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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±0.10%, 3.76±0.07, 203.36±0.36 mg/g, 4.90±0.25, 1.76±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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