



Microbial Vitamins and Carotenoids in Food Biotechnology

Novel Source and Potential Applications

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Chapter sixteen - Challenges and future scenario of microbial vitamins and carotenoids in food industry

Sameer Ahmad¹, Zuha Rahman², Sadaf Nazir³, Wasim Akram⁴

¹ Department of Bioengineering Integral University, Lucknow, Uttar Pradesh, India

² Department of Pharmacognosy & Phytochemistry, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi, India

³ Department of Food Technology, School of Interdisciplinary Sciences & Technology, Jamia Hamdard, New Delhi, India

⁴ Department of Pharmacology, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi, India

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Abstract

Most dietary sources of carotenoids are deeply pigmented fruits, vegetables, and juices. While various colorful fruits and vegetables provide the majority of α -carotene and β -carotene such as α -cryptoxanthin from orange fruits, lutein from dark green vegetables, and tomato and lycopene from tomato products. Furthermore, vitamins are vital nutrients that promote healthy metabolism, and cell development, and help in the production of other biomolecules. On the other hand, several disorders such as diabetes, cancer, and inflammation can be managed with the application of carotenoids. It also imparts and improves digestive activity and can work as an antioxidant, immunity enhancer, antiaging, and improve eye and skin health. Carotenoids derived from microbial sources such as *Haematococcus pluvialis*, *Phaffia rhodozyma*, and *Undaria pinnatifida* have been reported for their nutraceutical activity as well as for the development of functional foods. Microbial-derived carotenoids demonstrated wider applications as natural food additives in the form of lycopene and β carotene. Furthermore, recently, the use of these bioactive compounds has been proven to be emerging applications in pharmaceutical, nutraceutical, and cosmetics. This chapter also discussed in brief the extraction of microbial carotenoids and various parameters involved in the production of carotenoids such as substrate concentration, agitation, and aeration rate.

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