

Occupational contact urticaria caused by didecyl dimethyl ammonium chloride

Athamaica Ruiz Oropeza, Ulrik Fischer Friis and Jeanne Duus Johansen

Department of Dermato-allergology, National Allergy Research Centre, Copenhagen University Hospital Gentofte, 2900 Hellerup, Denmark

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Didecyl dimethyl ammonium chloride (DDAC; CAS 7173-51-5) is a quaternary ammonium compound with bactericidal, viricidal (against hepatitis B virus and human immunodeficiency virus), fungicidal and mildewcidal properties (1).

To date, only two cases of contact dermatitis caused by DDAC (2, 3) and two of immediate-type allergy to DDAC have been reported (4, 5). We present a new case of severe contact urticaria after occupational exposure to DDAC.

Case Report

A 42-year-old female laboratory technician with no history of skin disease presented with a rash on her face, neck, and chest. The rash had developed over 6 months, and arose from her work at a sterile bench, where a

disinfectant product with DDAC at a concentration of 10% was used.

Patch testing with the disinfectant product diluted 1:5 (2%) and 1:20 (0.5%) in pet. provoked an urticarial reaction, with swelling of the hands and feet and a sensation of stinging, burning and itchiness after 8–10 hr. Patch testing with the European baseline series and other relevant materials gave negative results. Three other patients with occupational DDAC exposure had negative patch test results with DDAC.

An open epicutaneous test with 15 µl of 1:1 million (unit exposure) DDAC solution dripped onto the right forearm

and rinsed with water after 20 min gave an urticarial rash, which spread to the elbow, face and back after 2 hr. No respiratory problems were induced. The patient was hospitalized for systemic treatment and observation. A histamine release test gave negative results.

In a previous study, open testing was performed with 0.5% DDAC, and 10 healthy controls gave negative results (4).

Correspondence: Athamaica Ruiz Oropeza, National Allergy Research Centre, Copenhagen University Hospital Gentofte, 2900 Hellerup, Denmark. Tel: +45 3977 7300; Fax: +45 3977 7118. E-mail: athamaica@hotmail.com

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Discussion

Reports of contact dermatitis and occupational asthma resulting from quaternary ammonium compounds are frequent, especially for benzalkonium chloride (6) used in cosmetics, disinfectants, nebulizer solutions, spermicides, and eye-drops (7).

Although DDAC is widely used as a detergent–disinfectant in hospitals, as an algicide in swimming

pools, and against termites in wood (8), there is a scarcity of literature regarding exposure to this substance (2–5). Recent studies in mice suggest that the inflammatory changes caused by DDAC are associated with cytotoxicity (9). This is the fifth documented case of contact reactions to DDAC; here, the reactions developed after intense and unprotected exposure. Despite contact reactions to DDAC being rare, they can lead to severe symptoms.

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