Characterization of Ergothioneine Biosynthesis in a thermophilic fungus

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Ergothioneine (EGT) is a N-α-trimethylhistidine derivative that is synthesized by many bacterial and fungal organisms.[1] Animals and plants assimilate EGT from the environment or through the food chain. Detailed characterization of EGT biosynthesis in mycobacteria revealed a catalytic pathway comprising five enzymes (EgtA-E).[2,3,4] The central step in this pathway is oxidative sulfur transfer to the imidazole ring of N-α-trimethylhistidine. This reaction is catalyzed by the iron-dependent sulfoxide synthase EgtB. Eukaryotic EGT biosynthesis appears to differ by several key aspects from the prokaryotic model. In this presentation we discuss the substrate selectivity and product specificity of fungal EgtB.

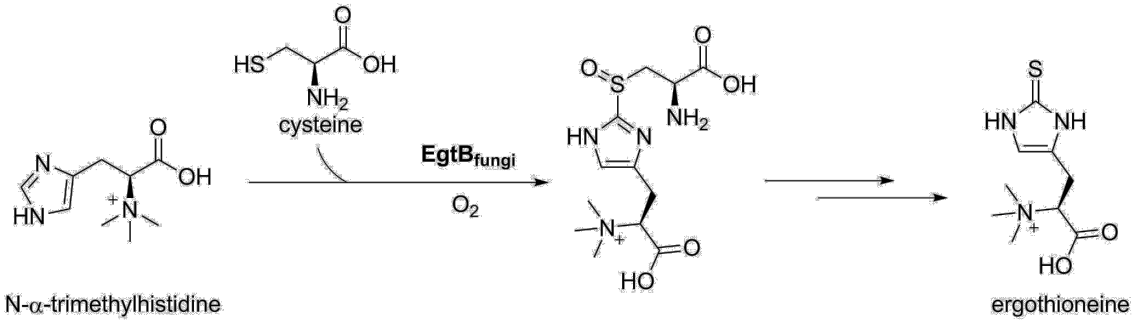

Fig. 1: The sulfoxidation step of $EgtB_{fungi}$ in the biosynthesis of EGT.

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