METAL POLLUTION IN THE MUSSEL (*MYTILUS GALLOPROVINCIALIS)* AT THE BOSPHORUS

Abdullah Aksu [1] *, Nuray Balkıs [1] and A.Edip Müftüoğlu [2]

[1] Istanbul University, Institute of Marine Sciences and Management, Department of Chemical Oceanography, Vefa 34470, Istanbul,Turkey - nbal@istanbul.edu.tr

[2] Istanbul University, Institute of Marine Sciences and Management, Department of Physical Oceanography and Marina Biology, Vefa 34470, Istanbul,Turkey

Abstract

Between the years 2003-2004, mussel samplings were performed seasonally from the six different stations located at the Istanbul Strait. The samples were classified in two classes according to their sizes (bigger and smaller than 5 cm). Their Pb, Cd, Hg, Cu contents had been measured by using the device of Absorption Spectrophotometers (AAS). As a result of the researches that Asian Side of the Istanbul Strait had been subjected household wastes much more than the European Side of the Istanbul Strait and there had been determined to exceed the Water Corps Instructions of the values limits.

Keywords : Trace Elements, Mollusca, Toxins.

Material and Method

For the mercury measurements they had been applied to nitric acid solubility in the 60 °C water bath, and the solubility of the strong acid ($HF+HNO_3+HCLO_4$) at 120 °C was used for the Pb, Cd and Cu analysis [1]. Hg measurements were made by the Cold Stream method in the Hydrure unit of the Shimadzu 6701 F model atomic absorption spectrophotometer. The other metal measurements were performed on the flames of the acetylene air-gas mixture.

Results and Discussion

The seasonal average values of Cd, Cu, Pb and Hg elements for each station are depicted in figures 1. In the figure, the limit values determined by the Water Corps Instructions are also given.

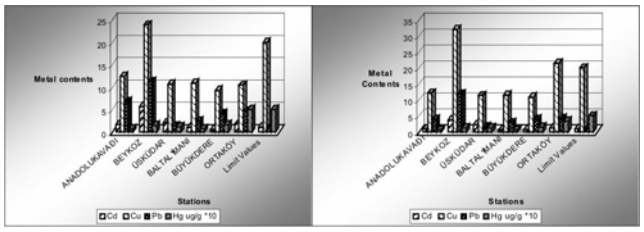

Fig. 1. a) The metal contents measured in the big sized mussels. b) In the small sized mussels (μg/g).

Generally Cadmium (Cd) contends had been found in big mussels at Asian side much more than the European side. But at both size of the mussels (big and small sizes) the Water Corps Instructions of the values limits had been exceeded at every stations without the Baltalimanıand Büyükdere stations. Copper (Cu) contents exist at the same level in big size and small size mussel groups. The values are higher at Asian Side like in Cadmium (Cd). Also at all the stations, the values are under the limit values determined by the Water Corps Instructions. Lead (Pb) contents are higher in big size mussels at Asian Side. For both size of the mussels the limit values had been exceeded at every stations. Mercury (Hg) contents are at the same level at the either sides. Also at all the stations, the values are under the limit values. Examined elements had been amountly arranged as follows Cu >Pb >Cd >Hg at both the Asian Side and the European Side. Another result of this research is that Asian Side of the Istanbul Strait had been subjected household wastes much more than the European Side. Especially Lead (Pb) and Cadmium (Cd) contends limits had been exceeded too much due to the Küçüksu and Göksu rivers which carry anthropogenic pollution into the Istanbul Strait. The final report of the water quality monitoring program handled in 2003 and 2004 also supports this situation [3].

Consumption of the mussels in Istanbul is rising rapidly and this will threaten the human health seriously.

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Dedicated to sainted Prof. Dr. Erdoğan Okuş who sacrificed his life for marine sciences.

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