

Production of Biodiesel from Defective Coffee Beans

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SUMMARY

The present study aimed at an evaluation of the production of biodiesel from the oil of defective coffee beans. Alcohol-to-oil molar ratios, time and temperature were the reaction parameters studied. Sodium methoxide was used as alkaline catalyst. Direct transesterifications of triglycerides from oil extracted from defective coffee beans were performed with both methanol and ethanol. Gas chromatography was employed for biodiesel analysis. The highest values of ester yields were 74% for coffee oil, for 1h transesterification with methanol at 25 °C. Also, the evaluated physical properties of the coffee oil biodiesel (density, viscosity and heat value) were within the limits specified by European standards. Further studies regarding the identification of the factors affecting conversion are needed in order to optimize the production of biodiesel using the oil from defective coffee beans. Preliminary tests involving the removal of unsaponifiable matter prior to transesterification has been demonstrated to be a suitable processing step for improving the ester yield.