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Food Biotechnology in the Commercialization of Functional Food and Nutraceuticals

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ABSTRACT

Food biotechnology plays a crucial role in the development and commercialization of nutraceuticals by enabling the efficient production of bioactive food components with enhanced nutritional and therapeutic value. Through the application of microbial fermentation, enzyme technology, genetic engineering, and bioprocess optimization, food biotechnology improves the yield, stability, and bioavailability of nutraceutical compounds. These approaches support the development of functional foods, probiotics, fortified products, and dietary supplements aimed at promoting health and preventing chronic diseases. In addition, biotechnological tools facilitate quality control, standardization, safety assessment, and large-scale manufacturing, which are essential for successful commercialization. Despite challenges related to regulation, cost, and consumer perception, food biotechnology continues to drive innovation in the nutraceutical sector. Overall, the integration of food biotechnology and nutraceutical science provides sustainable and innovative solutions for preventive healthcare and the growing nutraceutical industry.

Keywords: Food biotechnology, Nutraceuticals, Functional foods, Probiotics, Bioactive compounds

