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CONTACT DERMATITIS
ENVIRONMENTAL AND OCCUPATIONAL DERMATITIS

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Clothing dermatitis from Naphthol AS

Christophe-J. le Coz¹ and Jean-Pierre Lepoittevin²

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A 23-year-old woman, with a past history of dermatitis from costume jewellery, was referred with subacute eczema, which had begun 4 weeks earlier on her neck and décolleté and spread to the upper limbs. She reported the onset as a few days after she had worn a new blue woollen pullover. Patch tests with the European standard series, additional allergens, disperse blue dyes (Chemotechnique®), her nail lacquer and a piece of her pullover showed a + reaction to nickel sulfate only. As the patient had often worn another pullover with a zip likely to contain nickel, she was advised to avoid wearing this garment, and lesions cleared with topical corticosteroids.

Dermatitis relapsed acutely 2 months later, however, within 4 h of the patient wearing a strongly-coloured cotton scarf (black with a teddy bear motif) made in India, which had also been worn before the preceding episodes. Further patch tests with the garment and textile dyes and finishes series (Chemotechnique® and Trolab®), showed at D2 a +++ reaction to both the scarf and Naphthol AS 1% pet. (Trolab®). The presence of Naphthol AS in the scarf was confirmed by comparative thin-layer chromatography followed by high-performance liquid chromatography, after extraction with chloroform.

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Naphthols are coupling agents used to dye cotton in combination with diazonium salts. Because its lower affinity to cellulose, β -Naphthol (2-naphthol, C.I. Azoic coupling



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- ☐ allergic contact dermatitis
☐ CAS 92-77-3
☐ CI 37505, Naphthol AS
☐ clothing
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Affiliations

component 1) has been replaced by Naphthol AS (Fig. 1) (1), also called Naphthazol A, 3-hydroxy-2-naphthalinide, 3-hydroxy-2-naphthoic acid anilide and C.I. Azoic Coupling Component 2 (CI 37505; CAS 92-77-3).

Naphthol AS, though not tested alone, has been reported as an occupational allergen in combination with Diazo Component 51 (2), and as a cross- or associated sensitizer with Pigment Red 23 in tattoos (3). Naphthol AS itself was first reported as a cause of pigmented contact dermatitis in textile workers in Mexico in the 1970s (4). It was identified as the cause of hand dermatitis in a needlewoman probably occupationally sensitized from clothes (5), and occasionally in other cases of textile dermatitis (6–8).

In some situations (6), and particularly in patients with high phototype (7, 8), Naphthol AS may cause pigmented contact dermatitis. Both the textile and Naphthol AS are generally positive on patch testing (5, 9). As some unreacted Naphthol AS may persist in fibres, even after washing (6, 7), the residual concentration can be as high as 4 mg/g (5), constituting a risk of sensitization.

We emphasize: (i) clothing dermatitis may not present with a typical pattern; (ii) Naphthol AS allergy is not detected by patch testing with 'standard' textile allergens, though it is included in the Trolab® textile dyes series; (iii) though tending to be used for cheap cotton fabrics made in emerging countries, the presence of Naphthol AS in such fabrics may be difficult to establish; (iv) contrary to textile dyes and resins, there is no legislation or labelling concerning Naphthol AS (11, D. Fuess, Institut Textile de France, personal communication); (v) though possibly still underestimated, the sensitization rate to Naphthol AS seems lower than to azo dyes, such as Disperse Blue 106 or 124 (10).

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Fig. 1. Chemical structure of Naphthol AS.

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