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OPTIMIZATION OF ULTRASOUND-ASSISTED EXTRACTION CONDITIONS FOR ACTIVE ESSENTIAL OIL AND ANTI-ALZHEIMER ACTIVITIES FROM *MENTHA CORDIFOLIA*

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Abstract – *Mentha C.* (*Lamiaceae*) is distributed all over the world. Essential oils were found menthol, menthofuran, menthyl acetate, menthone, 1,8-cineole, pinene, myrcene and borneol. *Mentha C.* most popular herbs are widely used in cooking, in cosmetics, complementary therapy and pharmaceutical for anticarcinogenic, gastro protective, anti-inflammatory, antimicrobial and antiviral purposes. For essential oil extraction, a steam distillation, or hydro-distillation method was used, which allows the decomposition of components. The aim of this work was to study the innovative technologies of essential oil by ultrasound-assisted extraction (UAE) that include high yields, short-extraction time and save energy. The extraction of essential oils was carried out at three ultrasonic frequencies (15 kHz, 20 kHz, and 25 kHz), sonicated times were 1, 2 and 3 hours. The solvents extracted were hexane, ethylacetate and 95 % ethanol. The sonication conditions were different of compounds showed by Thin Layer Chromatography (TLC). The extraction compounds by hexane from sonicated at 20 kHz (2 h) were terpene hydrocarbon which was nonpolar essential oil. The oxygenated terpenoids were extracted by ethyl acetate from sonicated at 20 kHz (3 h) and the phenolic compounds were extracted by 95 % ethanol. The data was treated by applying multivariate statistical analysis. The tested of antioxidant by DPPH, and ABTS radical were the best of ethanol extracted IC₅₀ 73 mg/ml, ethyl acetate extracted and ethyl acetate extracted IC₅₀ 103 mg/ml, respectively. IC₅₀ of anti-acetylcholinesterase were 125.5 mg/ml of ethyl acetate extracted.

Keywords – *Anti-Alzheimer; antioxidant; essential oil; Mentha Cordifolia; ultrasound-assisted*

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