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Nutraceuticals and Their Role in Disease Prevention and Health Promotion

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Abstract

Nutraceuticals are food-derived products that provide health benefits beyond basic nutrition, including disease prevention and therapeutic effects. They bridge the gap between food and medicine by combining nutritional value with scientifically validated biological functions. The growing interest in preventive healthcare has increased the demand for nutraceutical products worldwide. This article discusses the importance of nutraceuticals in modern nutrition and their role in promoting health and preventing chronic diseases. This article discusses the role of food biotechnology in modern food science and its contribution to sustainable food production. Improper post-harvest practices can lead to significant food losses, reduced nutritional value, and economic challenges. The application of appropriate post-harvest technologies enhances food safety, extends shelf life, and ensures year-round availability of food products. This article discusses the role of post-harvest technology in improving food quality and reducing post-harvest losses.

***Keywords:** Nutraceuticals, Functional foods, Health promotion, Disease prevention, Bioactive compounds*

Introduction

Nutraceuticals are products derived from foods that offer physiological benefits and protection against diseases. These include dietary supplements, fortified foods, and functional food ingredients containing bioactive compounds such as antioxidants, omega-3 fatty acids, probiotics, and plant extracts [1]. Their use has expanded rapidly due to increased awareness of lifestyle-related diseases.Scientific research supports the role of nutraceuticals in reducing the risk of chronic diseases such as cardiovascular disorders, diabetes, and certain cancers [2]. These compounds modulate inflammation, oxidative stress, and immune responses, contributing to overall health maintenance [3]. Their presence in natural foods highlights the importance of dietary diversity and plant-based nutrition.In food science, bioactive compounds are increasingly used in the development of functional and fortified foods [4]. Advances in extraction, stabilization, and delivery technologies have improved their bioavailability and effectiveness [5]. Therefore, bioactive compounds represent a vital intersection between nutrition, food science, and preventive healthcare. Bioactive compounds are non-nutrient components in foods that influence

physiological processes and promote health. These substances include polyphenols, flavonoids, carotenoids, peptides, and phytosterols, which exert protective effects against various diseases. Their biological activity makes them valuable components of functional foods. Therefore, bioactive compounds represent a vital intersection between nutrition, food science, and preventive healthcare.

Conclusion

Nutraceuticals play a significant role in promoting health and preventing disease by integrating nutrition with therapeutic benefits. Their development supports preventive healthcare approaches and improved quality of life. Continued scientific research and regulatory oversight will strengthen the credibility and impact of nutraceuticals in global health systems. When used responsibly and regulated effectively, they contribute to product stability and consumer satisfaction. Ongoing research and regulatory oversight are essential to ensure the safe and beneficial use of food additives in the global food industry.

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