

OIL EXTRACTION FROM *Madhuca longifolia* SEEDS AND EVALUATION OF PHYSICO-CHEMICAL PROPERTIES, FATTY ACID PROFILE, ANTIOXIDANT POTENTIAL AND SENSORY CHARACTERISTICS

M Munasinghe* and J Wansapala

University of Sri Jayewardenepura, Nugegoda, Sri Lanka

*mihirimunasinghe@gmail.com

Increasing consumer awareness for health-promoting food has led people to focus more on plant based food sources. This emerges with the need to identify novel edible plant sources for food industry. This study was conducted to determine several physical and chemical parameters of seed oil extracted from locally available Mee plant. Dried, fallen seeds were collected from randomly selected one plant in North Western province of Sri Lanka and oil was extracted using 3 methods. Soxhlet extraction with n-Hexane (bp. 65-70° C) gave the highest yield with 52.22±0.63%. Yield of pressing method was 25.95±0.82%. Combined method (pressing + solvent extraction) yielded 43.73±0.86%. Physico-chemical properties of extracted oil were determined according to AOCS methods, 1999. Saponification value was 182.79±1.49 mg KOH/g. Obtained iodine value was 56.28±0.69 g I₂/100g. Determined peroxide value and acid value were 2.78±0.01 meq/kg and 3.55±0.03 mg KOH/g respectively. Melting point was recorded as 33.33±0.24 °C. Smoke point, specific gravity and refractive index were 169.66±1.25 °C, 0.9272±0.00 at 25 °C and 1.4672±0.00 respectively. GC-MS analysis of fatty acid methyl esters gave oleic (48.31%), stearic (24.50%) palmitic (19.12%) and linoleic (5.11%) as the major fatty acids. Palmitoleic (C16:0), margaric (C17:0), nonadecylic (C19:0), cis-gondoic (C20:1), lignoceric (C24:0), and cerotic (C26:0) were identified as new fatty acid types, which were not reported in previous studies. This study further demonstrated that Mee oil contains a considerably low amount of linoleic acid (5.11%) compared to previous studies (9.4 to 15.4%). Mee oil was shown to have slightly weaker radical scavenging activity (RSA) compared to coconut oil towards stable 1, 1-diphenyl-2-picrylhydrazyl (DPPH). Even though there was a diminutive negative effect of Mee oil on the taste of deep-fat fried French fries (P<0.05), other tested sensory attributes were acceptable. There was no significant difference between food samples prepared by stir frying for all tested sensory attributes.

Keywords: *Madhuca longifolia*, Mee oil, Fatty Acid Profile