

A case of allergic contact dermatitis to polyglyceryl laurate

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Polyglyceryl laurate is a non-ionic surfactant that is widely used in cosmetics such as cleansing oil, shampoo, moisturizing lotion, and essence. To our knowledge, this is the first report of allergic contact dermatitis because of polyglyceryl laurate in the essence.

Case Report

An 80-year-old woman experienced recurring pruritic erythema on her face for 3 months. She was treated with steroid ointment, but her condition gradually became worse, and she therefore visited our hospital on 10 February 2005. We suspected contact dermatitis. Using Finn Chamber[®] (Epitest Ltd Oy, Tuusula, Finland) and Scanpor[®] tape (Alpharma AS, Norgesplaster Facility, Vennesla, Norway), we performed 48-hr closed patch testing with the cosmetics that she had been using. Readings were made at 1 hr and 1 D after removal according to International Contact Dermatitis Research Group (ICDRG) recommendations. She showed a positive reaction (++) to the essential gel (as is). Further patch testing was performed with all ingredients of the essential gel.

She exhibited a positive reaction (+) to polyglyceryl-10 laurate 0.5%aq., and this positive reaction remained positive after 7 days. A 3rd patch test was performed with polyglyceryl-10 laurate (1%, 0.5%, 0.1%, and 0.05%aq.), and she exhibited positive reactions (+) to all concentrations tested.

After 6 months, a 4th patch test was performed using polyglyceryl laurate produced by several manufacturers, as we did not know which manufacturer produced the polyglyceryl-10 laurate in the essential gel the patient had been using.

She showed positive reactions (+) to polyglyceryl-10 laurate from manufacturer A, manufacturer B (1%, 0.5%, 0.05%, and 0.01%aq.) and polyglyceryl-10 laurate from manufacturer C (1% and 0.5%aq.). We then performed patch testing with polyglyceryl-4 laurate and polyglyceryl-6 laurate from manufacturer C (1% and 0.5%aq.), and she exhibited positive reactions (+) to both as well. She exhibited negative reactions to polyglyceryl-10 myristate, polyglyceryl-10 isostearate, polyglyceryl-10 stearate, and polyglyceryl-10 oleate (1%, 0.5%, 0.05%, and 0.01%aq.).

The 7 control materials tested gave negative reactions. The dermatitis cleared after the patient ceased using the essential gel. We thus concluded that our patient had developed allergic contact dermatitis against the polyglyceryl laurate present in the essential gel.

Discussion

In the present case: (i) patch testing confirmed a positive reaction to polyglyceryl laurate, while 7 controls gave negative reactions; (ii) the results of patch testing were reproducible; (iii) polyglyceryl laurate from several manufacturers gave similar positive reactions; and (iv) dermatitis was alleviated after the patient stopped using the essential gel. We thus diagnosed allergic contact dermatitis to polyglyceryl laurate.

Polyglyceryl laurate is made from glycerin polymer and lauric acid, and readily undergoes alterations during the polymerization process, fatty acid chain length, and esterification. It is a non-ionic surfactant that is widely used in cosmetics because of its moisturizing and emulsifying properties, as well as its cleaning effects (1, 2).

Polyglyceryl fatty acid esters are produced by esterification of glycerin and various natural compounds. It is thus considered to have outstanding safety features. It is widely used in the food industry as a food additive in whipped cream, margarine, chocolate, and lactic acid drinks because of its emulsifying properties effects. In the present case, the patient rarely ate

foods containing polyglyceryl laurate, and this is a 1st occurrence of eruptions on the face; we thus concluded that this patient had been sensitized via the skin.

References

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