

LETTER TO THE EDITOR

Allergic contact dermatitis due to neem oil: A case report and mini-review

Dear Editor,

Neem oil is derived from the seeds of the neem tree (*Azadirachta indica*, family Meliaceae), a tall evergreen growing in warm areas such as India. This oil has been considered to exhibit various effects in traditional medicine of India. With the increasing preference for organic products, the effects of neem oil have been globally recognized. We report a rare case of allergic contact dermatitis due to neem oil, along with a published work review.

A 29-year-old woman, who had atopic dermatitis, applied neem oil (Fig. S1a) to facial acne. Erythema accompanied by pruritus appeared on the face 2 weeks after the initiation of application. The skin symptoms improved after topical steroid application. Allergic contact dermatitis was suspected, and patch testing was performed with neem oil (as is) and cosmetics, and with Japanese standard allergen series. The results of the patch tests were determined on days 2, 3 and 7 according to the guidelines of the International Contact Dermatitis Research Group. Positive reactions (++) to neem oil (Fig. S1b–d) and (+) to the thiuram mix were detected. No rubber products such as puffs had been used for the face. Patch test reactions to the other materials were negative. In three healthy controls, the patch tests showed negative reactions to neem oil (as is and 10% pet.). Two previous reports have shown that

patch test reactions to neem oil (as is) were negative in five and eight control subjects, respectively.^{1,2} Based on these results, a diagnosis of allergic contact dermatitis due to neem oil was made. The patient had not previously used neem oil. Therefore, sensitization to neem oil might have occurred while she used the oil for 2 weeks. The patient was instructed to avoid direct contact with neem oil, and there has been no recurrence of skin symptoms.

Only five cases of allergic contact dermatitis due to neem oil have been reported previously in the published work (Table 1).^{1–5} In these cases, neem oil had been used for the treatment of acne, psoriasis, alopecia areata, eczema or dry skin. The duration from the start of use to the onset of eruption was between several days and 2 months, suggesting that the sensitization to neem oil can be established in a short term. Neem oil contains at least 100 biologically active compounds. The allergen in neem oil is unknown. Because there is a case report with both positive reactions to neem oil and argan oil,¹ the possible allergens are triterpenoid compounds and phenols which are contained in both oils. With the recent increase in the demand for organic products, cosmetics, creams, hair oils, soaps, shampoos and toothpastes containing neem oil are commercially available not only in India but also throughout the world. Therefore, clinicians should consider that neem oil can

Table 1. Case reports of allergic contact dermatitis due to neem oil

Age/ sex	Location of contact dermatitis	Purpose of using neem oil	Duration from the start of use to the onset of eruption	Patch test reactions at 72 or 96 h according to ICDRG (dilution)	Other items with positive patch test reactions	Reference
56/F	Right breast and arm	Treatment for furuncle of the right breast	Several days	++ (as is)	–	1
30/F	Neck	Treatment for psoriasis of the scalp	Several days	++ (as is)	Argan oil, argan perfume and <i>Mimosa tenuiflora</i>	2
27/F	Scalp and face	Treatment for alopecia areata of the scalp	1 week	+++ (as is)	Imidazolidinyl urea	3
66/M	Hands, arms and legs	Treatment for dry skin of hands, arms and legs	2 months	++ (as is)	Sodium metabisulfite and ketoconazole c ream	4
32/F	Face	Treatment for atopic dermatitis of the face	1 month	++ (10% pet.)	–	5
29/F	Face	Treatment for acne of the face	2 weeks	++ (as is)	Thiuram mix	Our case

ICDRG, International Contact Dermatitis Research Group.

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be a new possible cause in allergic contact dermatitis occurring in the individuals who use organic products. Further studies are required to clarify the allergens in neem oil and the optimal concentrations in patch testing.

CONFLICT OF INTEREST: None declared.

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SUPPORTING INFORMATION

Additional Supporting Information may be found in the online version of this article:

Figure S1. (a) The patient's bottle of neem oil and patch test reactions of neem oil (as is) at (b) 48 h, (c) 72 h and (d) 1 week.