



Levels and Source of Aliphatic Hydrocarbons in Marine Fishes from Coast of Iraq Based on Biomarkers and Biogeochemical Indices

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Abstract: The total n-alkane concentrations in the fish tissue samples were $9.14 \mu\text{g g}^{-1}$ Dwt, and the Pr and Ph concentrations were 0.22 and $0.85 \mu\text{g g}^{-1}$ Dwt, respectively. The CPI (carbon preference index) values ranged from 0.76 to 2.01 and the Pr/Ph ratios were 0.16-1.40. The fraction of n-alkanes in the tissue samples from petroleum sources was estimated to be 83%, whereas the fraction from natural biogenic sources (marine algae, bacteria, and terrestrial plants) was 17%. The application of biomarker indices such as CPI and Pr/Ph ratios indicated that AHs were mainly a mixture of anthropogenic and natural biogenic sources. The $\text{CPI}_{(\text{ole})}$ values signified that petroleum was a major sources of AHs in these fishes. The Pr/Ph ratios suggested different sources, including fossil fuel and petroleum by-products, as well as biological and chemical alteration under redox/anoxic conditions. The presence of a high fraction of n-alkanes from petroleum and crude oil sources in the tissues of these fishes indicated that their nursing habitats were critically contaminated by petroleum hydrocarbons. The results of this study suggest that further researches are needed to study the bioaccumulation of other organic pollutants, such as pesticides, plasticizers, and polycyclic aromatic hydrocarbons in the marine biota of the region.

Keywords: Aliphatic hydrocarbons, n-Alkanes, Isoprenoids, Marine fish, Iraq
