

Seasonal variations in the immunological and physiological parameters of the Pacific oyster *Crassostrea gigas* cultured in Bahía de Macapule (Sinaloa, Mexico)

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Abstract

Triploid *Crassostrea gigas* were cultured during 13 months in Nestier-type oyster trays. The impact of environmental parameters on the physiological and immunological parameters was evaluated. Temperature, salinity and seston were recorded monthly. Seventeen oysters were sampled monthly for immunological and condition index (CI) analyses. Samples were obtained as a haemolymph lysate supernatant (HLS). Protein content was determined using the Bradford method. The activity of hydrolytic enzymes was determined using the API ZYM kit and the lysoplate assay. Seston showed different patterns throughout the cycle. Condition index showed a positive correlation with the protein content of HLS. Protein showed a negative correlation with temperature. Eleven hydrolytic enzymes were detected in samples and higher enzymatic activity corresponded to leucine arylamidase and esterase. Leucine arylamidase and lysozyme activity showed a positive correlation with temperature. Oyster mortality was 28% in our modules and 70% in the oyster farm. Oysters showed low values of CI and haemolymph protein content in summer^autumn when mortalities were observed in the culture system. This finding suggests that these stressed oysters may have insufficient energy to invest in their immune system. It appears that oyster mortality in the culture system resulted from a combination of animal overcrowding, high temperature and low salinity.