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Fatty acid composition and physicochemical properties of oil extracted from head and viscera of Indian Mackerel (*Rastrelliger kanagurta*)

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The aim of this study is to investigate and compare the total lipid content, fatty acid composition and physicochemical properties (iodine value, acid value, and refractive index) of oil obtained from the head and viscera of Indian Mackerel. Fish with equal length were collected from fish markets and the research was run in triplicates for each sample. Oil was extracted using the modified Bligh and Dyer method. Iodine value, acid value and refractive index were determined according to American Oil Chemists' Society (AOCS) Cd 1b-87 and Cd 3d-63 methods and ISO 6320:2017(E) standard method, respectively. The fatty acid composition was determined by gas chromatography-mass spectrometry. The total mean oil content of the head and viscera of the Indian mackerel were (7.47 ± 0.84 w/w%), (4.66 ± 0.57 w/w%), respectively. In fatty acid analysis, it was observed that oil extracted from viscera of Indian mackerel contains a higher proportion of fatty acids including SFAs (44.75%), PUFAs (37.99%) and MUFAs (15.34%) than the oil obtained from the head of Indian mackerel which contains 39.12% of SFAs, 28.52% of PUFAs and 11.66% of MUFAs. Palmitic acid was the prominent SFAs and oleic acid was the dominant MUFAs discovered in both the head and viscera of Indian mackerel. Omega-3 fatty acid was the major type of PUFAs presented in oil extracted from head and viscera, while Eicosapentaenoic acid (C20:5n-3, EPA) and Docosahexaenoic acid (C22:6n-3, DHA) were the most abundant. The greatest amount of DHA (23.91%) was obtained from the viscera oil. A higher level of EPA and ω -6 was recorded for head oil compared to viscera oil. There were significant differences ($p < 0.05$) in the iodine value (141.59 I₂/100 g, 143.62 I₂/100 g), acid value (20.47 mg KOH/g, 22.41 mg KOH/g) and refractive index (1.4720, 1.4784 at 40 °C) of oil obtained from head and viscera of Indian mackerel. This study concludes that the head and viscera of Indian mackerel can be considered as a potential source of Omega-3 long-chain polyunsaturated fatty acids.

Keywords: Indian mackerel, fatty acid composition, Omega-3 fatty acids

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