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Letter to the Editor

Two cases of allergic contact dermatitis due to skin-whitening cosmetics



Dear Editor

Skin whitening cosmetics are used commonly in the Asia where their popularity is explained by the esthetic value often placed on light-colored skin. Their widespread use has led to the emergence of a number of cases of contact dermatitis, apparently due to an allergic response to the Vitamin C derivatives, hydroquinone, kojic acid, or arbutin, which inhibit tyrosinase activity. We herein present two cases of allergic contact dermatitis attributed to the use of oil-soluble licorice extracts and 3-o-ethyl ascorbic acid.

Case 1: A 76-year-old Japanese woman presented with a four-month history of erythema around the eyelids. She had begun using cosmetic creams to treat the pigment macules on her face in September, 2013. The symptoms appeared in November. The patient discontinued use of the whitening products in December, and visited our hospital on January 31, 2014. Clinical examination revealed infiltrative erythema accompanied by slight pruritus on the face, mostly around the eyelids and cheek, which still persists (Fig. 1a). We suspected contact dermatitis due to an allergic response to a cosmetic cream. Patch tests were conducted using Finn Chambers[®] on Scanpor[®] tape and the reactions were read on D2, D3 and D7 in accordance with the International Contact

Dermatitis Research Group (ICDRG) criteria. A positive reaction to a cosmetic cream used by the patient was observed (D7, +), and repeated open application tests (ROAT) resulted in erythema (Fig. 1b). Subsequent patch tests with the ingredients of this cream narrowed down the positive reaction to oil-soluble licorice extract 1% aq (D3, +; D7, +) (Fig. 1c).

Case 2: A 51-year-old Japanese woman presented with an 18 month history of erythema and scales on her face and neck. She had been treated with steroid ointment and improved although the eruptions later recurred. Possible diagnoses included allergic contact dermatitis, photo-contact allergy due to cosmetics, and photosensitivity disorder. A patch test showed a positive reaction to the cosmetic lotion used by the patient (D2, +; D3, +; D7, +) (Fig. 2a, b). The photo-patch test was negative. The minimal erythema dose (MED) and minimal response dose (MRD) were both within the normal range. Additional patch testing with the ingredients of the cosmetic produced a positive reaction to 3-o-ethyl-ascorbic acid 1% aq. (D3, +; D7, +) (Fig. 2c).

In our cases, no leukoderma was observed even after using the cosmetics.

Oil-soluble licorice extract and 3-o-ethyl-ascorbic acid, the ingredients thought to be the causative factors in our cases, inhibit

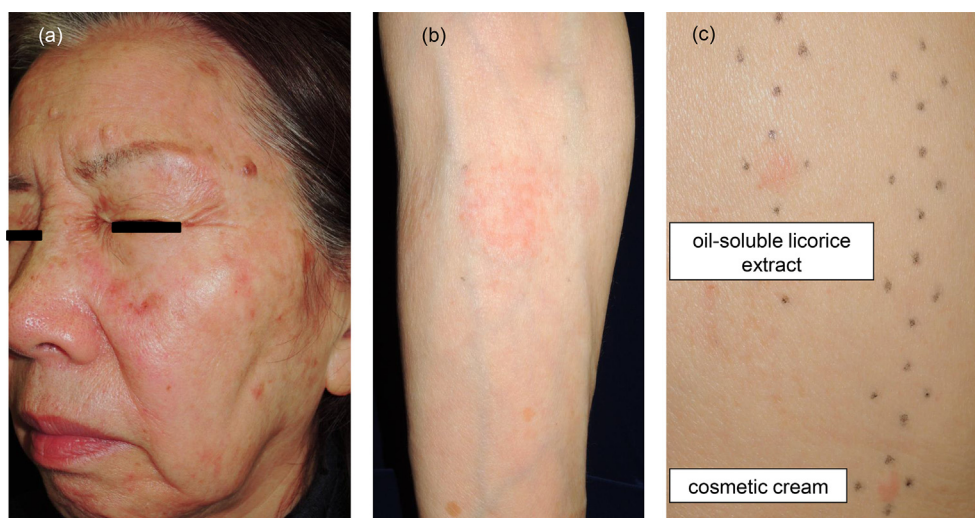


Fig. 1. (a) Infiltrative erythema with mild pruritus was seen on the face, mostly around the eyelids and cheek. Permission was obtained from the patient. (b) The repeated open application test resulted in erythema. (c) A positive reaction to the cosmetic cream and oil-soluble licorice extract 1% aq. was observed (Day 3).

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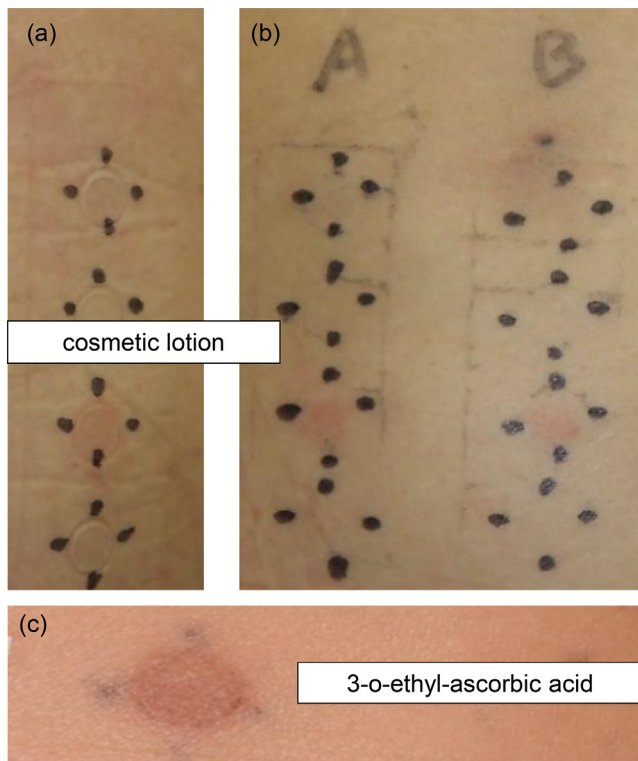


Fig. 2. (a,b) A positive reaction to the cosmetic lotion was observed. The photo-patch test produced the same erythema as the patch test, indicating a negative result (Day 2). (c) Additional patch-testing revealed a positive reaction to 3-o-ethyl-ascorbic acid 1% aq. (Day 3).

production of melanin within the melanocyte via inhibition of tyrosinase activity.

Although extract of licorice is available in water-soluble and oil-soluble versions, the latter version, of which the main component is glabridin, is more popular as an ingredient of facial cosmetics in Asia. The oil-soluble licorice extract examined in our study was diluted to a concentration of 5% in 1,3-butylene glycol.

The clinical evaluation of oil-soluble licorice extract-containing cream reported in 1995 found that only one out of 60 patients

who performed a patch test showed a positive reaction to this ingredient.¹ Thus far, only four cases of allergic contact dermatitis caused by oil-soluble licorice extract, including our case, have been reported in the literature.^{2,3} Similarly, with the exception of the present case, there is only one previous report of contact allergy due to 3-o-ethyl ascorbic acid.⁴ Although conventional vitamin C-derivatives bring about their skin-lightening effect by changing to ascorbic acid in the skin, 3-o-ethyl ascorbic acid produces its anti-oxidative activity while maintaining the integrity of its structure.

Skin-whitening agents are mostly thought to be safe, but there are some reported cases of allergic contact dermatitis due to the ingredients of these agents. Therefore, it is important to use patch tests to identify the ingredients which are responsible for the symptoms.

Conflict of interest

The authors have no conflict of interest to declare.

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