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## Dietary tomato paste protects against ultraviolet light-induced erythema in humans.

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### Abstract

Carotenoids are efficient antioxidants capable of scavenging reactive oxygen species generated under conditions of photooxidative stress. It has been shown that supplementation with high doses of beta-carotene protects skin against UV-induced erythema. This study was designed to investigate whether intervention with a natural dietary source rich in lycopene protects against UV-induced erythema in humans. Tomato paste (40 g), providing approximately 16 mg/d of lycopene, was ingested with 10 g of olive oil over a period of 10 wk by 9 volunteers. Controls (n = 10) received olive oil only. Erythema was induced by illumination of dorsal skin (scapular region) with a solar simulator at the beginning of the study, after 4 wk and after 10 wk. Intensity of erythema was measured by chromatometry; the a-value was determined directly before and 24 h after irradiation. Serum carotenoid levels were measured by HPLC. At the beginning of the study, carotenoid levels did not differ between the two groups. Serum levels of lycopene increased in supplemented subjects; the other carotenoids did not change significantly, and no change in serum carotenoids was observed in the control group. At wk 10, dorsal erythema formation was 40% lower in the group that consumed tomato paste compared with controls (P = 0.02; Wilcoxon-Mann-Whitney test). No significant difference between groups was found at wk 4 of treatment. The data demonstrate that it is feasible to achieve protection against UV light-induced erythema by ingestion of a commonly consumed dietary source of lycopene.

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