Superoxide dismutase activity in juvenile Litopenaeus vannamei and Nodipecten subnodosus exposed to the toxic dinoflagellate Prorocentrum lima

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The toxic effect of the dinoflagellate Prorocentrum lima on juvenile American whiteleg shrimp Litopenaeus vannamei and giant lion-paw scallop Nodipecten subnodosus was evaluated. Organisms were exposed to three densities (500, 2000, or 5000 cells mL⁻¹), superoxide dismutase activity and soluble protein in the hepatopancreas and muscle were determined at 1, 6, 24 and 48 h after challenge. Shrimp exposed at 5000 cells mL⁻¹ significantly increased SOD activity in the hepatopancreas at 1 h post-challenge, whereas enzymatic activity in muscle significantly increased at 24 h at all densities. Scallops exposed to 500 and 2000 cells mL⁻¹ showed significant SOD activity increase in hepatopancreas at 24 and 12 h, respectively. Mortality at 48 h was 100% in scallops exposed to 5000 cells mL⁻¹. Shrimp showed higher levels of SOD activity than scallops. Soluble protein content in the shrimp hepatopancreas was significantly higher at densities of 500 and 2000 cells mL⁻¹ at 6 and 1 h, respectively. Soluble protein content in the scallop hepatopancreas was higher than control values at 1 h after challenge. In this study, 500 cells mL⁻¹ was enough to trigger SOD activity in two benthic species exposed to the toxic dinoflagellate P. lima.