

# INFUSE 2025: International Conference on Frontiers of Unified Science and Exploration



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## Bridging functional foods and nutraceuticals: Advances in bioactive compounds for health promotion and disease prevention

Nutraceuticals and functional foods together offer a novel approach for disease prevention and health enhancement. Nutraceuticals, formulated from natural sources and functional foods, are enriched with specific bioactive substances, that assures to provide health benefits that go beyond simple nourishment. This review offers a comprehensive study on classifications of significant bioactive compounds such as polyphenols, carotenoids, omega-3 fatty acids, phytosterols, probiotics, and bioactive peptides. In order to improve stability, bioavailability, and efficacy, these bioactive compounds are extracted using the most recent developments in extraction technologies, processing techniques, and delivery systems, such as controlled release, nanoencapsulation, and supercritical fluid extraction. The review also encompasses quality control, safety concerns, and labeling methods, acknowledging their importance for global regulatory compliance and consumer confidence. Current concerns including bioavailability optimization, sustainable sourcing, and integration into frameworks for personalized nutrition are emphasized along with potential approach for future research. It also highlights the potential of nutraceuticals and functional foods as long-term, cost-effective methods to improve global health outcomes by bridging diverse views.

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

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