
**ABSTRACT:**

This study evaluated the production of fatty acid ethyl esters from fish oil using ultrasonic energy and alkaline catalysts dissolved in ethanol. The feasibility of fatty acid ethyl ester production was determined using an ultrasonic bath and probe, and between 0.5 and 1% KOH (added to the fish oil). Furthermore, factors such as ultrasonic device (bath and probe), catalyst (KOH and C₂H₅ONa), temperature (20 and 60 °C), and duration of exposure (10–90 min) were assessed. Sodium ethoxide was found to be a more efficient catalyst than KOH when transesterifying fish oil. Ultrasonic energy applied for greater than 30 min at 60 °C using 0.8% of C₂H₅ONa as a catalyst transesterified over 98% fish oil triglycerides to fatty acid ethyl esters. It is reasonable to conclude that the yield of fatty acid ethyl esters produced by applying ultrasonic energy to fish oil is related to the sonication time. Due to increases in the surface area contact between the reactants and the catalyst, ultrasonic energy has the potential to reduce the production time required by a conventional large-scale commercial transesterification method that uses agitation as a way of mixing.

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