Short Communication International Journal of Bioassays 2021
Vol.10 No.3

Chemical Sciences 2018: Design, Synthesis and Target Identification of Novel AntiTubercular Agents - Ahmed Khalaf Aljohani - Newcastle University

Ahmed Khalaf Aljohani
Newcastle University, UK

Tuberculosis (TB) is recognized as a lethal bacterial infection that caused by the bacterium Mycobacterium. Tuberculosis (MtB). According to the World Health Organization in 2017, MtB is mainly found in developing countries such as India and South Africa. Consequently, an estimated 9.6 million people became ill from M. tuberculosis in 2014 with 1.5 million deaths, 27 % of which were complicated by co-morbid HIV.(1) However, the present day chemical synthesis could be used to produce a set of novel medicinal compounds that can selectively show bactericidal activity against Mycobacterium. Tuberculosis (MtB). The continued development of novel benzo-[2,1,3]-diazole molecules may be used to solve antitubercular resistance because multi-drug resistant bacteria are unaffected by front-line therapies including Isoniazid 1, Rifampicin 2, Ethambutol 3 and Pyrazinamde 4 .

Background: In the past two decades, the synthesis of bioactive heterocyclic compound had a significant role in discovery of novel and active medicinal agents. The good example of heterocyclic compounds is benzimidazole moiety 5 (Figure 2) that has been widely used for synthesis of a large number of bioactive agents. Furthermore, any substitution of one or more heteroatoms and any change in any position within heterocyclic system can clearly influence on benzimidazole's behaviors such as acidity, basicity, solubility and susceptibility to attack by electrophiles or nucleophiles. Finally, the minimal inhibitory concentration (MIC) of novel benzodiazole antitubercular agents is determined by using the resazurin microtiter assay (REMA) against four different types of Mycobacterium. Tuberculosis that are susceptible to Isoniazid, Rifampicin, Pyrazinamde and lead compound, respectively

Project Aim: The aim of this study focuses on the continued synthesis of the novel benzodiazole antibacterial agents to undertake a SAR study. Synthesis of a series of benzodiazole as antibacterial agents: This will be achieved in two steps beginning with peptide bond coupling to give rise to hydrazide 7. Subsequent deprotection of 7 and coupling with benzodiazole 8 provides the final benzodiazole compounds 9 for biological screening. Additionally the hydrazides 7 will also be screened (Figure 3). Microbiological testing will be undertaken using a resazurin microtiter assay (REMA) or a Microtitre alama blue assay (MABA) to produce minimum inhibitory concentration values (MIC) for 7 and 9

This work is partly presented at International Conference on Chemical Sciences on June 14-15, 2018 held at London, UK