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Structural crystalography of Mu-class glutathione S-transferase from shrimp Litopenaeus vannamei

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Abstract content

Glutathione S-transferase is a widely distributed enzyme, found in diverse organisms like microbes, insects, plants, fish, birds and mammals. Currently, four types of GSTs has been described and characterized: class Pi, Mu, Alpha and Theta. These enzymes catalyze nucleophilic attack by reduced glutathione (GSH) on nopolar compounds (or xenobiotics) that contain an electrophilic carbon, nitrogen or sulphur atom. Experimental data suggest that sublethal concentration of certain metals may affect the capacity of several organisms to achieve detoxification against some pesticides or xenobiotics. It is crucial to remark that many of those xenobioticss are presents in the marine sediments. Our work is focused on the 3D structural description of a Mu class GST from Litopenaeus vannamei, leg white shrimp (LvGST). We have purified this protein and it was used to obtain crystals using different crystallization conditions. Crystals of LvGST were diffracted at the APS (Advanced Photon Source) in Chicago and the NSLS (National Synchrotron Light Source) in New York. At the moment we have the native structure at a resolution of 1.90 Å, being visible the interaction of the catalytic reside (tyrosine 7) with the sulfhydryl group of GSH. Currently we are growing crystals of LvGST in presence of diferrent metals in order to evaluate the possible structural effects over LvGST structure and function.

Summary

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