

THERMAL EFFECT ON PHYSICOCHEMICAL PROPERTIES AND FATTY ACID PROFILE OF MEE [*Madhuca longifolia* (Konig J.)] OIL

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Heating of oils alter its physicochemical properties and fatty acid profile which leads to health issues in human and cause interferences in food processing. Relative dearth of literature about thermal effect on *mee* oil restricts its potential to serve as an alternative, hence the study was conducted. Oil was extracted by screw pressing of hulled and unhulled *mee* seeds. Acid value (19.2 ± 0.23 mg KOHg⁻¹) and peroxide value (33.33 ± 1.27 meqkg⁻¹) of the unhulled *mee* oil was significantly higher than the recommended levels for human consumption. Therefore, this study was proceeded with the hulled *mee* seed oil and coconut oil as a two factor factorial complete randomized design. The oil samples were heated up to 100°C, 150°C, 200°C and 280°C for 3 hours. The analyzed specific gravity and viscosity at 25°C, smoking point, iodine value and saponification value of the unheated *mee* oil were 0.945 ± 0.00 , 212.4 mPas, 172 ± 1.2 °C, 62.12 ± 0.58 g I₂/100g and 184.44 ± 1.4 mg KOHg⁻¹ respectively. Colour, peroxide value, acid value, free fatty acid percentage (% as oleic) and fatty acid profile of both heated and unheated oil were measured compare to coconut oil. The predominant fatty acids of the unheated *mee* oil was oleic (44.07%), followed by palmitic (19.59%) and stearic (22.39%). The predominant fatty acids of unheated coconut oil were lauric (44.07%) followed by myristic (19.54%) and palmitic (8.94%). Acid value and saturated fatty acids such as palmitic and stearic acid percentage of both heated oil were increased with the elevated temperatures. The measured values for colour as L* and b* for both oils were significantly decreased with increasing temperature. Peroxide value significantly increased up to 200°C in both oils. The study reveals that evaluated physico-chemical parameters and fatty acid profile of unheated *mee* oil were significantly affected by heating except free fatty acid percentage (as oleic).

Keywords: Coconut oil, Fatty acid profile, Heating, *Mee* oil, Physicochemical properties