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Chapter - 9

Nanotechnology in Dentistry

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Abstract

The field of pharmacological research has seen significant advances with the development of heterocyclic compounds such as pyrazines, known for their wide spectrum of biological activities. This chapter provides a comprehensive overview of pyrazine derivatives, focusing on their synthesis and evaluation for antimicrobial, anticancer, anti-inflammatory, and analgesic, antioxidant, and antidepressant properties. Particular attention is given to the structure-activity relationship (SAR) that governs their pharmacodynamics efficacy. Several recent studies are discussed, highlighting the potential of pyrazine-based scaffolds in drug development. The versatility of pyrazines as bioactive molecules underscores their relevance in medicinal chemistry and prompts further investigation for therapeutic applications.

Keywords: Pyrazine derivatives, heterocyclic compounds, antimicrobial activity, anticancer agents, anti-inflammatory, antioxidant, structure-activity relationship (SAR), drug discovery, medicinal chemistry

Introduction

Progressively, science is undergoing great evolutions that are leading humanity towards a new era of nanotechnology including dentistry that provides an insight to explore a coherent technology that is beneficial for the dental sciences. Nanodentistry helps in attaining good oral health while using Nanomaterials and various biotechnologies like nanorobots and tissue engineering etc. In dentistry, there are other treatment modalities where nanotechnology proves to be effective, and those include nanorobots, nanoneedles, nanorobotics dentrifices, bone replacement materials, nanocomposites, etc. In addition, nanotechnology has wider use in the field of medicine where its benefits in the development of drugs to the cells of cancer in the body which has proved to be safe and effective in treating cancer.

Chapter - 11
Dental Prosthetic Aids: An Academic Overview
for the General Population

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