

Bioaccumulation of cadmium and lead in scallop *Argopecten purpuratus* (Lamarck, 1819) in bottom culture, at Sechura Bay

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In Sechura Bay, Peru bottom culture of the scallop *Argopecten purpuratus* is an important economic activity with a production around 69 millions dollars in 2010 (Superintendencia de Administración Nacional Tributaria, 2010). However due to the nearby presence of cities, fishery industries, fishing piers and oil companies, this production area is subject to pollution and heavy metals are a concern (IMARPE 2007; INEI, 2008; ITP, 2008ab). Therefore, the bioaccumulation of cadmium and lead in *Argopecten purpuratus* was determined, as well as its variation with the size of individuals (50 - 65 and 70 - 80mm) and its relationship with the concentration of Cd and Pb in water and sediment and some abiotic variables during January to April 2010 at Sechura Bay was established. The evaluation was performed in-situ, where 1,700 specimens (50-65mm / 70-80mm) were extracted by semi-autonomous diving for planting randomly at a density of 10 ind.m⁻². Samples of 500 individuals were collected monthly for biometric and heavy metals analysis. Additionally, samples of seawater and sediment were collected with Niskin Bottle and plastic spatula respectively. Measurements of temperature, dissolved oxygen, electrical conductivity and redox potential were performed with the Multi-parameter HACH®. Both size ranges showed similar concentrations in the bioaccumulation of cadmium in muscle adductor and lead in gonad. The lowest tissue Cd concentrations were observed in the adductor muscle. Results showed significant differences ($\alpha < 0.05$) in Cd and Pb concentrations in adductor muscle and gonad in relation to size. The bioaccumulation of Cd in gonads of individuals from 50 to 65mm showed an increasing trend throughout the evaluation period, while individuals 70 to 80mm showed more variability. Pb always exhibited considerable variability. There were no significant correlations ($\alpha < 0.05$) between the bioaccumulation of Cd and Pb in scallops and the concentration of Cd and Pb in bottom sediments. The abiotic variables, temperature and salinity were directly related with the bioaccumulation of Cd and Pb in *Argopecten purpuratus*. Although traces of cadmium and lead are present we conclude that the values in edible tissue of scallop are below the maximum levels of the European Union (EU) and World Health Organization (WHO).

Keywords: *Argopecten purpuratus*; bioaccumulation; Sechura Bay.

References

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