

Allergic contact dermatitis of head and neck by propolis contained in a shampoo

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Case report

A 42-year-old woman was referred to our Contact Eczema Department with head and neck eczema lasting 6 months. The patient had initially been diagnosed with atopic dermatitis of a head and neck pattern. However, treatment with topical methylprednisolone aceponate 0.1% cream did not improve eczema. Subsequently the patient was treated for 2 weeks with prednisone (1 mg/kg/day) and bilastine 20 mg per day, also without improvement. Re-interviewing the patient the focus was put on cosmetic products, and she reported the use of a new shampoo (Propo-mel shampoo, NadiPrana, Tarragona, Spain) in the last 8 months and intense pruritus after the use of the shampoo. Nevertheless, she continued using it as she considered it as a natural and harmless product. The patient denied digestive symptoms related to the consumption of honey.

Physical examination showed subacute eczema located in the head and neck (Figure 1A), with more marked desquamation on the eyelids (Figure 1B), and erythematous and edematous confluent papules and plaques on the neckline (Figure 1C). Blood tests were all within normal results. Patch tests were performed with the European comprehensive baseline series (Chemotechnique Diagnostics, Vellinge, Sweden), a cosmetic series (Chemotechnique Diagnostics), and caffeic acid phenyl ester 1% pet. (Sigma-Aldrich Sweden, Stockholm). The results were interpreted according to the criteria of the

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International Contact Dermatitis Research Group. Patch tests were read on day (D) 2 and D4. The patient showed positive patch test reaction to propolis 10% pet. and to caffeic acid phenyl ester 1% pet.

Allergic contact dermatitis caused by propolis present in the shampoo was diagnosed. Shampoo change was prescribed. Complete clearance of the lesions was achieved within 6 weeks, and no recurrence observed in 3 months follow-up.

Discussion

Propolis is a product made by bees. The prevalence of positive patch test reactions to propolis has reached 1.9-3.5% according to the literature. The composition of propolis varies depending upon the source plant, that is, the local flora. Although more than 300 constituents have been identified, it normally composed of 30% wax, 50% resins and balsams, 10% essential oils and 5% pollen plus cinnamic alcohol and flavonoids. The antiseptic, anti-inflammatory, astringent, spasmolytic, and anaesthetic properties, among others, have provoked the widespread use of propolis in medicinal preparations and cosmetical products. Propolis is known as an occupational contact allergen mainly in beekeepers, musicians, and manufacturers of stringed musical instruments. Nowadays, however, the main risk group is the general population applying biocosmetics and biopharmaceutical products.

Several studies have been published regarding the strong sensitization capacity of propolis (1). The allergens with the greatest sensitizing power presented in propolis are the esters of caffeic acid (phenylethyl caffeate and methylbutenyl cafeate). Beeswax and propolis may be considered different products, although sometimes they are referred to as the same substance. Beeswax is commonly used in cosmetic formulation like lipsticks, or in ointments and creams, in coatings of modified-release oral preparations, and occasionally to adjust the melting point of suppositories. Propolis can be present in beeswax as an impurity, and contact sensitization to beeswax be a consequence of contamination with propolis.

Cheilitis (2) has been reported as the most frequent form of clinical involvement, caused by the use of toothpastes, lipsticks or lip balms, powders, chewing gum, mouthwashes, and “natural” intraoral remedies. The hands are usually also involved. However, other sources of exposure, such as in the case reported, must also be investigated. Infrequent forms of presentation such as erythema multiforme-like have also been described (3), as well as maculo-papular rashes caused by oral intake of propolis (4).

Patch tests are essential to confirm the suspicion of allergic contact eczema to propolis. Cross-sensitization to *Myroxylon pereirae*, fragrance mix I, and colophonium is frequent owing to shared constituents.

Head and neck dermatitis pattern can be observed in adult patients with atopic dermatitis, but it can also be observed in allergic contact eczema related to the use of shampoo. It is essential to investigate the use of cosmetics and personal care products.

Nyman et al (5) recently published a study on allergic contact eczema to propolis, mainly in patients with lip and facial dermatitis. They highlighted that sensitisation to

yellow beeswax is more common than to white beeswax. Through mass spectrometry they showed a higher concentration of caffeic acid phenethyl ether and caffeic acid 1,1-dimethylallyl ester in yellow beeswax, compared to propolis. Thus, they described the relationship between yellow beeswax and propolis regarding important allergens.

In the light of the results obtained in our patient, we present a new case of allergic contact dermatitis to propolis. The use of cosmetic products of natural content (biocosmetics), such as propolis, has grown exponentially in recent years. The marketing of natural cosmetics can confuse the patient, making them believe that these products are harmless and not sensitizing. Moreover, eczema may show patterns that are suggestive of incorrect diagnoses, such as adult atopic dermatitis.

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References

1. Hausen BM, Wollenweber E, Sneff H, Post B. Propolis allergy (II). The sensitizing properties of 1,1-dimethylallyl caffeic acid ester. *Contact Dermatitis* 1987;17(3):71-7.
2. Nyman G, Hagvall L. A case of allergic contact cheilitis caused by propolis and honey. *Contact Dermatitis* 2016;74(3):186-7.
3. Lamoureux A, Meharon M, Durand AL, Darrigade AS, Doutre MS, Milpied B. A first case of erythema multiforme-like contact dermatitis caused by propolis. *Contact Dermatitis* 2017;77(4):263-4.
4. Komericki P, Kränke B. Maculopapular exanthema from propolis: case report and review of systemic cutaneous and non-cutaneous reactions. *Contact Dermatitis* 2009;61(6):353-5.
5. Nyman GSA, Tang M, Ineot A, Osmancevic A, Malmberg P, Hagvall L. Contact allergy to beeswax and propolis among patients with cheilitis or facial dermatitis. *Contact Dermatitis* 2019;81(2):110-6

Figures

Figure 1. (A). Head and neck dermatitis. (B). Eyelids eczema. (C). Erythematous-edematous confluent papules and plaques on the neckline. (D). Propolis shampoo (Propo-mel shampoo, NadiPrana, Tarragona-Spain).

