

Sustainable biodiesel from neem tree transesterification

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The neem tree, *Azadirachta indica*, also known as the Indian Lilac, is well known for its oil extracted from its seed and fruit. It has been used in traditional medicine but has also been investigated for the pest control potential of natural products. Work published in the *International Journal of Renewable Energy Technology* reports on the production,

characterisation and use of neem biodiesel as a green fuel for vehicle engines.

Bheru Lal Salvi and Sudhakar Jindal of the Department of Mechanical Engineering at the Maharana Pratap University of Agriculture and Technology in Udaipur, Rajasthan, India, have shown how neem biodiesel can be prepared through a two-stage trans-esterification reaction in approximately 88% yield. The neem biodiesel is of a higher viscosity and density than conventional diesel derived from petroleum oil. It also has a slightly lower energy density, or calorific value. However, neem biodiesel blended with up to 20 percent by volume of petrochemical diesel results in a product with a very similar viscosity to conventional diesel, making it more viable for use in compression ignition engines.

The blended bio-product had little impact on brake specific fuel efficiency. However, it reduced smoke opacity and also led to savings in carbon dioxide emissions. These are two [important factors](#) in opting for biodiesel rather than petrochemical diesel. Specifically, analysis of carbon dioxide generated shows that the use of the 20% blended neem biodiesel, led to savings in [carbon dioxide emissions](#) of more than 0.14 kilograms per kilowatt hour of power generated. Neem biodiesel may thus represent a potentially sustainable fuel.

More information: Bheru Lal Salvi et al. Study on production, characterisation and utilisation of neem biodiesel as green fuel for compression ignition engine, *International Journal of Renewable Energy Technology* (2020). [DOI: 10.1504/IJRET.2020.111998](https://doi.org/10.1504/IJRET.2020.111998)

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