

Biodiesel Production from Fruit Pulp of *Cassia fistula* L. Using Green Microalga *Chlorella minutissima*

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Abstract : This study demonstrates microalgal bio-diesel generation from a cheap, abundant, non-edible fruit pulp of *Cassia fistula* L. The *Cassia fistula* L. fruit pulp aqueous extract (CFAE) was utilized as a growth medium for cultivation of microalga *Chlorella minutissima* (*C. minutissima*). This microalga accumulated a high amount of lipids when cultivated with CFAE as a source of nutrition in comparison to BG-11 medium. Different concentrations (10, 20, 30, 40 and 50%) of CFAE diluted with distilled water were used to cultivate microalga. Effects of light intensity and photoperiod were also observed on biomass and lipid yield of microalga. Light intensity of 8000 lux with a photoperiod of 18 h resulted in maximum biomass and lipid yield of 1.28 ± 0.03 and 0.3968 ± 0.05 g/L, respectively when cultivated with 40% CFAE. Fatty acid methyl ester (FAME) profile of bio-diesel obtained shown the presence of myristic acid (C14:0), palmitic acid (C16:0), palmitoleic acid (C16:1), stearic acid (C18:0), linoleic acid (C18:2), linolenic acid (C18:3), arachidic acid (C20:0), and gondoic acid (C20:1), as major fatty acids. These facts reflect that the fruit pulp of *Cassia fistula* L. can be used for cultivation of *C. minutissima*.

Keywords : biomass, bio-diesel, *Cassia fistula* L., *C. minutissima*, GC-MS, lipid

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