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Lipolytic enzymes of *Mycobacterium tuberculosis* as drug target

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Tuberculosis is one of the top ten causes of death worldwide and India alone accounts for one quarter of cases. MDR (Multi drug resistant) and XDR (Extensively drug resistant) strains of the causative pathogen *Mycobacterium tuberculosis* are the major hurdles in combating the disease. There is dire need to search for new drug targets/drugs that are effective against the drug resistant strains. A major chunk of the mycobacterial genome encodes for genes involved in lipid metabolism. Several lipases were reported to be essential for virulence, survival and pathogenesis of MTB. The antisense nucleotides against lipU, lipS and lipK genes inhibited the *in vitro* growth and survival of bacteria under stress conditions. Rv0774c, an iron stress inducible, extracellular esterase is involved in immune-suppression associated with altered cytokine and TLR2 expression. All these genes coded for esterases. LipS demonstrated epoxy hydrolase activity also. 3D model structure of these proteins was developed and stabilized through molecular dynamics. Natural compounds and FDA approved drugs were screened against these proteins. We identified some inhibitors by virtual screening against these enzymes and validated using bioinformatics tools. The results suggested high probability of these drugs to inhibit the enzyme activity of these enzymes and could be tested under *ex-vivo* and *in vivo* conditions.

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