

**EXTRACTION AND COMPARISON OF  
PHYSIOCHEMICAL PROPERTIES OF LIPIDS  
FROM CATLA (*Catla catla*) AND TUNA (*Thunnus  
albacares*) FISH SKIN**

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by

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## ABSTRACT

Fish oil is considered to be an important natural source of Poly unsaturated fatty acid (PUFA) and it provides benefits to human health. The objective of this study was to compare the yield and the physiochemical properties of two fish oils extracted from the *Catla catla* (catla) and *Thunnus albacares* (tuna) respectively using different extraction methods. Fresh fish skins were collected from local market and extracted using Ultrasonic (SO) and Soxhlet (SH) extraction methods with ethanol (EtOH) and Acetone (Ac) at 100% and 50% (v/v) water: EtOH and water: Ac strengths. Yield analysis of different extractions revealed that SH extraction with acetone has the maximum yield ( $p < 0.05$ ). 100% and 50% Acetone showed the highest yield for catla (12.48%) and tuna (4.68%) respectively. Malondialdehyde (TBARS) assay and free fatty acid value of lipid extracts with highest yields (tuna-100% Acetone in Sonicator and 50% Acetone in Soxhlet; Catla-100% Acetone in Soxhlet and 50% Acetone in sonicator) were tested to determine the effect of extraction method on quality of lipids extracted. Free Fatty acid values were recorded as mg of KOH/g  $2.1 \pm 0.204$ ,  $3.9 \pm 0.04$ ,  $2.13 \pm 0.28$  and  $2.9 \pm 0.13$  in catla SH/100%Ac, tuna SO/100% Ac, catla SO/100% Ac, tuna SH/50% Ac respectively. Also the degradation of lipids due to oxidation during all these extraction methods has been minimum and were in acceptable ranges according to recorded TBARS values. (0.093, 0.025, 0.053, 0.010 Malanoldyhyde mg/kg in catla SH/100%Ac, tuna SO/100% Ac, catla SO/100% Ac, tuna SH/50% Ac). With these results, it can be concluded that Soxhlet method is the best technique used in this study for lipid extraction from fish skin with high yield and optimum quality. Also, more polar solvent systems have increased the extraction efficiency in tuna and this can be due to the high polar nature of lipids in tuna compared to catla. However, Lipid profile analysis is essential for further comparison.

**Keywords:** Acetone, *Catla catla*, Fatty acids, *Thunnus albacares*, Soxhlet