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# Propolis: Is it harmless to the extent that it is natural?

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### Abstract:

Propolis is a resinous substance produced from tree buds and bark, digested by bees, and is mainly composed of resins, wax, pollen, and essential oils. Propolis is used in traditional medicine due to its anti-inflammatory, antioxidant, antiseptic, and local anesthetic properties. The increase in the use and popularity of propolis-containing products coincides with a linear increase in the incidence of propolis-related allergic contact dermatitis. In this report, we present a case of local allergic contact dermatitis that developed after local propolis application for wound care in a 69-year-old male patient.

### Keywords:

Allergy, contact dermatitis, propolis, wound care

## Introduction

Propolis is a resinous substance obtained from tree buds and bark, and digested by bees. It consists mainly of resins, wax, pollen, and essential oils. Due to its antiseptic, anti-inflammatory, and antioxidant properties, propolis has attracted the attention of manufacturers in medical, cosmetic, and hygiene product sectors.<sup>[1]</sup> It has been used to treat wounds, psoriasis, atopic dermatitis, aphthous ulcers, warts, and herpes.<sup>[2]</sup> This increased use has led to a rise in the frequency of allergic contact dermatitis caused by propolis.<sup>[1]</sup> Here, we present a case of allergic

contact dermatitis that developed after local propolis application for wound care.

## Case Report

A 69-year-old male patient developed an abrasion on the extensor surface of his right leg and repeatedly applied a cream containing *Triticum vulgare* aqueous extract, silver sulfadiazine, and propolis to the abraded area. However, in the following days, instead of healing, itching and redness developed in this area [Fig. 1]. The patient, whose complaints continued for two weeks, suspected that the itchy lesions were due to propolis and

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applied propolis to his wrist for testing purposes. On the second day following this application, similar lesions formed in this area [Fig. 2].

The patient had no known history of allergies. His findings were evaluated as compatible with propolis-related allergic contact dermatitis by the dermatology clinic. He was started on local treatment with betamethasone and fusidic acid, oral 0.5 mg/kg/day methylprednisolone, and oral antihistamine treatment. Following the initiation of treatment, the patient experienced a rapid clinical response, and his complaints resolved.

## Discussion

Propolis is used in traditional medicine due to its anti-inflammatory, antioxidant, antiseptic, and local anesthetic properties.<sup>[3]</sup> The increase in the use of products containing propolis parallels the increase in the incidence of propolis-related allergic contact dermatitis. Among the more than 300 components it contains, caffeic acid esters (phenylethyl caffeate and 3-methyl-2-butenyl caffeate) have been associated with hypersensitivity to propolis.<sup>[4,5]</sup>

Patch tests are used to confirm the suspicion of propolis-induced contact eczema.<sup>[6]</sup> Patch tests were applied to

17,784 patients at the Allergology Polyclinic of the Department of Dermatology, Venereology, and Dermatocology at Semmelweis University between 1992 and 2021. In this study, the propolis sensitivity rate was found to be 2.6%.<sup>[7]</sup> In another study, patch test reactions for any propolis type ranged between 1.3% and 5.8%.<sup>[8]</sup> However, clinicians need to be aware that cross-sensitivity, fragrance mixture I, and colophony are frequently observed against propolis and *Myroxylon pereirae* due to common components.<sup>[6]</sup> Contact allergy to propolis has been reported in individuals with occupational exposure in the past, but most current cases result from the topical application or oral use of propolis-containing products.<sup>[9]</sup> Ingested propolis is associated with allergic contact cheilitis, stomatitis, perioral eczema, lip edema, mouth pain, and shortness of breath.<sup>[5]</sup>

Propolis can be found in materials frequently used in daily life, such as creams, shampoos, and toothpaste. Since it is considered natural and harmless by users, it can be used excessively without control. However, it should be used with caution as it causes hypersensitivity reactions. This case is presented to raise awareness that natural products can also cause undesirable side effects.



Figure 1: Lesions on the leg surface at the time of admission



Figure 2: Area of propolis application on the patient's wrist

## Informed Consent

Written informed consent was obtained from the patient for the publication of the case report and the accompanying images.

## Conflicts of interest

There are no conflicts of interest.

## Financial support and sponsorship

Nil.

## Peer-review

Externally peer-reviewed.

## Authorship Contributions

Concept – H.Ç.T., F.D.Ç., M.Y., O.T., Ö.A., K.A.; Design – H.Ç.T., F.D.Ç., M.Y., O.T., Ö.A., K.A.; Supervision – H.Ç.T., F.D.Ç., M.Y., O.T., Ö.A., K.A.; Funding – H.Ç.T., F.D.Ç., M.Y., O.T., Ö.A., K.A.; Materials – H.Ç.T., F.D.Ç., M.Y., O.T., Ö.A., K.A.; Data collection &/or processing – H.Ç.T., F.D.Ç., M.Y., O.T., Ö.A., K.A.; Analysis and/or interpretation – H.Ç.T., F.D.Ç., M.Y., O.T., Ö.A., K.A.; Literature search – H.Ç.T., F.D.Ç., M.Y., O.T., Ö.A., K.A.; Writing – H.Ç.T., F.D.Ç., M.Y., O.T., Ö.A., K.A.; Critical review – H.Ç.T., F.D.Ç., M.Y., O.T., Ö.A., K.A.

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