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## Determination of P, Ca, Zn, Cd and Pb concentrations in muscle, gills, liver, gonads and skeletons of two natural populations of *Atherina lagunae* in North Tunis Lake, Tunisia

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### ABSTRACT

In this study, zinc (Zn), cadmium (Cd), lead (Pb), phosphorus (P) and calcium (Ca) concentrations in muscles, gills, liver, gonads and skeletons of two natural populations of sand smelt *Atherina lagunae* (Teleostean, Atherinidae) normal and deformed, as well as bioaccumulation of these elements from the water and the sediment in the North Tunis Lake were investigated. The analysis of Ca was performed with flame atomic absorption spectrometry. The average concentrations of Ca in the different tissues analyzed show higher values in healthy atherines except in gonads where the average concentration of Ca in deformed atherines significantly exceeds that in normal atherines ( $p < 0.05$ ) and the spine Ca concentrations were similar in the two populations. Zinc, cadmium, lead and phosphorus were determined by inductively coupled plasma atomic emission spectrometry (ICP-AES). The Zn concentrations of *Atherina lagunae* in North Tunis Lake were very high compared to other studies in other lagoons. The highest concentrations were found in deformed atherines. The differences are significant for all tissues studied ( $p < 0.05$ ). The average concentration of P in different tissues analyzed shows that the highest values were detected in the normal population of *Atherina lagunae*. The potential rate of Cd was below the detection limit in the different organs analyzed, in water and sediment.

### KEYWORDS

 heavy metal, phosphorus, calcium, deformation, Tunis North Lake, *Atherina lagunae*.

### Cite this paper

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