

## LEAD ACCUMULATION AND SUBCELULAR DISTRIBUTION IN THE SCALLOP *Aequipecten opercularis*

Paula Sánchez-Marín\*, Mónica González-Fernández and Juan Santos-Echeandía

Centro Oceanográfico de Vigo, IEO-CSIC, Vigo, SPAIN.  
*paula.sanchez@ieo.es, monicaglez2207@gmail.com, juan.santos@ieo.es*

**Abstract:** The scallop *Aequipecten opercularis* accumulates high concentrations of lead (Pb) in its tissues, what has led to the ban of its extraction in the Ría de Vigo (Galicia, Spain) for feeding purposes. The Ría de Vigo presents higher levels of Pb than other industrialized Galician Rías, mainly due to a ceramic factory that was operating in the inner part of the Ría from 1961 to 2001 (Álvarez-Iglesias et al., 2003). This study aims at testing the dynamics of bioaccumulation of Pb in this species, its tissue distribution and the subcellular partitioning Pb, with the aim of enhancing our understanding of the mechanisms that provoke the high Pb levels reached in its tissues. Scallops originating from a clean area were exposed in cages in two places in the Ría de Vigo (one harbour and a less impacted location) and 10 individuals were collected every month over a three months period. The bioaccumulation of Pb and other metals was studied including its distribution in several tissues: gills, digestive gland, kidney, muscle, gonad and rest. The results showed that scallops accumulated similar levels of Pb in both locations, and that about 76% of the Pb was found in the kidney. Subcellular partitioning of kidney samples additionally showed that around a 60-70% of Pb in the kidneys was included in metal rich granules, indicating that this is probably the reason of the high levels of Pb observed in this species, as occurs for other bivalves (Darriba and Sánchez-Marín, 2013). Concerning other metals analysed, it was observed that Zn was also mainly accumulated in the kidney, while Cd content was highest in the digestive gland. Cu and Ni were preferentially accumulated in the digestive gland or kidney, depending on the location, and As was mainly found in the muscle. Results will be discussed on the basis of metal pollution in both locations and according to detoxification strategies used by scallops.

**Key words:** metal bioaccumulation, metal rich granules, bivalves

### References:

- Álvarez-Iglesias, P., Rubio, B. and Vilas, F., (2003). Pollution in intertidal sediments of San Simón Bay (Inner Ría de Vigo, NW of Spain): Total heavy metal concentrations and speciation. *Marine Pollution Bulletin*, 46(4): 491-503.
- Darriba, S. and Sánchez-Marín, P., (2013). Lead accumulation in extracellular granules detected in the kidney of the bivalve *Dosinia exoleta*. *Aquat. Living Resour.* 26 (1): 11-17.