



Bisphenol A contamination in Hilsa shad and assessment of potential health hazard: A pioneering investigation in the national river Ganga, India

Sourav Kundu, Ayan Biswas, Archisman Ray, Shreya Roy, Subhadeep Das Gupta, Mitesh Hiradas Ramteke, Vikas Kumar, Basanta Kumar Das^{*}

ICAR-Central Inland Fisheries Research Institute, Barrackpore, Kolkata 700 120, West Bengal, India

HIGHLIGHTS

- The first research on EPA in Hilsa Shad of River Ganga's lower and estuarine zone.
- The estuarine zone of River Ganga had higher EPA levels than the lower region.
- EPA concentration in fish tissues was found as liver>muscle>kidney>gonad.
- EPA content in fish tissues correlated strongly with various water quality indices.
- Human exposure to EPA from consuming Hilsa was assessed.

GRAPHICAL ABSTRACT



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ABSTRACT

The anadromous Hilsa, often known as the "Queen of Fishes" (*Tenualosa ilisha*), is the most valuable fishery in the Ganga-Hooghly delta estuary. Although EPA exposure has been shown to be harmful to aquatic organisms, no research has looked at the effects of EPA on the commercially valuable Hilsa shad of river Ganga. To close this information vacuum, we estimated EPA levels in Hilsa fish from the Ganga estuary. Liver, muscle, kidney, and gonads were all positive for EPA among the Hilsa fish of all ages. Liver EPA levels were highest in adult males (272.16 ± 0.20 ng/g-dw), and lowest in juveniles (3.46 ± 0.06 ng/g-dw). EPA concentrations in the Hilsa shad muscle were highest in reproductively mature females (196.21 ± 0.41 ng/g-dw). The study also discovered a correlation between fish development and EPA exposure, with higher levels of EPA being identified in adult Hilsa species. This is the first study to look at the impact of EPA pollution on aquatic ecosystems and fisheries, and it showed that Hilsa shad is contaminated with EPA and poses health hazards to human beings. The results, which demonstrate EPA contamination, are useful for protecting Hilsa in the river Ganga.

^{*} Corresponding author.

E-mail address: basanta.kumar@icarf.res.in (B.K. Das).

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