

15th World Congress onBIOTECHNOLOGY AND BIOTECH INDUSTRIES MEET
&2nd International Conference on

ENZYMOMOLOGY AND MOLECULAR BIOLOGY

March 20-21, 2017 Rome, Italy

Molecular characterization of glutathione transferase M1-1 from the *Camelus dromedarius*Fereniki Perperopoulou¹, Farid Ataya² and Nikolaos E Labrou¹¹Agricultural University of Athens, Greece²King Saud University, Saudi Arabia

Glutathione transferases (GSTs, EC. 2.5.1.18) are a large family of multifunctional enzymes, best known for their involvement in the metabolism and inactivation of a broad range of xenobiotic compounds. GSTs catalyze the nucleophilic attack of the reduced form of glutathione (γ -L-Glu-L-Cys-Gly, GSH) on the electrophilic center of a variety of compounds such as pesticides, herbicides, etc. The result of the conjugation of GSH to such molecules is the increase of their solubility and the reduction of their toxicity. GSTs could be useful tools with a variety of biotechnological applications in many fields. Many studies have been carried out exploiting the natural ability of the GSTs to interact with xenobiotic compounds in order to develop simple and selective biotechnological applications. In the present work, we report the cloning, kinetic and structural characterization of the GSTM1-1 from camel (*Camelus dromedarius*). The Cd-GSTM enzyme was expressed in *E. coli* and purified by affinity chromatography. The ligand in function of the enzyme was evaluated by measuring the ability of 47 xenobiotic compounds to bind and inhibit the enzyme activity. The inhibition potency was measured with the CDNB/GSH assay system. The IC₅₀ value and the kinetic analysis of the compound that showed the highest inhibition were determined. The results demonstrated that the enzyme exhibits high selectivity towards the fungicide Zoxium/ zoxamide. Hence, this method can be used as an optical biosensor for the determination of Zoxium/zoxamide in environmental samples.

Biography

Fereniki Perperopoulou has studied Agricultural Biotechnology from the Agricultural University of Athens. She has done her Master's degree in Bioactive Protein Products and Technology at the Agricultural Biotechnology department of Agricultural University of Athens. Currently, she is a PhD candidate in the Department of Biotechnology at the Agricultural University of Athens, working on the protein engineering and molecular study of transferase glutathione.

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