

Allergic contact dermatitis caused by 2,2'-azobis(2-methylpropionamidine) dihydrochloride used in the manufacture of acrylic polymers

Thomas Oliphant¹, Mark Wilkinson¹ and Andrew Wright²

¹Department of Dermatology, Leeds General Infirmary, Great George Street, Leeds, West Yorkshire LS13EX and ²Department of Dermatology, St Luke's Hospital, Little Horton Lane, Bradford, West Yorkshire, BD50NA

doi:10.1111/j.1600-0536.2011.01892.x

Key words: 2,2'-azobis(2-methylpropionamidine) dihydrochloride; acrylic polymers; allergic contact dermatitis, occupational; radical chain initiator.

Case Report

A 31-year-old man was referred for further investigation of a persistent dermatitis affecting his hands, wrists, face, and neck. His work involved maintaining and repairing a plant that manufactured acrylic

Correspondence: Dr Thomas Oliphant, Leeds General Infirmary, Dermatology, Great George Street, LS74AY Leeds, UK. Tel: 00441133922741; Fax: 00441133923565. E-mail: TJOliphant@doctors.org.uk

Conflicts of interest: The authors have declared no conflict of interest.

polymers. His skin would predictably improve during periods of absence. He was patch tested with the British Society for Cutaneous Allergy baseline series and our own locally developed face, acrylate adhesive, acrylate printing, shoe and oil and coolant series (applied using IQ Ultra® Chambers; Chemotechnique Diagnostics®, Vellinge, Sweden). There were positive reactions at day 4 to thiuram mix (+) and carba mix (+). However, we did not feel that this adequately explained the patient's symptoms.

Further patch testing was undertaken with a number of samples provided by his employer, including 2,2'-azobis(2-methylpropionamide) dihydrochloride. Positive reactions were seen to 2,2'-azobis(2-methylpropionamide) dihydrochloride on day 2 and day 4 at 5% pet. and on day 4 at 1% pet. (no reaction was seen on day 2 at 1% pet.). Twenty control patients gave written consent for patch testing with 2,2'-azobis(2-methylpropionamide) dihydrochloride 5% pet., and there were no positive reactions.

Discussion

2,2'-azobis(2-methylpropionamide) dihydrochloride is a water-soluble azo-compound that is used as a radical chain initiator (CAS number 2997-92-4). The material safety data sheet does not indicate that this compound is an irritant, but does warn that it may cause sensitization by skin contact. A literature search identified a previous case series of 8 Japanese workers who developed allergic contact dermatitis to 2,2'-azobis(2-amidinopropane) dihydrochloride (1). These individuals were involved in the manufacture of 2,2'-azobis(2-methylpropionamide) dihydrochloride rather than using it in the production of acrylic polymers, as in our patient. Patch testing with 2,2'-azobis(2-amidinopropane) dihydrochloride at 5% and 1% pet. gave positive results in all 8 patients.

The chemical name used in the above case series was 2,2'-azobis(2-amidinopropane) dihydrochloride, and the CAS number was not mentioned. We wish to highlight our case because it may not be clear that

2,2'-azobis(2-amidinopropane) dihydrochloride and 2,2'-azobis(2-methylpropionamide) dihydrochloride are, in fact, the same compound. Below, we list a number of synonyms for 2,2'-azobis(2-methylpropionamide) dihydrochloride (2).

- 2,2'-azobis(2-amidinopropane) dihydrochloride
- 2,2'-azobis(2-methylpropionamide) dihydrochloride
- 2,2'-azobis(isobutyramidine hydrochloride)
- 2,2'-azobis(propane-2-carboxamide) dihydrochloride
- 2,2'-azobis(2-methylpropionamide) dihydrochloride
- 2,2'-azobis(2-methylpropionamide) dichlorhydrate
- 2,2'-azobisamidinopropane dihydrochloride
- 2,2'-azobisisobutyramidinium chloride
- AAPH
- AIBA
- azobis(isobutyramidine) dihydrochloride
- azobisisobutyramidinium dichloride
- Azostarter V 50
- MS 1
- MS 1 (catalyst)
- NC 32P
- propanimidamide, 2,2'-(1,2-diazenediyl)bis [2-methyl-, hydrochloride (1:2)]
- propanimidamide, 2,2'-azobis[2-methyl-, dihydrochloride]
- propionamide, 2,2'-azobis[2-methyl-, dihydrochloride]
- V 50
- VA 50
- VA 50 (catalyst)
- Vazo 56
- Vazo 56WSP
- Vazo 56WSW
- Wako V 50

References

- 1 Takiwaki H, Arase S, Nakayama H. Contact dermatitis due to 2,2'-azobis(2-amidinopropane) dihydrochloride: an outbreak in production workers. *Contact Dermatitis* 1998; **39**: 4–7.
- 2 Chemical Abstracts Service (CAS). Common Chemistry™ from Chemical Abstracts Service (CAS), a division of the American Chemical Society. Available at: <http://www.commonchemistry.org/index.aspx> (last accessed December 2010).