gallons of diesel consumed that year. Most of the biodiesel came from soybean oil. Due to concerns that using food crops to produce fuels will raise the price of food, scientists have been investigating alternative feedstocks, including sewage sludge, Chinese tallow, and used vegetable oil.

By showing in experiments that oil extracted from alligator fat meets nearly all of the official standards for high-quality biodiesel, the Louisiana

researchers have added another feedstock to the list. The scientists explained that alligator fat has a high lipid content, and the lipids could be recovered by microwaving frozen samples and by using a chemical solvent.

Although it would play a small role in biodiesel production if it is ever to be used, alligator fat could have an advantage of lower processing costs compared to some other feedstocks since it is a waste product.

More information: Potential of Alligator Fat as Source of Lipids for Biodiesel Production, Ind. Eng. Chem. Res., Article ASAP, [DOI: 10.1021/ie201000s](https://doi.org/10.1021/ie201000s)

Abstract

A large amount of alligator fat (AF) is produced by alligator meat processing industry and disposed in landfills or discarded as waste. The AF can be used as a potential feedstock for biodiesel production due to its high lipid content. In this work, recovery of lipids from the AF tissue was studied by solvent extraction as well as by microwave rendering. Microwave rendering resulted in AF oil recovery of 61% by weight of the frozen AF tissue obtained from producers. The fatty acid profile of the lipid showed that palmitic acid (C16:0), palmitoleic acid (C16:1), and oleic acid (C18:1) were the dominant fatty acids accounting for 89 - 92% of all lipids by mass; 30% of the fatty acids were saturated and 70% were unsaturated. The biodiesel produced from AF oil was found to meet the ASTM specifications of biodiesel concerning kinematic viscosity, sulfur, free and total glycerin, flash point, cloud point, and acid number.

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