

USE OF METALLOPROTEOMICS TO ACCESS ENVIRONMENTAL STRESS IN THE FREE-LIVING MICE *MUS SPRETUS*

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The use of free-living mice as bioindicator of environmental contamination together with contaminants measurement is a very frequent practice for environmental assessment based on biological response. The aboriginal mouse *Mus spretus* has been used in the southwest Spain for this purpose [1] and both conventional biomarkers and protein expression changes [2] have been reported to test environmental issues. However, environmental proteomics has drawbacks caused by the lack of genetic sequence data from free-living organisms, for this reason genetically sequenced organisms close to the bioindicator are necessary to apply this approach as is the case of *Mus Musculus* and *Mus spretus* [3].

A previous metallomic study based on SEC-ICP-MS has been performed on several organs of *Mus Musculus* [4], but some problems were detected to apply typical proteomic extraction procedures. Now a new extraction approach considering the presence of metal linked to proteins has been optimized and the procedure applied to liver and brain from *Mus Musculus* and *Mus spretus*. Differences between SEC-ICP-MS profiles has been considered for essential (Cu and, Zn) and toxic (Cd, Pb and As) elements, and results of *Mus spretus* from different contaminated and non-contaminated areas surrounding the Natural Park of Doñana were compared. In addition, an exposition experiment to Cd was performed with *Mus Musculus*. Finally, suitable SEC-ICP-MS fractions were collected and purified by multidimensional HPLC-ICP-MS for further metallobiomolecules identification by organic mass spectrometric techniques, namely MALDI-TOF and Qq-TOF.

[1] J. Lopez-Barea et al, *Toxicology* 2004, 197, 123.

[2] J. Lopez-Barea et al, *Proteomics*, 2007, 7, 4376

[3] C. Pueyo et al, *Environ. Sci. Technol.* 2006, 40, 3646.

[4] J.L. Gómez-Ariza et al, *Anal. Bioanal. Chem.*, 2008, 390, 17

ACKNOWLEDGEMENT

Ministerio de Ciencia e Innovación. Grant: CTM2009-12858-C02-01