



University of Zabol

Graduate School

Faculty of Veterinary

Department of food hygiene and quality control

The Thesis Submitted for the Degree of DVM

(In the field of Veterinary)

Title:

**Investigation of the concentration of some essential and toxic metals in the edible tissue  
(muscle) of Greater lizardfish (*Saurida tumbil*) in Chabahar port**

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## Abstract

Elements such as copper, zinc, nickel, cobalt, manganese and iron are essential metals that are required for the activities of the biological system. Although these elements are classified as essential elements, they are harmful and even toxic in high concentrations. Cadmium, mercury, arsenic and lead are not required for biological activity and are toxic in low concentrations. These metals enter the body through various means, including nutrients, and accumulate in tissues over time. From the perspective of public health, assessing and examining the concentration of metals in edible aquatic species in areas where these animals are in the main food chain of the people of is inevitable and important. Hasoun fish (*Saurida tumbil*) is a species belonging to lizardfishes. The genus *Saurida* has 23 known species, of which two species *Saurida tumbil* and *Saurida undosquamis* are found in Oman Sea and Persian Gulf. The fishing of specie has sometimes reached 300 tons per year, which shows the great importance of this fish from an economic point of view for the southern region of the country. In this study, we seek to measure the concentration of copper, zinc, iron, nickel, cobalt, manganese, cadmium, lead, mercury and arsenic by digestion and concentration evaluation of metals using ICP-OES. After that we compared these concentrations with the standard limits set by international standards. In the present study, it was found that the concentration of all heavy metals except arsenic is in the range less than the standard limits set by the World Health Organization and the World Food and Agriculture Organization. In the case of essential and trace metals, it is worth mentioning that all elements tested except for nickel were in the standard range. Due to the importance of aquatic animals in the human diet, it seems that additional studies and continuous monitoring of aquatic animals in the field of metal contamination, especially nickel and arsenic, should be pursued more seriously.

**Key words:** Hasoun fish, Heavy metals, Essential metals, ICP-OES, Muscle tissue