

SUMMARY

- 1 TB is a contagious infection that has troubled humankind from the history. An estimated 9.2 million new cases of TB are reported every year (afflicting mostly the young and productive adults), including 4.1 million new smear-positive cases and 0.7 million HIV-positive cases (8% of the total).
2. The resurgence of TB, accompanied by HIV, has been complicated by the emergence of MDR- and XDR-TB.
- 3 Recent developments in the therapy of TB have been reviewed.
- 4 Literature pertaining to various synthetic approaches to pyrimidine synthesis and 2,3-dihydroimidazo[1,2-c]pyrimidines has been reviewed.
5. A series of 2,3-dihydroimidazo[1,2-c]pyrimidines has been designed by ligand based molecular modeling studies based on its 3D structural similarity with PA-824, a novel potent antimycobacterial agent. The r.m.s.d. found was 0.244, which suggested good 3D similarity between them.
- 6 The designed series of 2,3-dihydroimidazo[1,2-c]pyrimidines was synthesized and confirmed by physical, elemental and spectral data.
7. The synthesized 2,3-dihydroimidazo[1,2-c]pyrimidines were screened for their antimicrobial activity against Gram-negative (*Escherichia coli* and *Pseudomonas aeruginosa*) and Gram-positive (*Bacillus pumilis* and *Staphylococcus aureus*) bacteria and *M. tuberculosis* H37Rv. Some of the compounds were also tested for their antifungal activity against *Aspergillus niger*.
- 8 The intermediates, 5-carbomethoxy-2-(un)substituted-4-(substituted amino)-6-(substituted amino)pyrimidines were also tested for the antibacterial and antifungal activity.
9. The concept of QSAR has been briefly reviewed in context of basic principles, tools and methodologies adapted for QSAR studies.

10. A detailed 2D-QSAR study has been undertaken using Hansch model with different molecular descriptors

11. Various QSAR equations have been generated and validated. The detailed QSAR study suggested that the inclusion of electron withdrawing and less lipophilic substituents may enhance the potency of the 2,3-dihydroimidazo[1,2-c]pyrimidines.