

# Effects of the Sediment Grain Size on Metabolic Reaction of *Callista umbonella* in Oxidative Stress Caused by Hydrocarbon Pollution in the Coast of Assaluyeh (North of the Persian Gulf)

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## Abstract

This research aimed to show different reactions of *Callista umbonella* in the oxidative stress caused by hydrocarbon pollution in sediments with different grain size. Regarding the differences in Porosity, Permeability and Penetrability in sandy shores, the grain size is an important factor that changes the severity of pollution caused by oxidative stress. In this research, we investigated the total length size of bivalve shell and values of antioxidant enzymes (GPx, GR, SOD and CAT) in soft tissue of *C. umbonella* in shores of three industrial sites (Site 1, Site 2 and site 5) and two control sites (site 3, site 4). Collected samples fixed rapidly in liquid nitrogen. The enzymes were extracted using perpendicular force and measured by spectrophotometry analysis. The values of SOD and CAT showed a positive and significant correlation ( $P < 0.05$ ) as well as GR and GPx during the research. With average of 47.08 ( $\pm 4.7$ ) mm, Site 4 showed largest sample records in length size ( $\pm SD$ ) but samples records on Site 1 with average length ( $\pm SD$ ), 37.72 ( $\pm 3.9$ ) mm were in minimum scale. The results showed that metabolic reaction of *C. umbonella*, for controlling the oxidative stress of being exposed to the pollution in sediments with higher porosity was decreasing the metabolism, while the reaction in sediment with higher permeability was vice versa. Finally, according to the results, *C. umbonella* showed better growth in clean sediments with the high porosity.

Keywords: Grain size, Sandy shores, Oxidative stress, *C. umbonella*, Hydrocarbon pollution, Persian Gulf.

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