Characterization of a probable GDSL lipase, *Rv1075c of Mycobacterium tuberculosis*

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Tuberculosis is caused by *Mycobacterium tuberculosis*. Due to the emergence of multiple drug resistance organisms, research in this area is focused to identify new drug targets. In TB database, several genes have been annotated as hypothetical and needs characterization for assigning a role. *Rv1075c* has been annotated GDSL lipase. GDSL esterases/ lipases possess multi-functional properties due to broad substrate specificity, so some of them have thioesterase, protease, arylesterase, and lysophospholipase activity. In this study, we have cloned *Rv1075c* gene in pET28a vector, expressed in E. coli BL21 (DE3) pGro7 strain and protein was purified by Ni-NTA chromatography. Also, the active site mutants were created using site-directed mutagenesis technique. Based on biochemical characterization, it was found to posses' lipase activity toward mid-carbon chain length having pNP-laurate as its optimal substrate. Its optimum temperature and pH were 37˚C and 9˚C, respectively; and stable up to 60˚C and long pH range, pH5 to 11. It was also confirmed to be belonged to SGNH hydrolase subgroup of GDSL category of lipases by the activity analysis of active site mutants. The active site mutant's activity was found to be tampered as compared to wild-type protein.

Speaker Biography

Jashandeep Kaur is a PhD Scholar in the Department of Biotechnology, Panjab University, Chandigarh, India. She has been working on deciphering the role of lipases in the life-cycle of *Mycobacterium tuberculosis* under the supervision of Prof. Jagdeep Kaur. Her expertise is in Molecular Biology, Protein Biochemistry and Animal Tissue Culture.

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