

Letter to the Editor

Allergic contact dermatitis caused by bis-diglycerylpolyacyladipate-2 (Softisan® 649) owing to its 12-hydroxystearic acid content

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Dear Sir,

Du-Thanh et al. recently published in *Contact Dermatitis* what they described as the first reported patient with allergic contact dermatitis caused by bis-diglycerylpolyacyladipate-2 (Softisan® 649) and postulated that it may be an 'emerging allergen' (1).

A previous report (2) described a 34-year-old man with allergic contact dermatitis caused by a lip balm containing 4% bis-diglycerylpolyacyladipate-2 and 7% 12-hydroxystearic acid, and an antiperspirant deodorant containing hydrogenated castor oil. Patch testing was positive with bis-diglycerylpolyacyladipate-2 at 5% pet. and with 99.7% pure 12-hydroxystearic acid in serial dilution patch testing from 10% to 0.001% pet. There were also positive patch test reactions with ricinoleic acid from 10% to 0.1% pet., castor oil 100%, and hydrogenated castor oil 10% and 1% pet.

Bis-diglycerylpolyacyladipate-2 (CAS 130905-60-1) is an ointment base and lanolin substitute (3). It is a partial ester of diglycerin with several fatty acids, including 10–30% adipic acid, 20–50% stearic acid, 5–10% 12-hydroxystearic acid, and 1–10% each of caprylic, capric, palmitic and isostearic acids (concentrations as per personal communication with Sasol Germany GmbH, 29 May 2011). Patch testing in our patient was negative with glycerin and with capric, palmitic and stearic acids. Thus, our patient's patch test reaction to bis-diglycerylpolyacyladipate-2 can be explained by the 12-hydroxystearic acid that it contains.

12-Hydroxystearic acid (12-OH, C18:0) is the principal fatty acid in hydrogenated castor oil, and ricinoleic

acid (12-OH, C18:1, ω 9cis) is the principal fatty acid in castor oil. As recently summarized (2), there are multiple reports of allergic contact dermatitis caused by ricinoleic acid and castor oil, whereas there are fewer reports of allergic contact dermatitis caused by 12-hydroxystearic acid (2, 4) and hydrogenated castor oil (2, 5, 6).

Bis-diglycerylpolyacyladipate-2 (Softisan® 649) has been proposed as a patch test vehicle (7). Starting in 2009, Chemotechnique Diagnostics® (Vellinge, Sweden) changed its benzyl alcohol patch test material from its previous 1% pet. to its current 10% in Softisan® 649. Anise alcohol 10% was newly added in the same vehicle and Softisan® 649 was made available as a vehicle control. This new vehicle was used because these concentrations of benzyl alcohol and anise alcohol are not fully miscible in pet. Lower concentrations of benzyl alcohol and anise alcohol may yield false-negative patch test reactions (M. Bruze, Department of Occupational and Environmental Dermatology, Skåne University Hospital, Lund University, Malmö Sweden, and B. Niklasson, Chemotechnique Diagnostics, 29 June 2011, personal communication).

The authors of the recent paper (1) suggest that bis-diglycerylpolyacyladipate-2 might be an 'emerging allergen'. In any patient allergic to bis-diglycerylpolyacyladipate-2, it would be informative to perform patch tests with its constituent fatty acids, especially 12-hydroxystearic acid, in order to confirm if the latter is the actual underlying allergen, as it was in our patient (2). This distinction is important because of the common use of 12-hydroxystearic acid and other castor oil-derived ingredients in skin care and other types of products.

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