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Mini Review

Biological Active Compounds for the Development of Biosensors and it's Medicinal Importance

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Abstract

Bio-active heterocyclic compounds have significant importance in the field of medicinal chemists as they present many pharmacological activities. They are also useful as active ionophore material for making polymeric membrane protein-based biosensors. Heterocyclic compounds of five- and six-membered ring with N, S and O as heteroatom have shown wide range of application in the field of biological chemistry. Schiff bases, quinazoline and benzoxazinone among are the most important six-membered heterocyclic compounds possess good range of biological activities as anti-bacterial, antimicrobial and anticancer agents. Compounds with good biological activity have also been used in past for the development of various products with enhanced health promoting properties in food and pharmaceutical industries. They have the great ability to modulate one or more metabolic processes, which may promote better health conditions in patients.

Keywords: *Biological Active Compounds; Biosensors; Medicinal Importance*

Introduction

Heterocyclic compound is a cyclic compound with ring that has at least two different atoms as members of its ring structure. Specially nitrogen (N) containing compounds such as Pyridine may be used as solvent, in waterproofing, an alcohol denaturant, and a dyeing adjunct among the various types of heterocyclic molecules studied [1]. Many other heterocyclic compounds like quinazolines, benzimidazole and their derivatives represent a group of important chromophores with desirable biological properties. Biosensor refers to the analytical devices involving biological active element. Truly, the first biosensor was developed by Leland C. Clark, Jr who is known as the 'father of biosensor' in year 1956 for the detection of oxygen. A biosensor generally consists of three components: bio specific capture entity for the bio-detection, chemical interface based on entrapment and transducer for signal transmission. Usually, biosensors are developed by the screen printing of electrode patterns on a plastic substrate of conducting polymer and coating. Various methods are currently available to detect physiological changes which include extracellular electrical recordings, optical measurements and functional genomics and proteomics for futuristic applications [2,3]. Several technical advancements are desirable to increase the feasibility of cell-based biosensors including development of stem cell and 3D culture technologies for field applications. Various biosensors are available for the diagnosis of malaria as biomarkers like Plasmodium falciparum histidine-rich protein 2 (PfHRP-2), aldolase, glutamate dehydrogenase (GDH), parasite lactate dehydrogenase (pLDH), and the biocrystal hemozoin. Paper biosensor has been developed by using bioconjugate of Tyr-AuNps produced by Streptomyces to detect the presence of phenol in different effluent of wine, and paper industries [4-6]. Biosensors provide cost-effective analytical devices with highly sensitive and accuracy for detection of pathogen like Campylobacter and Salmonella in fresh meat and poultry products in food industry, water and air analysis to measure environmental pollution, to detect human papilloma virus in medical science field. Fluorescent biosensors also play important role in drug discovery and for the treatment of cancer [7].

These compounds are available in the form of capsules in the market, would have wider applications of these natural extracts in the field of medicine.

Biologically active compounds that bind to specific targets in the brain are useful in curing many kinds of diseases, especially Alzheimer's disease. Beyond nutritional values, these active compounds have an impact on the body functions. Milk proteins itself are biologically active and related to immune, cardiovascular, and nervous systems [8].

Conclusion

It concludes that continuous research in the field of biological active compounds is mandatory and will contribute significant applications to the society. The preparation and properties of such compounds from multicomponent approaches may result in diverse organic synthesis, drug discoveries and sensor applications for better diagnosis and treatment of human diseases.

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