

Evaluation of heavy elements bioaccumulation in the muscle tissue of Wels catfish (*Silurus glanis* Linnaeus, 1758) from the Siah Darvishan River (Guilan province, Iran)

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Abstract

Heavy elements are resistant to biological degradation, which accumulation of high levels of their concentration in the aquatic tissues, threaten aquatic health as well as humans. So, the present study aims to measure the concentration and order of accumulated elements in muscle tissue of Wels catfish from Siah Darvishan River as one of the most economical fish species and determining its health safety for human nutrition. In this research, accumulation of eleven heavy elements (As, Cd, Cr, Cu, Fe, Hg, Mn, Ni, Pb, Se and Zn) in the muscle tissue of 20 Wels catfish (*Silurus glanis*) caught by using the cast net in summer 2016 from Siah Darvishan River (Guilan province, Iran) were digested with CEM closed vessel microwave digestion system then measured and evaluated by Varian[®] atomic absorption spectroscopy. The minimum and maximum of accumulated elements have been observed, as follows: Zinc 28.74 - 30.95, Iron 23.75 - 26.41, Copper 6.33 - 7.61, Manganese 2.58 - 3.11, Lead 0.55 - 0.63, Cadmium 0.44 - 0.52, Selenium 0.37 - 0.42, Arsenic 0.36 - 0.43, Chromium 0.16 - 0.18, Nickel 0.16 - 0.18 and Mercury 0.079 - 0.095 microgram per gram dry weight, respectively. According to the obtained results of this research, the mean concentrations of all studied elements in the muscle tissue of Wels catfish, except the four heavy elements; Cadmium (0.477 ± 0.040), Arsenic (0.386 ± 0.035), Lead (0.587 ± 0.037) and Manganese (2.882 ± 0.271), has been observed below than the threshold limit value (TLV) specified by (FAO/WHO) international standard.

Key words: Atomic absorption, Health nutrition, Heavy Metals, Muscle tissue, Wels catfish

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