

## **Biochemical Indicators of Contaminate Exposure in the Mangrove Periwinkle, *Tympanotonus Fuscatus*, in Tidal Polluted Creeks of the Lagos Metropolis**

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Cellular oxidative stress biomarker response [lipid peroxidation using thiobarbituric acid reactive substances (TBARS), superoxide dismutase (SOD), glutathione (GSH) and catalase-enzymes (CAT)] activities in the periwinkle, *Tympanotonus fuscatus*, were evaluated in tidal polluted creeks of the Lagos metropolis. *T. fuscatus* were collected from three aquatic environments, namely; Agboyi Creek (AAC), Lagos Lagoon (BLL) and Lekki Lagoon (CLL) in the Lagos metropolis where activities of pollutants and xenobiotic compounds may be high. Enzymatic activities were expressed in relation to protein concentration which was determined as outlined by Radox (Total protein [Biuret method]). No significance differences ( $p > 0.05$ ) were observed for either TBARS or GSH activities for all the three sites (AAC, BLL and CLL). However, SOD and CAT activities were significantly different ( $p < 0.05$ ). The mean concentrations of TBARS, GSH, SOD and CAT in *T. fuscatus* were low in site AAC with the following values: 338.64  $\mu\text{mol}/\text{min}/\text{mg}$  protein, 264.48  $\text{mmol}/\text{min}/\text{mg}$  protein, 53.41  $\mu\text{mol}/\text{min}/\text{mg}$  protein, and 205.75  $\text{mmol}/\text{min}/\text{mg}$  protein, respectively. The mean concentration of GSH and SOD were highest with the following values: 280.61  $\text{mmol}/\text{min}/\text{mg}$  protein and 178.22  $\mu\text{mol}/\text{min}/\text{mg}$  proteins, respectively at site BLL. Also the concentration of TBARS and CAT were highest at site CLL with the following values: 856.94  $\text{mmol}/\text{min}/\text{mg}$  protein and 467.45  $\mu\text{mol}/\text{min}/\text{mg}$  proteins, respectively. Analysis using student Newman Keuls at ( $p = 0.05$ ) showed that the concentration of TBARS and GSH in *T. fuscatus* were not significantly different among all sites. However, SOD and CAT showed significant differences in sites BLL, AAC, and CLL. Considering that many of the pollutants are capable of absorption by aquatic organisms, which usually induce oxidative stress due to the production of oxyradicals during detoxification processes, it is possible that site AAC with reduced antioxidant enzyme activities would be more susceptible to the effects of xenobiotic compounds.