

Lubing up industry, the natural way

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Sesame oil might make a viable and sustainable alternative to mineral oil as an industrial lubricant, according to research published in the *International Journal of Agricultural Resources, Governance and Ecology*.

Sabarinath Sankaran Nair, Kumarapillai Prabhakaran Nair, and Perikinalil Krishnan Rajendrakumar of the Department of Mechanical Engineering at the National Institute of Technology, Calicut, Kerala, India, explain that there is a pressing need to find alternatives to the [mineral](#) oils currently produced by the petrochemicals industry from fossil reserves of crude oil. Sustainable alternative feedstocks that might be grown as agricultural crops could offer a potentially less polluting alternative especially in the face of dwindling resources.

There are countless plant-derived oils any one of which might have particularly properties desirable in an industrial lubricant. The team, however, has tested the physicochemical, rheological, thermal, oxidative, and tribological properties of sesame oil and compared it positively with coconut oil, sunflower oil, and a commercially available [mineral oil](#). The team reports that sesame oil has excellent thermal and tribological properties and high viscosity and has a better coefficient of friction.

However, the oxidative stability of sesame oil is not as high as mineral oil and this will need improving through reformulation of oil derived from [sesame seeds](#) with additives, or perhaps even through genetically modified plants for improved oil stability. Nevertheless, even without such changes, the team points out that it is stable as a [lubricant](#) base stock at a wide range of temperatures.

"With further development, it can become an eco-friendly substitute for its mineral oil counterparts in near future," the team concludes.

More information: Nair, S.S., Nair, K.P. and Rajendrakumar, P.K. (2017) 'Evaluation of physicochemical, thermal and tribological properties of sesame oil (*Sesamum indicum* L.): a potential agricultural crop base stock for eco-friendly industrial lubricants', *Int. J. Agricultural Resources, Governance and Ecology*, Vol. 13, No. 1, pp.77-90.

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