



The Study of Biodiesel Characterization Obtained from *Capparis Spinosa* Oil Seed

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Abstract

Biodiesel is usually produced from food-grade vegetable oil using trans-esterification process. As an effective factor on the biodiesel characteristics of the biodiesel is the kind of feedstock which is used, so finding a proper feedstock for using initially has an important role for different places. So, in this research, disposal substances of *Capparis Spinosa* are used as a feedstock for producing biodiesel because it was found that it contains nearly 30% triglyceride oils which are mostly based on linoleic and oleic triglycerides. After the extraction of oil, oil seeds of *Capparis Spinosa* were reacted with methanol 99% in press of basic homogenous catalyst (KOH) and (NaOH). Properties of biodiesel are evaluated by fuel standard test, and the results are compared with ASTM D6751 standards. Saponification number (SN), Iodine value (IV), Cetane number (CN), Viscosity (VS), Flash point (FP), Density (DN), Pour point (PP), and Cloud point (CP) of fatty acid methyl esters of *Capparis Spinosa* seed oil were empirically determined. Fatty acid composition, IV and CN were used to predict the quality of fatty acid methyl esters of oil for use as biodiesel. All its properties were in allowed limitation of ASTM D6751 standards. The obtained products were analyzed with FTIR and GC-MS spectrum. And by the GC-MS, all sorts of methyl ester composition were identified. Concerning the obtained results from the analysis of the sample, it showed that reaction progress was more in four hours of reaction.

Keywords. *Capparis Spinosa*, Trans-esterification, Biodiesel, Feedstock, Triglyceride oils.

Introduction

Demand for energy and its resources is increasing every day due to the rapid outgrowth of population and urbanization. The major conventional energy resources

like coal, petroleum and natural gas are at the verge of getting extinct [1]. As an alternative fuel, vegetable oil is one of the renewable fuels. These oils have become more attractive recently because they are

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