

MERCURY IN FISH FROM BRAZILIANS RIVER AND RESERVOIRS HYDROELECTRIC POWER PLANT

Luiz Fabrício Zara¹, W. S. Figueiredo¹, T. M. da Silva¹, B. C. P. Rocha²

¹*University of Brasília, UnB Faculty Planaltina, Brasília-DF, Brazil*

²*State University of São Paulo, Chemistry Institute of Araraquara, Araraquara-SP, Brazil*

fabriciozara@gmail.com

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Introduction

Mercury is a ubiquitous element accumulative and potentially toxic behavior when ingested in high concentrations, may cause permanent damage or lead to death. Intake of fish constitutes the main route of environmental exposure of humans and other animals to mercury (Malm, 1998; Passos et al., 2003; Roulet et al., 1999). This study discusses the total mercury concentrations in muscle tissue tucunarés (*Cichla sp.*) sampled from some rivers and reservoirs brazilian hydroelectric power plant, considering the physical and chemical characteristics of each environment.

Methods

It been sampled tucunarés (n = 58), from Negro river, Purus river, Apuaú river and Solimões river in Amazonas State and also from reservoir of the Jirau Hydroelectric in Rondônia State, Balbina Hydroelectric in Amazonas State, Tucuruí Hydroelectric in Pará State and Cana Brava Hydroelectric in Goiás State. Quantification direct of total mercury of muscle tissue (0.04 g) by atomic absorption spectrometry technique coupled to a cold mercury vapor generation system (CVAAS).

Results

The **Figure 1** shows the distribution the mercury concentration considering the different sampling sites. The red line on the graph represents the maximum limit determined by Brazilian Legislation regarding mercury concentrations in predatory fish (1 mg kg⁻¹). The distribution of concentrations mercury depends on sampling site, although very heterogeneous, it was possible to observe that lower concentrations in tucunarés (*Cichla sp.*) of artificial reservoirs. Among the reservoirs, Tucuruí Hydroelectric had the highest concentration mercury compared to reservoirs of Balbina and Cana Brava Hydroelectric. A possible influence to such large concentrations mercury in Tucuruí is due to gold mining and natural reserves of the element present in the geology of the region where the hydroelectric plant was installed.

Whereas the physicochemical characteristics of each environment, the distribution of concentrations mercury on fish were highest on black water sampling site in this study. Some Amazonian rivers like the black and its left bank tributary of the Apuaú river, are rich in humic and fulvic acids that acidify and darken the water. Such conditions favor the methylation of mercury

and increasing the bioaccumulation of this element on aquatic organisms (Rocha et al., 2000). The white water sampling sites, as Madeira, Purus and Solimões rivers, which are born in pre-Andean and Andean region, have lower levels of organic matter, large concentration of inorganic particulate material, turbidity and conductivity high, pH near the neutral and relatively rich in calcium and bicarbonates (Queiroz et al., 2009).

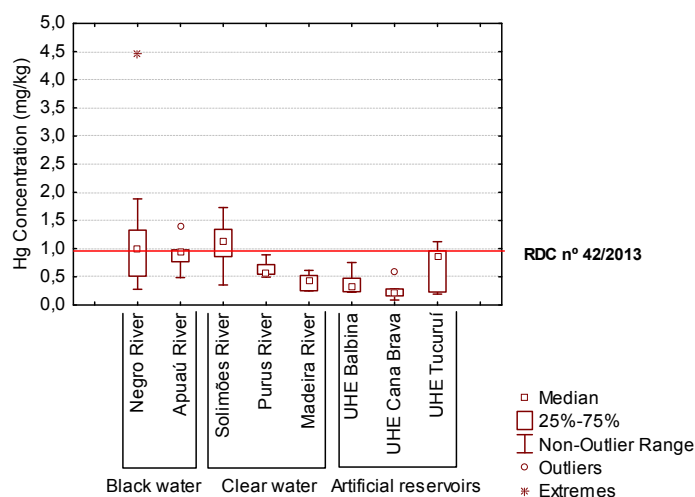


Figure 1 – The concentrations total mercury quantified in muscle tissue of tucunarés (*Cichla sp.*).

Conclusion

The concentrations mercury in the tissues of tucunarés (*Cichla sp.*), were similar to those documented in the literature in various parts of the world, especially in Brazil. The environments physicochemical characteristics influence the dynamics of accumulation mercury in aquatic organisms.

References

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