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Critical review on sesame seed oil and its methyl ester on cold flow and oxidation stability

(Review) (Open Access)

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Abstract

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The demand for renewable energy is steadily increasing due to rapid population growth and economic development worldwide. An additional reason is that fossil fuel reserves are limited, and this situation results in their non-uniform availability globally. Furthermore, the attitudes of the society, energy policies and technology choices are constantly changing. Thus, renewable energy resources are now considered good alternatives to fossil fuels. In the meantime, liquid energy, such as methyl ester from locally produced vegetable oils, is well accepted by many countries, even though it is currently being blended up to 20% with petroleum fuels. Recently, the industrialisation of biodiesel is a major problem because of its poor cold flow properties and oxidative stability. Vegetable oils are also being blended in an appropriate proportion before transesterification to obtain the desired properties in biodiesel. Similarly, poor cold flow properties and oxidative stability can be improved by choosing suitable vegetable oils for making blends. Amongst all available vegetable oils, sesame seed oil (SSO) has unique cold flow properties and oxidation stability, particularly because of naturally occurring antioxidants and preservatives, which enhance the stability of oil towards rancidity. Therefore, SSO can be used as a potential feedstock for blending with other vegetable oils to enhance the overall cold flow and oxidation stability properties. This overview summarises sesame cultivation, SSO production, the physicochemical properties of SSO and its potential as an alternative renewable fuel source. In this review, the physicochemical properties of sesame biodiesel are compared with those of biodiesel derived from other vegetable oils. Results show that blending SSO with palm oil before transesterification will successfully improve the cold flow properties and oxidation stability of palm methyl ester (biodiesel). © 2019

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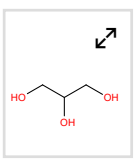
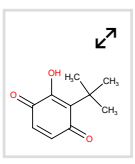
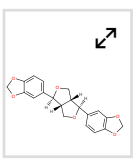
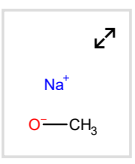
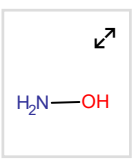
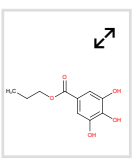

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