Chapter II

Objectives

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The global pandemic of drug sensitive tuberculosis as well as the increasing threat from various drug resistant forms of TB drives the quest for newer, safer, more effective TB treatment options. A thorough review of the various literatures available enlightened the importance of pantothenate synthetase and InhA biosynthetic pathways in the lifecycle of *Mycobacterium tuberculosis*. The present study thus focused on utilizing the pharmaceutically underexploited pantothenate synthetase and InhA as potential target platforms for exploring newer anti tubercular agents that lack cross-resistance mediated by mutations in the bacterial targets.

The main objectives of the proposed work are:

1. To design novel anti-tubercular agents based on reported anti-tubercular leads by molecular hybridisation strategy and rational drug derivatization based on medicinal chemistry approach.

2. To synthesize the designed molecules by conventional methods, an environmental benign technique like, click chemistry method.

3. To undertake *in vitro* antimycobacterial screening of the synthesized compounds against *Mycobacterium tuberculosis*, pantothenate synthetase enzyme assay and InhA studies.

4. To perform the *in vitro* cytotoxicity studies of the synthesized compounds.