

Spectroscopy Study of *Jatropha curcas* Seed Oil for Pharmaceutical Applications

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Abstract : This study was carried out to determine the thermal properties and spectroscopy study of Malaysian *Jatropha curcas* seed oil. The *J. curcas* seed oil physicochemical properties such as free fatty acid (FFA %), acid value, saponification value, iodine value, unsaponifiable matter, and viscosity (cp) gave values of $1.89 \pm 0.10\%$, 3.76 ± 0.07 , 203.36 ± 0.36 mg/g, 4.90 ± 0.25 , $1.76 \pm 0.03\%$, and 32, respectively. Gas chromatography (GC) was used to determine the fatty acids (FAs) composition. *J. curcas* seed oil is consisting of saturated FAs (19.55%) such as palmitic (13.19%), palmitoleic (0.40%), and stearic (6.36%) acids and unsaturated FAs (80.42%) such as oleic (43.32%) and linoleic (36.70%) acids. The thermal properties using differential scanning calorimetry (DSC) showed that crystallized TAG was observed at -6.79°C . The melting curves displayed three major exothermic regions of *J. curcas* seed oil, monounsaturated (lower-temperature peak) at -31.69°C , di-unsaturated (medium temperature peak) at -20.23°C and tri-unsaturated (higher temperature peak) at -12.72°C . The results of this study showed that the *J. curcas* seed oil is a plausible source of polyunsaturated fatty acid (PUFA) to be developed in the future for pharmaceutical applications.

Keywords : *Jatropha curcas* seed oil, thermal properties, crystallization, melting, spectroscopy

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