Natural better than Synthetic AX against skin cancer abstract Rao 2013

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Effective inhibition of skin cancer, tyrosinase, and antioxidative properties by astaxanthin and astaxanthin esters from the green alga Haematococcus pluvialis.

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Abstract

Astaxanthin mono- (AXME) and diesters (AXDE) were characterized and examined for anticancer potency with total carotenoids (TC) andastaxanthin (AX) against UV-7,12-dimethylbenz(a)anthracene (DMBA)-induced skin cancer model in rat. At 200 μg/kg bw, AXDE and AXME reduced UV-DMBA-induced tumor incidences up to 96 and 88%, respectively, when compared to AX (66%) and TC (85%). UV-DMBA has been known to generate high levels of free radicals and tyrosinase enzyme, leading to characteristic symptoms of skin pigmentation and tumor initiation. Intriguingly, ~7-fold increase in tyrosinase and 10-fold decrease in antioxidant levels were normalized by AXDE and AXME as opposed to only ~1.4-2.2-fold by AX and TC, respectively. This result together with the appearance of 72 and 58 ng/mL of retinol in the serum of respective AXE-treated (AXDE + AXME) and AX-treated animals suggested that better anticancer potency of AXEs could be due to increased bioavailability.

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