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Synthesis and investigation on antimicrobial activities of some benzimidazol and bisbenzimidazole compounds

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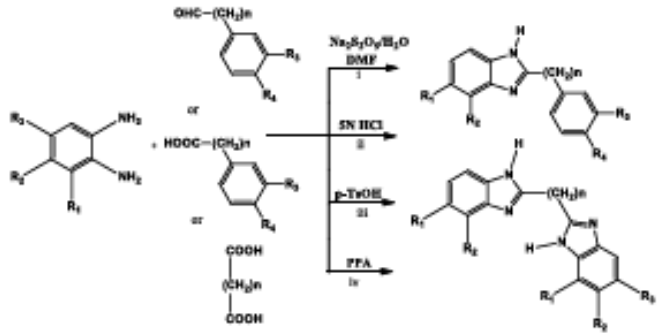
In recent years, failure in the treatment of bacterial and fungal infections has increased because of the development of the multidrug resistance due to miss-use of antimicrobial drugs.[1] Therefore the synthesis of most effective novel antimicrobial compounds on microorganisms has became important as a requirement. Nowadays, benzimidazole derivatives used for their antiulcer, antihelmintic, antiviral, antihistaminic, anti-inflammatory and antioxidant activities have been prominent. Because of the structures of benzimidazole rings are isosteres of DNA bases (purine and pyrimidine moieties) and are placed in the natural structure of vitamin B12 (Cyanocobalamin), these structures have been keen interest of the researches for more than hundred years.[2]

In this study, we aimed to find conventional and microwave synthesis methods for benzimidazole and bisbenzimidazole derivatives. The compounds in the title were prepared from o-phenylendiamine and suitable aldehyde or carboxylic acid derivatives by comparative studies with conventional and microwave irradiation methods.[3] Then, we demonstrated in vitro antimicrobial activity of these synthesized compounds against various microorganisms.



R_1; R_2; R_3; R_4= H, Cl, CH_3, OCH_3, $N(CH_3)_2$, NO_2 i, ii, iii, iv) Conventional methods or microwave irradiation

Scheme 1: Synthesis of the target compounds.

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