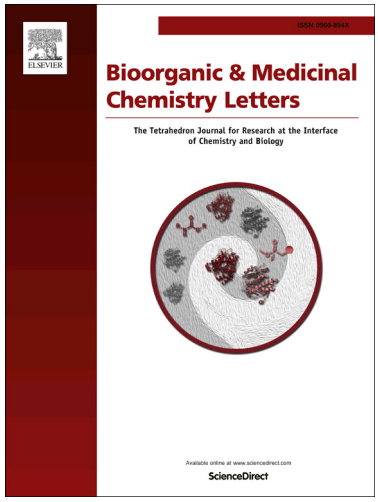

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Synthesis, antimycobacterial evaluation and pharmacophore modeling of analogues of the natural product formononetin

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Abstract

The synthesis and antimycobacterial activity of formononetin analogues is hereby reported. Formononetin and its analogue **11E** showed 88% and 95% growth inhibition, respectively, against the H37Rv strain of *Mycobacterium tuberculosis.* Pharmacophore modeling studies indicated that the presence of a hydroxyl group in formononetin and its analogues, is crucial for maintaining activity.

Keywords Antimycobacterial, Formononetin, Pharmacophore, Structure, Activity

Tuberculosis (TB) is a leading cause of mortality and morbidity, being estimated to infect about one third of the world's population [1]. The Global tuberculosis report by WHO in 2013 reported that there were an estimated 8.6 million incidents of TB in 2012 and 1.3 million TB related deaths [2].The HIV scourge has made the TB situation worse, especially in sub-Saharan Africa, with the co-epidemic being particularly concentrated in the Southern African countries where HIV prevalence is high [3]. Increasing rates of drug-resistant tuberculosis are a significant concern and pose serious implications for current and future treatment of the disease[4]. Resistance has been reported for new drugs such as bedaquiline[5], indicating that there is an urgent need for more new drug candidates to raise the probability of developing a novel, short-course and safe 'universal' regimen applicable to drug-susceptible and all forms of drug-resistant TB[6].