

Contact allergy to vitamin E capsules: false-negative patch tests to vitamin E?

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Vitamin E (α -tocopherol) is in widespread use in many cosmetic preparations and pure vitamin E oil is applied for its purported antioxidant and "anti-aging" effects.

Case Report

A 17-year-old student applied the contents of a "pure vitamin E" capsule to a laceration on her face. 24 h later, she noted erythema and edema of her entire face. She had noted similar skin reactions to various facial moisturizers, all of which were labelled as containing tocopheryl acetate. Patch testing to the NACDG standard series, d,l- α -tocopherol 4% pet., the contents of the vitamin E capsule labelled as containing d,l- α -tocopheryl acetate, and the offending cosmetics containing tocopheryl acetate was negative at both 2 and 4 days. A ROAT with the contents of the vitamin E capsule was performed after the 2-day patch test reading. Within 24 h of its application to her left forearm, the patient noted a non-pruritic, spreading rash at the site of application, similar to that she had experienced with the vitamin E capsule and cosmetics. At the time of the 4-day patch test reading, a fine papular eruption was noted at the site of the ROAT.

Discussion

Topical vitamin E has been shown to be a contact allergen in numerous case reports (1–6). 2 cases of erythema-multiforme-like eruptions and positive patch tests to d,l- α -tocopheryl acetate in vitamin E oil and cream were reported by Saperstein et al. (2). Goldman & Rapaport (3) described allergic contact dermatitis with positive patch tests to "pure vitamin E" oil. De Groot et al. (4) reported contact dermatitis with positive patch tests to tocopheryl acetate in cosmetic creams. Most cases we reviewed were patch test positive to d,l- α -tocopherol or d,l- α -tocopheryl acetate (1–4, 6). Aeling et al. (6) reported 3 patients with dermatitis following the use of vitamin E aerosol deodorant. All 3 had positive patch tests to d,l- α -tocopherol; however, 2 of the 3 had negative patch test to d,l- α -tocopherol acetate in capsule form at 2 days. Readings beyond 2 days were not reported.

The various isomers of vitamin E may yield different patch test results. Roed-Petersen & Hjorth (7) reported a patient with positive patch tests to d,l- α -tocopherol which did not extend to any of the other isomers or esters of tocopherol. Our patient reacted negatively to both the d,l- α -tocopherol 4% and the d,l- α -tocopheryl acetate. Cronin (8) suggested d,l- α -tocopherol 20% pet. for patch testing.

Correspondence with the manufacturer revealed the vitamin E capsule to be composed of d,l- α -tocopheryl

acetate, soybean oil, gelatin, and glycerin. There are reports of allergic contact dermatitis from glycerin as glycerol (9) and to maleated soybean oil (10). Each of the patient's offending cosmetics contained glycerin, as well as tocopheryl acetate, but none contained soybean oil or gelatin. We cannot exclude allergic contact dermatitis from the soybean oil, gelatin, or glycerin in the vitamin E capsule. Recently, a Swiss line of cosmetics containing tocopheryl linoleate was associated with an outbreak of papular and follicular dermatitis, which was felt to be both allergic and irritant (11).

We also cannot exclude the possibility of photocontact dermatitis from vitamin E in our patient. The locations of the patient's prior skin reactions to vitamin E and the ROAT were both on sun-exposed skin, whereas the patch tests were on non-sun-exposed skin. Another explanation for our results may be the large surface area exposed to allergen in cosmetic use, and ROAT versus the smaller surface area of the Finn Chamber (12).

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