The Relationships Between Fish Size and the Metal Levels of the Muscle Tissue of *Serranus cabrilla* (Linnaeus, 1758) Caught from the Yesilovacik Bay, Turkey

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Abstract

In this study, the relationships were determined between the potential toxic metal (Cd, Cr, Pb,As), macro (Na, Mg, P, K, Ca) and trace element (Mn, Fe, Co, Cu, Zn, Mo, Ni, Se) levels of the muscle tissue and fish size (length and weight) in *Serranus cabrilla* (Linnaeus, 1758) caught via bottom trawl vessels from the Yesilovacik Bay (Northeastern Mediterranean, Turkey). The potential toxic metal, macro and trace element levels of the muscle tissue of *S. cabrilla* were determined. Besides, the relationships between fish size and metal levels were investigated. For this study, *S. cabrilla* individuals of 0-1, 1-2 and 2-3 age groups were used. Min-Max total length of the age groups was determined as 10.5-11.8, 13.0-15.5 and 15.8-16.5 cm; Min-Max weights were 15.34-23.66, 30.41-43.82 and 41.89-58.18 g respectively. The muscle samples (0.1 g dry weight each) used for metal analysis were dried at 110°C to reach constant weight and then concentrated nitric acid (4 mL, Merck, Darmstadt, Germany) and perchloric acid (2 mL, Merck) were added to the samples, and they were put on a hot plate set to 150°C until all tissues were dissolved. Inductively coupled plasma mass spectrometer (ICP-MS, Agilent, 7500ce Model) was used to determine metals. All digested samples were analyzed three times for each metals. The standard addition method was used to correct for matrix effects. Standards were prepared from stock standard solution (High Purity® Standards) of metals. All chemicals and standard solutions used in the study were obtained from Merck and were of analytical grade. The metal levels in tissue were recorded as µg metal/g dry weight. Prior to the analyses, all data were checked for outliers and homogeneity of variance was also tested. Statistical analysis of data was carried out with the IBM SPSS STATISTICS 22 statistical program. ANOVA (Analysis of Variance) was used to evaluate the effect of age on the metals levels. There was no statistical difference between the age groups according to the macro and trace element levels of muscle tissue. The potential toxic metal levels of the muscle tissue were high and in general displayed variation with age.

Keywords:

Serranus cabrilla, Comber, Serranidae, Potential Toxic Metals, Macro Elements, Trace Elements