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BENZIMIDAZOLE : AN OWERVIEW

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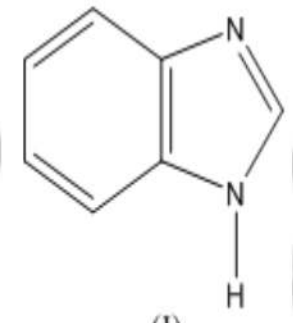
Abstract
Benzimidazole nucleus is one of the most important heterocycles exhibiting remarkable pharmacological activities. Numerous method for the synthesis of benzimidazole and also their diverse reactions offer enormous scope in the field of medicinal chemistry. The utility of benzimidazole as synthon for various biologically active compounds has given impetus to these studies. The present review provides a broad view of the synthesis, properties and biological activity possessed by compounds having benzimidazole nucleus.

Keywords: - : Benzimidazole, Heterocyclic, Properties and Biological activity .

INTRODUCTION

Benzimidazole (I) is a heterocyclic aromatic compound. It consists of a benzene ring fused with an imidazole ring at its 4, 5- positions. The various positions on the benzimidazole ring are numbered in the manner indicated , with the imino function as number one.



(I)

Structure of Benzimidazole

Benzimidazoles possessing free imino hydrogen are tautomeric systems. The two possible tautomeric forms of benzimidazole and of those of its derivatives possessing a plane of symmetry are identical, and a definite assignment of structure is possible.

Mankind has been in constant search for antibacterial agents to combat the various infections that has taken millions of lives over the years.

Selective toxicity, the property of certain chemicals to destroy one form of life without harming another. is the cornerstone of modern antimicrobial chemotherapy. The concept is largely credited to Paul Ehrlich, who discovered the selective -staining properties of certain antibacterial dyes and the anti parasitic activity of organic arsenicals. Although the compounds discovered by Ehrlich has largely been replaced by safer and more effective agent, his ideas paved the way for the advent of the sulfonamides and penicillin and elucidation of the mechanism for their selective toxicity. The modern era of the chemotherapy of infection started with the clinical use of sulfanilamides in 1936. The golden age of anti¬microbial therapy began with the production of penicillin on 12th Feb. 1941. In rapid succession, deliberate searches of the metabolic products of the wide variety of soil microbes led to discovery of streptomycin (1943), chloramphenicol (1947), chlortetracycline(l948), neomycin(1949), erythromycin (1952), and more, and this ushered in the age of the miracle drugs.

In 20th century there was significant achievement in discovery and commercial development of various antibacterial agents that provide effective treatment for many infections and diseases that has previously caused extensive mortality, morbidity and fear.[2]Benzimidazole derivatives are of wide interest because of their diverse biological activity and clinical applications. This heterocyclic ring system is present in numerous anti-parasitic. Fungicidal. Anthelminitc and