**Title:** Health Risk Assessment in Marine Fish Consumed by Residents of Zabol City

**Author:** Narjes Okati, Mohsen Shahriari Moghadam, Fatemeh Einollahi-peer, Faculty of Natural Resources, University of Zabol, Iran

**Email:** Narjesokati@uoz.ac.ir

**Date:** January 2021

**Introduction**

The assessment of toxic metals in fish from different regions is useful because of two reasons: 1) from the public health point of view; to estimate the potential health risks related to fish consumption for the populations to safeguard of their health, and 2) from the marine environment viewpoint, to improve our knowledge on the biological qualification of the marine ecosystems. Human activities including industries, economical projects, shipping, development of petrochemical factories, as well as the extension of the fisheries, and agricultural projects, would result in the increase of many pollutants get in the Oman Sea. It is needed to assess more data on Hg, As, and Se levels in different species of fish consumed by the people. In this study was conducted to investigate the amount of mercury (Hg), arsenic (As) and selenium (Se) in marine fish (from the Oman Sea) that consumed by residents of Zabol city.

**Methods**

Between November 2018 and February 2019, the number of 10 fish species (N= 110), which are commonly used by the people, were sampled. As stated by the US EPA guideline, the sampling of fish was followed. The total weight and length of the fish samples were determined to the closest gram and centimeter before dissection. Fish samples were individually packaged in tagged polyethylene bags and were stored at 4 °C into portable refrigerators so long as transported to the research laboratory. Advanced Mercury Analyzer (LECO AMA, USA) Model 254 was used to detection of Hg in fish muscle tissue using of ASTM standard method in number 6722-D. For the purpose of the measuring of the As and Se concentrations, we used the ICP-MS with the specification of the model HP-4500 (made in the USA) was equipped with the Asus-520 Autosampler.

**Results**

The results of Pearson test showed that there was a significant positive correlation between Hg and Se concentrations (r = 0.71; p = 0.71) and also between As and Se concentrations (r = 0.34); p <0.001) in the muscle tissue of the studied fish. The results of Tukey test showed that the amount of Se in fish in pelagic-neritic habitats was significantly (p <0.001) higher than reef associated and pelagic-benthic habitats. The Se: Hg molar ratio and the selenium health benefit value (HBVSe) index for all fish species were higher than one. The mean weekly intake (EWI) and hazard index (HQ) for mercury in *Scomberomorus commerson*, *Euthynnus affinis* and *Epinephelus coioides* were higher than the standard limits defined for these indices, but according to the Se: Hg molar ratio obtained for these fish, which were higher than one in all of them, can be concluded that the amount of Se in these fish is enough to reduce the toxicity of Hg in. Therefore, it can be said that Hg levels in these fish species are not risk for consumers. In all fish samples studied, the EWI for As was much lower than the USEPA standard limit. Also, in all samples, HQ for As was lower than one. Therefore, it can be concluded that the consumption of these fish species in terms of arsenic content will not be hazard for their consumers.