

Biodiesel production from aflaj algae by using ethanol produced from dates syrup

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The Earth's growing population has increased the demand for oil, leading to higher prices and consumption. Algae are emerging as a promising biomass source for biodiesel, potentially replacing fossil fuels due to their renewable nature and high lipid content. Since two-thirds of Earth's surface is water, algae-based biofuels could meet global energy needs. Over the past decade, algae biofuel has become a viable alternative to petroleum. Algae grown in CO₂-enriched environments can be transformed into oily substances, offering a solution to air pollution and energy shortages.

Countries are focused on developing renewable fuels, and algae-derived biodiesel could be an essential replacement for gasoline in vehicles. This study explores biodiesel production from algae oil using ethanol made from date syrup. The process involved transesterification using catalysts like KOH and NaOH. The study found that NaOH catalyst with 70% ethanol from date syrup produced the highest biodiesel yield of 28 ml, whereas KOH resulted in 13 ml.

The research concluded that algae oil and date syrup ethanol can serve as renewable, environmentally friendly energy sources. NaOH and 70% date syrup ethanol were recommended for the best biodiesel production. However, further studies are needed to evaluate the impact of this biodiesel on engine performance.

Key words: Aflaj , algae, dates syrup , biodiesel, ethanol