

Anaphylactic Reaction Caused by the UVA Absorber Disodium Phenyl Dibenzimidazole Tetrasulfonate

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Accepted October 25, 2004.

Sir,

Adverse reactions from sunscreen ingredients have been increasingly reported, including allergic and irritant contact dermatitis, phototoxic and photoallergic reactions, contact urticaria and even severe anaphylactic reactions (1). UV filters, the active sunscreen components, are more frequently being added to cosmetic products such as lipsticks and moisturizing creams. Moreover, the variety of fragrances, emollients, preservatives and waterproofing additives in these products is infinitely increasing. We here report the first case of a severe generalized anaphylactic reaction caused by the UVA filter disodium phenyl dibenzimidazole tetrasulfonate (PDBT), recently approved for use in the European market.

CASE REPORT

In October 2001, a 29-year-old man was referred to our hospital following a severe anaphylactic reaction during his vacation in Turkey. A few minutes after topical application of a sunscreen manufactured by Beiersdorf (Germany) to the trunk and extremities, the patient developed generalized urticaria, swelling of the hands and angioedema. Subsequently, the patient suffered from vertigo, nausea and dyspnoea and was transferred to the emergency unit of a local hospital.

In 1987, the patient (then 15 years old) was diagnosed with atopic dermatitis, allergic asthma and rhinoconjunctivitis. Diagnostic prick tests revealed allergies against grass pollen, rye pollen, hay, dust mites and cat allergens. Patch tests and photopatch tests were performed according to the guidelines of the German photopatch test group (1). No positive test reaction was observed in either the patch test or the photopatch test using a UVA irradiation dose of 10 J/cm².

In addition to these standardized tests, patch and scratch tests with the suspected sunscreen were performed. Although we observed no positive reaction in the patch test during the 96-h test period, within minutes, there was a marked positive reaction in the scratch test. In order to identify the possible sensitizing substance(s), the manufacturer provided the individual ingredients of this particular product for scratch and patch testing. A few minutes after the application of the test substances, we observed a strong urticarial reaction caused by scratch test with 2% of the UVA filter PDBT (in petrolatum). Late reading 48 h after the scratch test revealed strong erythema and infiltration at the site of the scratch test. However, no positive patch test reaction was observed following the application of PDBT on the upper back in small Finn chambers attached for 24 h.

DISCUSSION

No positive test reaction was observed in our patient to any of the well-known UV absorbers when performing standardized patch and photopatch tests. As a second step, we contacted the manufacturer to acquire the components of the specific sunscreen used by our patient. Scratch tests revealed an allergic reaction to the recently approved UVA absorber PDBT within minutes, suggesting a type I immediate hypersensitivity immune response. Nonetheless, a delayed-type hypersensitivity reaction could not be excluded, as the late reading of the scratch test was positive. This reaction could result from an increased penetration of the sensitizing agent since the upper epidermal layers were scratched away. To our knowledge, this is the first report of an allergic reaction to this new compound and consequently we do not know the frequency of allergic

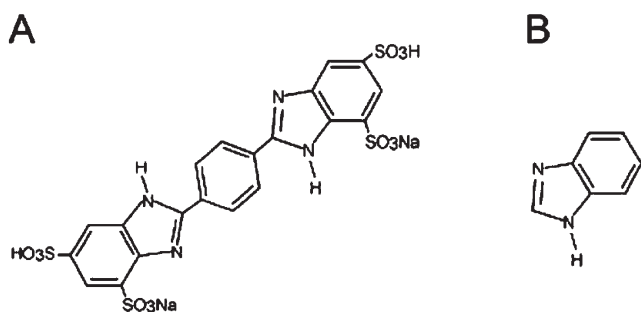


Fig. 1. Structural formula of disodium phenyl dibenzimidazole tetrasulfonate, the UVA absorber found in the sunscreen (A). Benzimidazoles (B) are also the base of other drugs such as anthelmintics (e.g. mebendazole), proton pump inhibitors (e.g. omeprazole) and certain fungicides.

reactions in the general population to this filter. Moreover, it is unclear if the UVA absorber PDBT (Fig. 1A) was the sensitizing agent itself or whether

exposure to other benzimidazole derivatives (Fig. 1B) such as proton pump inhibitors (e.g. omeprazole), anthelmintics (e.g. mebendazole) or fungicides could have led to sensitization.

The case is distinguished by the severity of the clinical reaction. In addition, this case emphasizes the importance of continuously updating the UV absorber patch and photopatch test as well as scratch test series in cooperation with the pharmaceutical companies in order to identify potential allergens in newly developed products containing UV absorbers.

REFERENCE

1. Neumann NJ, Lehmann P. The photopatch test procedure of the German, Austrian, and Swiss photopatch test group. *Photodermatol Photoimmunol Photomed* 2003; 19: 8–10.