POSTER

THE INVASIVE ALGAE *CAULERPA RACEMOSA* POSES A THREAT TO MUSSEL VIABILITY AND REPRODUCTION

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The invasive alien seaweed Caulerpa racemosa, which belongs to the Chlorophyta group, poses a serious threat to Mediterranean Sea ecosystems by disrupting native algal biodiversity and having toxic effects on aquatic organisms. This study analysed the effects of this species on the Mediterranean mussel Mytilus galloprovincialis, a sessile, filter-feeding organism, with the aim of understanding the biological and structural responses induced by exposure to the seaweed. Histological techniques were employed to evaluate the mussel's tissue response to increasing concentrations of C. racemosa. The results revealed a state of multisystemic distress, particularly affecting the gills, digestive gland, and mantle. Significant structural alterations were observed in the gills, including changes in epithelial thickness and the presence of lipofuscin granules, indicative of degenerative processes and cellular stress. Similarly, the digestive gland exhibited marked cellular disorganisation, while cell hypertrophy was detected in the mantle. These morphological changes are most likely attributable to oxidative stress induced by the compounds produced by C. racemosa. This mechanism also appears to underlie the more severe alterations observed in the exposed specimens, particularly in the reproductive system. Processes of oocyte degeneration and abnormalities in sperm differentiation were indeed observed, accompanied by profound disorganisation of the gonads. In the long term, these effects could significantly compromise the reproductive fitness of adult individuals, posing a real risk to the survival of the species. Therefore, the observed alterations suggest that the spread of C. racemosa could have significant consequences for Mediterranean marine ecosystems, affecting their stability at both the individual and population levels.