

Cheilitis due to olive oil

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According to the literature, allergic contact dermatitis caused by olive oil is rare. Despite frequent patch testing with olive oil in a topical medicaments series (117 patients in 2007), we report the third patient since 1981 in whom we have found a relevant contact allergic reaction to olive oil (1, 2).

Case Report

A 66-year-old man presented with a 12-month history of cheilitis and palmar eczema, which both started at approximately the same time. He had worked as a plumber for 40 years. His cheilitis was treated with a mixture of 30% cera alba and 70% olive oil and his hands with a corticosteroid ointment. He was patch tested with the European baseline series (Trolab-Hermal, Reinbek, Germany) and supplementary allergens including spices, in Van der Bend square chambers (Brielle, the Netherlands) on Fixomull stretch (BSN, Almere, the Netherlands) with 2-day occlusion. Readings were performed on D2 and D3. There were positive reactions to *p*-phenylenediamine, rubber additives (isopropylaminodiphenylamine, diphenyl-*p*-phenylenediamine, 1,3-diphenylguanidine, *N*-cyclohexyl-2-benzothiazyl sulfenamide, *N*-isopropyl-*N'*-phenyl-*p*-phenylenediamine, and phenylcyclohexyl-*p*-phenylenediamine). Avoidance of rubber products at work caused improvement of his hand eczema. However, his cheilitis showed no improvement on avoidance of rubbers and even extended periorally.

Having excluded lip-licking cheilitis and transfer of rubber allergens from his hands, we needed to exclude further contact allergies as possible causative factors. He was further tested with fragrances and flavours and ingredients of topical medicaments. He showed a positive reaction to clove

oil (D2: – and D3: +), olive oil (pharmaceutical grade) (D2: – and D3: +), and jasmine absolute. (D2: ++ and D3: ++). We advised him to avoid clove oil and fragrances (jasmine).

As contact dermatitis to olive oil is considered rare, he was rested to olive oil, sesame oil, arachis oil, and sunflower oil. The pharmaceutical grade olive oil and his cooking olive oil (Carbonelli® extra vierge) gave positive reactions (+) on D2 and D3. The reaction to olive oil was considered relevant as during the previous year his son, who did the cooking at home, had been using olive oil. We advised him to stop the topical therapy for the lips, which contained olive oil, and unprocessed olive oil in foods.

Discussion

Olive oil is a vegetable oil obtained from the fruit of the olive tree (*Olea europaea* L.). Reports of sensitization to olive oil are considered rare. Olive oil is used as a nutrient, as a constituent in pharmaceutical and cosmetic preparations, and as a vehicle for certain allergens in patch testing. According to The Merck Index (3), the major constituents of olive oil are identified as glycerines of oleic acid (83.5%), palmitic acid (9.4%), linoleic acid (4.0%), stearic acid (2.0%), and arachidic acid (0.9%). Minor constituents are squalene, up to 0.7%, phytosterol, and tocopherols around 0.2%.

The sensitizers in olive oil are not known. In 11 cases of contact allergy

to olive oil, all the patients had a positive reaction to olive oil, while none reacted to (parts of) the constituents of olive oil tested (1, 4). We did not perform patch tests with olive oil constituents in our patient. To gain more knowledge about the allergens, a fractioning of olive oil by thin layer chromatography and gas chromatography can be performed (5–7). The fractions can be isolated and used for patch testing. In 1975, Neering et al. (7) performed this for sesame oil.

As far as we know, there are 23 patients described in the literature (Table 1) since 1975. A summary of the literature shows that most patients are sensitized by topical treatment with or without occlusion, as in treatment for stasis eczema. Only a few occupational causes are described: pedicurist, masseur, pizza maker, beautician, and an aromatherapist (4, 8–11). Allergic contact dermatitis has also been reported from olive wood (12) in a woman who sold jewellery (bracelets and necklaces containing olive wood), which she demonstrated by wearing them herself.

The reason so few cases of olive oil allergy are described may be because individuals are exposed to olive oil through ingestion before handling it. In this way, tolerance might be induced. Another explanation may be that oxidation of unsaturated lipids may change olive oil into a non-sensitizer (13). Systemic allergic

Table 1. Contact allergy to olive oil described in the literature

Author (reference)	Patients	Diagnosis	Therapy under occlusion	Occupational
Joost van et al. (1)	1	Stasis dermatitis	Yes	—
	1	Dermatitis	No	—
Malmkvist et al. (4)	9	Stasis dermatitis	?	—
	1	Atopic dermatitis	?	—
	1	Hand and leg eczema	?	Pedicurist
	1	Hand eczema	No	Pedicurist
	1	Leg eczema	No	
Jung and Holzegel (14)	1	Stasis dermatitis	Yes	
Isaksson and Bruze (8)	1	Hand eczema	No	Masseur
Wong and King (9)	1	Hand eczema	No	Pizza maker
Boer de and Ketel van (2)	1	Dermatitis	No	
	1	Atopic dermatitis	No	
Kränke et al. (10)	1	Hand eczema	No	Beautician
	4	Irritative		
Williams and Tate (11)	1	Hand eczema and eczema on the face, arms, and thighs	No	Aromatherapist
Beukers et al. (2008)	1	Cheilitis	No	—

dermatitis could not be established by Isaksson et al. (8).

Besides allergenicity, irritancy has also been discussed (10). Kränke et al. tested 100 patients with olive oil. Five patients tested positive of which only one was allergic in nature. They concluded that olive oil is a mild irritant, especially when used under occlusion. However, olive oil is frequently used in patch testing as a vehicle and, although we regularly perform multiple tests with series of topical medicaments in which olive oil is a standard allergen (approximately 100 patients a year), this is only the third patient in our hospital tested positive for olive oil with relevance to their eczema (1, 2). In conclusion, the rare possibility of sensitization to olive oil must be taken into consideration especially if it is used as a topical ointment, especially under occlusion.

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