

Title Differences in absorption efficiency between alfa- and beta-cryptoxanthin from carrot leaves and papaya fruit

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Abstract

The carotenoids xanthophylls (such as lutein) and zeaxanthin have gained increasing interest in recent years because of their positive health effects, such as in the prevention of eye diseases, age-related macular degeneration and cataract formation. They are not considered to be provitamin A active, but act by absorbing blue light which damages the retina and by enhancing the antioxidative status of the environmental tissues. As far as we know, there has been no study that directly compared the lutein and zeaxanthin plasma levels reached after consumption of a formulated product. Therefore, the objective of our study was to investigate the absorbance efficiency of the monohydroxylated counterparts of lutein and zeaxanthin; α - and β -cryptoxanthin. A corn-oil based diet comprising β -cryptoxanthin from papaya puree and α -cryptoxanthin from green carrot leaves was fed to female Wistar rats for eight consecutive days, at a rate of 17.3 nmol and 9.2 nmol per day, respectively. The identity of the xanthophylls in the supplement was confirmed by mass spectroscopy [LC-(APCI)MS] analyses, and xanthophylls present in liver and plasma samples were determined by high pressure liquid chromatography. The β -cryptoxanthin concentrations of rat livers of the treatment group were statistically distinguishable from those present in livers of the control group that were fed a basic diet. α -Cryptoxanthin, the second xanthophyll present in the supplement, was not found in the rat livers of the treatment group. Plasma samples were free of xanthophylls. This is the first report proving that β -cryptoxanthin has higher absorption efficiency than α -cryptoxanthin in rats.