

Recovery of omega-3 fish oil from *Monopterus albus* using microwave assisted extraction process

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ABSTRACT

Fish oil are currently high in demand due to its wide range of therapeutic benefits. High content of eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) derived from various sources of marine life in fish oil are essential in human mental developments and metabolism. Swamp Eel Fish, scientifically known as *Monopterus Albus* is a freshwater fish that highly in demands across South-East Asia and can easily be found in Malaysia. This paper presents the study on the extraction of fish oil from the *Monopterus Albus* eel fish using microwave assisted extraction (MAE) process with ethanol as a solvent. The yield, acid value and free fatty acid (FFA) content of the *Monopterus Albus* eel fish oil were studied at different solvent concentrations (0 % v/v-100 % v/v) and solid-to-solvent ratios (0.04 g/ml-0.13 g/ml) with constant time, temperature and power of 30 min, 60 °C and 800 W, respectively. Concentrated *Monopterus Albus* fish oil was analyzed using 785 DMP Titrino Metrom and scanning electron microscope (SEM). The results showed that the oil yield increases with the increases of solvent concentration and solid-to-solvent ratios with the highest yield of 14.60 % at 100 % v/v and 0.13 g/ml, respectively. Acid values and free fatty acid content recorded was 2.19 mg KOH/g and 1.14 %. Morphology of the before and after extraction process displayed significant structural changes on the surfaces of the sample indicated effectiveness of microwave-assisted extraction in extracting fish oil. The findings from this study suggested the best operating conditions to extracts fish oil from the *Monopterus Albus* eel fish.

KEYWORDS

DHA; EPA; Fish oil; Microwave-assisted extraction; *Monopterus Albus* eel fish

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