



Contribution of toxicological analysis to the care of dimethyl fumarate dermatitis

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Background:

Dimethyl fumarate (DMFu) is a fungicide which is used in Chinese manufactures of furniture and shoes to avoid mould spoiling of fabrics. In 2008, DMFu was found the responsible allergen for several cases of contact dermatitis from armchairs and shoes observed in Europe. In France a national toxicovigilance survey was set up and importation of products containing dimethyl fumarate is now forbidden. Case report: a 36 year-old woman, with no history of previous allergy, was hospitalized because of a severe acute eczema of her feet after wearing a new pair of boots inside which she had noticed desiccant sachets. She strongly reacted on patch testing to DMFu and to the content of a sachet which was identified as DMFu, both at 0.01%, 0.1%, 1% in petrolatum, and also to a piece of the fabric of her boots, patch tested as is.

Materials and method:

Boot fabrics and mould-proof sachets found in the boots were analysed by HPLC/UV/DAD and GC/MS after methanol extraction. Further samples of anti mould agent sachets or shoe fabrics from 5 other patients with suspicion of DMFu dermatitis were analysed with the same procedure. Some of them were transferred to the laboratory several months after healing of the dermatitis.

Results:

DMFu was found in all the samples from 1 to 100% in sachets or from 20 to 2000 µg/g in the fabrics of shoes, even after one year. These findings contributed to ensure the responsibility of DMFu in the dermatitis of the patients and demonstrate that DMFu may remain a long time in the contaminated fabrics after removal of the sachets. This study also points out the usefulness of the collaboration between dermatologists, biologists and poison centre practitioners.

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