

Airborne contact dermatitis caused by microscopy immersion fluid containing epoxy resin

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Within 3 months of the introduction of a new microscopy immersion fluid, 3 microscopists developed occupational contact dermatitis.

Case Reports

Case no. 1

A 33-year-old medical genetics laboratory technician presented with an exposure-pattern eczema, which had been present for 1 month. This improved when she was off work and recurred within 4 h of her returning. She had no other skin diseases and was not atopic.

She had already been tested to the European standard series, topical corticosteroids and her own cosmetics, with strong positive reactions to epoxy resin, nickel and cobalt. Subsequently tested to cycloaliphatic epoxy resin, bisphenol A and the epoxy hardeners, phenyl glycidyl ether and cresyl glycidyl ether, she reacted + at D 2 and 4 to all of these. She also reacted + at D 2 to the immersion oil 50%, 10% and 5% pet. Patch tests in 20 controls were negative.

Case no. 2

A 37-year-old microbiology laboratory technician was seen with a 3-month history of an exposure-pattern eczema, which had improved during her Christmas holiday, but recurred after she had started back at work. There was no past medical history of atopy or other skin diseases.

When patch tested to the European standard series, she reacted ++ at D 2 and 4 to nickel sulfate and epoxy resin and + on D 4 to fragrance mix and colophonium. In addition, she had positive patch tests to abietic acid phenyl salicylate, and cycloaliphatic epoxy resin (each + D 4), dibutyl phthalate (+ D 2, ++ D 4) and the microscopy oil 10% pet. (++ D 2, +++ D 4).

Case no. 3

A 33-year-old microscopist in the same cytogenetics laboratory as patient no. 1 complained of a facial eczema within 2 to 3 h of being at work. He was found to express dermatographism on examination. Patch and prick tests to the oil and to epoxy resin were negative. A diagnosis of an irritant reaction was made.

Discussion

Epoxy resins have been known to be irritant and to cause sensitization on skin contact since the 1950s (1). They have been identified as a major cause of occu-

pational eczema, contact urticaria and asthma (2–3). The importance of patch testing with the epoxy resin to which the patient has been exposed, in addition to the standard test, has been stressed (4). Epoxy resins are mainly found in 2-component adhesives, but many other sources have been identified, including medical and laboratory equipment (5–17).

The immersion oil previously used in our patients' laboratories contained chlorinated paraffins. Although these are not thought to be harmful in normal microscopic practice (18–21), the composition of the oil was changed due to ecological concern. The new formulation contained epoxy resin, despite the well-established contact-sensitizing potential. However, our patients did not develop eczema in a pattern of direct skin contact with the immersion fluid, but in an exposure pattern suggesting airborne distribution. The heat generated by the light beneath may have caused evaporation of the immersion oil on the slide.

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Comparison of the eliciting properties of 3 different propolis samples

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Hausen et al. (1) stated the main allergen in propolis to be 1,1-dimethylallyl caffeic acid ester. Later, he observed that the minor constituents of propolis also sensitized and cross-reacted with balsam of Peru (2–4). In our clinic, cross-reactions between propolis and balsam of Peru have long been observed (5). Lately, we wondered how much such cross-reactions might be influenced by differing samples of propolis.

For this study, 3 propolis samples, from various regions of Poland, were designated with letters A, B, C, and used for patch testing (10% pet.), along with balsam of Peru of 1830 consecutive patients with dermatitis. The results obtained are presented in Table 1. 2 conclusions were drawn: firstly, different samples detected sensitivity with different frequencies; secondly, there was a small group of patients sensitive to only 1 of the 3 samples tested.

Table 2 presents the frequency of sensitivity to balsam of Peru coexistent with sensitivity to various propolis

samples. For comparison, the frequency of sensitivity to this balsam in patients sensitive to nickel, the most frequent contact allergen, was noted. In patients sensitive to every propolis sample, sensitivity to balsam of Peru was 6× as frequent as in patients sensitive to nickel, and this difference was statistically significant ($p < 0.001$). Moreover, coexistence of sensitivity to the balsam with sensitivity to various propolis samples was different be-

Table 2. Coexistence of sensitivity to balsam of Peru with sensitivity to propolis samples A, B, C and nickel

Contactant	Positive	Positive also to balsam of Peru	
	<i>n</i>	<i>n</i>	(%)
A	33	26	78.8
B	26	17	65.4
C	28	18	64.3
nickel	41	4	9.8

Table 1. Frequency of sensitivity to various propolis samples in 1830 consecutive patients with dermatitis

Propolis sample	All sensitive patients		Sensitive only to a given sample	
	<i>n</i>	(%)	<i>n</i>	(%)
A	33	1.8	8	0.4
B	26	1.4	2	0.1
C	28	1.5	2	0.1

Table 3. Coexistence of allergy to balsam of Peru in patients sensitive to propolis but negative to at least 1 propolis sample

Patients unresponsive to propolis sample	Sensitive to balsam of Peru		
	<i>n</i>	<i>n</i>	(%)
A	8	2	25.0
B	15	11	73.3
C	13	10	76.9