

4th International Conference on Earth Science & Climate Change

June 16-18, 2015 Alicante, Spain

Severe exposure to contaminated sediments of Portman bay down-regulate the gene expression of stress biomarkers and innate immune status in the gilthead sea bream (*Sparus aurata* L)

F A Guardiola¹, S Benhamed², S Martínez¹, C Pérez-Sirvent¹, M J Martínez-Sánchez¹, A Cuesta¹, J Meseguer¹, M Mars² and M A Esteban¹

¹University of Murcia, Spain

²Research Unit-Faculty of Sciences of Gabès, Tunisia

Heavy metals are non-degradable pollutants in aquatic system and they accumulate along the trophic chain. In Murcia (Spain), Portman bay was exposed to heavy metals rejections for more than 30 years. In this study, gilthead seabream, an important fish for the Mediterranean aquaculture, were exposed to different Portman bay sediments. Fish exposed to sand beach were used as control group. Induction of several stress biomarker and immune relevant genes (*sod*, *cat*, *gr*, *il-1b*, *igm*, *tcr*, *cox-2*, *csfr* and *hep*) were determined in head kidney (main haemopoietic organ), liver and skin by real-time PCR. Results showed that, after two weeks of exposure, gilthead sea bream resist to heavy metal toxicity and that induction of stress biomarker and immune relevant genes is organ dependent. In head kidney, *tcr*, *csfr* and *hep* genes were significantly down-regulated in the sediment-exposed groups. Likewise, *tcr*, *gr* and *il-1b* genes were significantly down-regulated in liver for both groups exposed. These last two genes (*gr* and *il-1b*) were also significantly down-regulated in skin of fish exposed to both sediments. By contrast, in this tissue was observed an up-regulated of *cox-2* gene by exposure to contaminated sediments. These finding confirmed that the exposure to contaminated sediments could not emphasize in all stress biomarker and immune relevant genes studied and that the induced genes are organ dependent. Besides, gilthead seabream could be used to regenerate the devastated ecosystem in this bay. Nonetheless, further studies are needed to understand this effects since the same fish showed stress and decreased immune response.

Biography

F A Guardiola has completed his PhD from University of Murcia. He has published more than 17 papers in reputed journals and more than 30 presentations at national and international conferences. Actually, he is a candidate to Marie Curie Fellowships.

faga1@um.es

Notes: