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Graduate School

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The Thesis Submitted for the Degree of M.Sc (in the field of Food hygiene and quality control)

Investigation of the amount of hea lead(pb) and mercury(Hg) in the muscles of Liza Klunzingeri and Smelt-Whitings fish caught on the shores of Bandar Abbas and their relationship with length and weight

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Abstract:

The accumulation of heavy metals as a pollutant in aquatic environments in the body of fish and other organisms pose a potential risk to living organisms especially humans. They part of natural consistent factors of seawater. They enters to the environments through smelting process, extraction , combustion of fuels , petroleum processing and transportation , disposal of waste , accidental leakage and ship water ballast. Following the transferring these pollutants to water environments, it is likely that fish will absorb large amounts of some heavy metals through the food chain or through water. Increasing in the amount of heavy metals entering water environment can lead to high accumulation of these pollutants in fish and their consumers, thus pose serious danger to ecosystem and human health. The toxicity of heavy metals has long been a concern, because they don't remove from the environment using self-purifying cations and accumulate in the suspended particles and sediments.The impact of heavy metals on humans and aquatic animals depends on the concentration and type of element. Some of these elements are vital for biological processes, but the presence of other elements such as cadmium, mercury and lead is unknown from a biological point of view and even very small amounts of them can cause poisoning.The present study was conducted in the summer of 2021 to investigate the amounts of heavy metals including lead and mercury in the muscle tissue of two species of high-consumption fish (*Silago sihama* and *mugil dussumieri*) caught off the coast of Bandar Abbas and to assess the health risk of their consumption on human.The amount of heavy metals was studied on the 40 collected samples of lady fish *Silago sihama* and *mugil dussumieri* (*Liza klunzingeri*) by using the Perkinelmer Pinacle 900T atomic absorption device made in the USA, that is using graphite furnace method to measure the amount of lead and is using Cold mercury vapor method to determine the amount of mercury element. In this study, as a result, lead contamination was observed in 7 samples, the prevalence of lead contamination was 17.5% and none of the identified samples were higher than the allowable limit (200 ppb).The concentration of mercury was less than the detectable amount in all samples. The average of weight and length of sample were also calculated in terms of lead contamination using Independent T-Test. In fact, there was no significant relationship between the amount of lead and the height and weight of the samples. The prevalence of lead contamination in the studied samples was calculated with 95% confidence. Bootstrip method was used to calculate the reliability limits and SPSS software version 25 was also used for statistical analysis. As a result, the concentrations of heavy metals lead and mercury in the muscle tissue of samples were lower compared to the international standards of FAO, UKMAFF, NHMRC, WHO and the National Standards Institute of Iran, therefore, consuming these two types of fish is not dangerous for humans health.

Keyword : Heavy metals , Fish *Silago sihama* , Fish *mugil dussumieri* , Persian gulf