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Entitled

ASSESSMENT OF HEAVY METALS IN SHARKS IN EASTERN UAE

by

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Date & Venue

11:00 am

Thursday, 28 October 2021

Abstract

Metals occur naturally in the environment however anthropogenic activities have contributed to their increase in the marine ecosystem. As elements have the ability to bioaccumulate, biomagnify and transfer between biological compartments throughout the food web, they pose a great threat to living biota. The characteristics of the Arabian Gulf make it a harsh environment for marine species especially when multiple stressors are acting together. *Rhizoprionodon acutus* (milk shark) and *Carcharhinus sorrah* (spot-tail shark) are essential compartments of the Arabian Gulf ecosystem. As they are found up in the food chain and considered a predator species they are under the threat of trace element bioaccumulation. Thus, the objectives of this research is to examine how element behave in the food web and understand the extent of contaminant exposure on these species. Contaminants analyzed in this study comprised of trace elements in gills, liver and muscle tissues of both milk shark and spot-tail shark. The accumulation of 15 elements from milk shark and spot-tail shark specimens was conducted using Varian 720-ES (ICP-OES) system for metals and non-metals and (Varian SpectraAA 220 FS) for mercury (Hg) concentration. Elasmobranchs specimens were purchased from local markets in Abu Dhabi and Dubai and brought back to the labs for dissection and further analysis. Statistical tests that were performed are principal components analysis and one-way ANOVA. The results showed an uneven distribution of elements in species tissues. In the milk shark, Cd, Cu, and Fe expressed higher concentrations in the studied tissue of both locations. Except for Hg, which found to have higher concentration in Abu Dhabi liver tissue and Dubai muscle tissue. Additionally, Cd exceeded the permissible limits in the muscle tissue of Dubai milk shark. In spot-tail shark, Cu had high mean concentration in the liver tissue. There is a general lack of studies on metal behavior related to elasmobranchs. Therefore, this study can add valuable baseline information on how metals behave in the food web and it illustrates pollution status of different locations along the Arabian Gulf.

Keywords: Milk shark, Spot-tail shark, Bioaccumulation, Arabian Gulf, Trace elements.