

Present Condition and Observations on Carotenoid Research

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Summary

Carotenoids are yellow to red isoprenoid polyene pigments; approximately 750 carotenoids are known from bacteria, fungi, plants, and animals.

They occur not only as free forms but also as esters, glycosides, sulfates and carotenoproteins.

The most important metabolic products of carotenoids are the retinoids, and the metabolic reactions of carotenoids are essentially oxidative.

However, pathways of reductive metabolism have recently been discovered, and this has opened up the possibility that some xanthophylls could be precursors of retinoids. A recent discovery of antitumor activity in carotenoids, such as vitamin A and β -carotene, has brought attention to carotenoids.

Findings on carotenoid biosynthesis genes and the encoded enzymes have rapidly been extended since 1990. Accordingly biotechnology on carotenoids has been carried out.

On the other hand, sufficient intake of carotenoid-rich vegetables such as carrot, spinach, tomato and orange has been reported to prevent various diseases, especially life style related diseases.

Preventive effects for cancer, atherosclerosis, antiallergy effects and delayed effect on age-related phenomena have been studied extensively.