

International Conference on

# AQUACULTURE & MARINE BIOLOGY

June 25-27, 2018 | Rome, Italy

## The effect of thermal and saline oscillations in the oxidative stress and digestive systems of *Crassostrea gigas* & *Crassostrea angulata*

Rodrigo O A Ozorio<sup>1</sup>, Pereira L1, Machado J<sup>1,2</sup>, Gonçalves J F M<sup>1,2</sup>, Vaz-Pires P<sup>1,2</sup> and Hinzmann M<sup>2</sup>
<sup>1</sup>CIIMAR, University of Porto, Portugal

<sup>2</sup>University of Porto, Portugal

Environmental changes have a significant negative impact on bivalve industry. Temperature and salinity variations are the cause for mass mortalities every year. To better understand the vulnerability to temperature and salinity variations, two trials were carried out in Pacific oyster (*Crassostrea gigas*) (31.2±4.1g) and Portuguese oyster (*Crassostrea angulata*) (31.5±3.2g) for a period of 7 and 10 weeks, respectively. The *C. gigas* and *C. angulata* were separated into 2 groups: 1) submitted to a constant temperature and salinity conditions and 2) submitted to weekly oscillations. Cumulative mortality, digestive enzymes and oxidative stress parameters were analysed. Cumulative mortality was three times higher in oyster subjected to temperature and salinity oscillations, especially the *C. angulata* (Figure 1). Oxidative stress response was significantly different between hepatopancreas and gill tissues, where the glutathione ratio (GSH/GSSG) was four times higher in gill than in hepatopancreas, suggesting a more reactive role of gill tissue. The *C. gigas* showed

higher anti-oxidant activities (catalase and glutathione s-transferase) and lower lipid peroxidation (LPO). Digestive enzymes activities were similar between species subjected to constant environmental condition. However, when subjected to thermal and saline oscillations, amylase activity decreased significantly in *C. angulata*, suggesting an adaptive role of the digestive system of the Pacific oyster during environmental stress.



### Biography

Rodrigo O A Ozorio is a researcher at Centre of Marine and Environmental Research, Portugal. He has more than 20 years of experience in aquaculture research, special emphasis on the fish nutrition. He holds MSc and PhD degrees from Wageningen University and Research Centre, The Netherlands. Rodrigo has expertise on nutritional dynamics of fish and the economic potential of new aquaculture species based on a set of husbandry and physiological criteria. He participated in over 15 national and international projects (overall budget of 2.0 million euros), including four projects as scientific leader dealing with new aquaculture systems and sustainable alternative for intensive marine aquaculture. He supervised 8 PhD theses and 15 MSc theses and he authored over 56 scientific publications.

[rodrigo.ozorio@ciimar.up.pt](mailto:rodrigo.ozorio@ciimar.up.pt)

### Notes: