Extraction of fish oil from the skin of Indian mackerel using supercritical fluids.

ABSTRACT

The total oil was extracted from the ground skin of Indian mackerel (Rastrelliger kanagurta) using various techniques of supercritical fluid extraction (SFE) at 20–35 MPa and 45–75 °C and by the Soxhlet method for comparison. The oil yield increased with pressure and temperature and the highest yields were 24.7, 53.2, 52.8, and 52.3/100 g sample (dry basis) for the continuous, cosolvent, soaking, and pressure swing techniques, respectively, at 35 MPa and 75 °C. The yield from the Soxhlet extraction was 53.6/100 g sample (dry basis). The CO2 consumption was 581.8, 493.6, 484.9 and 290.9 g for the continuous, cosolvent, soaking and pressure swing techniques, respectively, at 35 MPa and 75 °C. The largest recoveries of PUFA, especially the ω-3 family, were achieved from the soaking and pressure swing techniques at 35 MPa and 75 °C. Thus, the pressure swing and soaking techniques are the most effective at extracting the oil from fish skin.

Keyword: Fish oil; Supercritical extraction; Cosolvent technique; Soaking technique; Pressure swing technique.