

Mary Metrie

Glutathione-S-transferase: A glimpse into its interaction with lipid peroxidation products

Glutathione-S-transferases (GSTs) belong to a large class of enzymes, whose primary function is to catalyze the nucleophilic conjugation of reduced glutathione (GSH) to exogenous or endogenous electrophiles. GSTs detoxify electrophilic xenobiotics in cells by making the conjugates water-soluble and thus more easily excreted by the cell. Glutathione-S-transferase from *Schistosoma Japonicum* can be widely expressed in *E. coli* and has been successfully expressed and purified in the lab. GST catalyzes the reaction of GSH and HNE to form a water-soluble adduct (GSH-HNE). The activity of the GST enzyme was measured after its reaction with a major lipid peroxidation product, 4-hydroxy-2-nonenal (HNE) using an assay with 1-chloro-2,4-dinitrobenzene. No significant change in activity of the GST was observed after reaction with HNE. GST has a high affinity for GSH, and a possible explanation may be that the HNE sites of attack have been blocked. Another explanation lies in that *Schistosoma Japonicum* GST is a hybrid of the alpha and mu classes of GST enzymes, and these classes have separately shown minimal decreases in activity, if at all, in other species studied.