Allergies in the workplace

SKIN HYPERSENSITIVITY REACTIONS TO PRESERVATIVES

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ABSTRACT

Preservatives are chemicals that are added to water-based products to prevent microbiological contamination and to protect the integrity of the product. The ideal preservative should be an effective antimicrobial that is stable, non-toxic, non-irritant and non-sensitising. Unfortunately preservatives are well known causes of contact allergy. We present a case of allergic contact dermatitis to methyldibromo glutaronitrile (MDBGN) in a patient employed in an industry that manufactures polypropylene fibres from plastic polymers. The article reviews the most important classes of preservatives in the industrial and cosmetic industry, namely parabens, isothiazolines, formaldehyde and formaldehyde-releasers, Euxyl K 400 and iodopropynyl butylcarbamate. The chemical and physical characteristics, antimicrobial efficacy, exposures, cross-reactivity and reported rates of sensitisation are discussed.

INTRODUCTION

Preservatives are chemicals that are added to products that contain an aqueous phase. These include cosmetics, topical medications, household products, foods, and industrial products such as glues, paints, dyes, metal-working fluids, and spin finishes. They are biocidal or biostatic, inhibiting the overgrowth of micro-organisms and protecting and retarding the chemical degradation of the product.[1] The ideal preservative should be an effective antimicrobial that is stable, non-toxic, non-irritant and non-sensitising. No one preservative fulfils these ideal criteria and all preservatives are known to cause contact allergy. In cosmetics, preservatives are second only to fragrances as the commonest cause of allergic contact dermatitis. We present a case of allergic contact dermatitis to methyldibromo glutaronitrile (MDBGN) in a worker employed in an industry that manufactures polypropylene fibres from plastic polymers.

The article reviews the most important classes of preservatives in the industrial and cosmetic industry, namely parabens, isothiazolines, formaldehyde and formaldehyde-releasers, Euxyl K 400 and iodopropynyl butylcarbamate (IPBC). The chemical and physical characteristics, antimicrobial efficacy, exposures, cross-reactivity and reported rates of sensitisation for each of these groups are discussed.

CASE REPORT

A 53-year-old man presented to the Occupational Dermatology Clinic at Groote Schuur Hospital with an itchy rash involving the face and hands. It was associated with swelling of the eyes. The rash responded to treatment with topical corticosteroids but relapsed when they were stopped. He had no past medical or family history of atopy, and his hobbies were non-contributory. He had a 20-pack year history of smoking. On clinical examination, he had erythematous patches with scale on his face with periorbital postinflammatory hyperpigmentation (Fig. 1). He also had hyperkeratotic palms, with mild erythema and scale (Fig. 2).

He was employed in the manufacture of polypropylene fibres from plastic polymers. He had previously been employed in a similar industry producing nylon fibres without any symptoms. The current fibre-manufactur-

Fig. 1. Erythematous patches with scale and periorbital postinflammatory hyperpigmentation.

Fig. 2. Hyperkeratotic palms, with mild erythema and scale.

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Table I. Preservatives and possible sources of exposure adapted from Sasseville[1]

Preservative	Industrial	Other
Parabens	Industrial oils, glues, textiles, foods	Cosmetics, food, topical and systemic medication
MCI/MI	Metal-working fluids, latex paints, lacquers, cleaning products, printing inks, glues, slime control products	Cosmetics
MI	Paint, glues	Cosmetics
Formaldehyde	Disinfectant in fumigations, renal dialysis, tissue fixation, embalming fluid, resins in paper sizing, permanent press clothing, leather glues, contact cement, neoprene	Nail varnish, shampoos, Brazilian blow-dry
Q-15	Latex paints, metal-working fluids and glues	Shampoos, conditioners, bath and shower gels, liquid soap, shaving products, make-up, moisturising lotions and creams
MDBGN	Latex paint, metal-working oils, adhesives, dishwashing fluids, fabric softeners, liquid detergents, industrial cleaners and barrier creams	Leave-on and rinse-off cosmetics
IPBC	Wood and paint preservative, metal-working fluids, adhesives, textiles, plastics, inks and paper	Make-up, creams, moisturising lotions, contact lenses, baby products, shampoos and moist toilet paper

MCI/MI – methyl chlorisothiazolinone/methylisothiazolinone; Q-15 – quaternium-15; MDBGN – methyldibromo glutaronitrile; IPBC – iodopropynyl butylcarbamate.

ing process involved melting plastic polymers and pigments or dyes at high temperatures, then extruding them under high pressure through extruders to produce filaments. The filaments were then cooled through an air-quenching chamber after which spin finish was applied to the product to facilitate the filaments being spun into a single tow of yarn.

The patient was assessed as having a combination of allergic and irritant contact dermatitis caused by exposures at work. He was treated with an ultrapotent topical corticosteroid for his hands, and weak-potency topical corticosteroid for his face. We advised his employer to decrease his exposure to potential allergens and irritants while investigating the problem.

Investigations included an initial patch test to 45 commercial allergens commonly implicated in allergic contact dermatitis which showed a 2+ reaction to MDBGN. Potential exposures identified from history included spin finish, dyes and pigments, polymers, yarn, hand wash and silicon lubricant spray. The spin finish was considered the most likely source of preservative despite MDBGN not being listed on the material safety and data (MSD) sheet for the product. A specific patch test to these identified hazards was performed but was negative. A workplace visit was conducted to try to identify further relevant exposures, but no additional hazards were identified.

He was assessed as having allergic contact dermatitis to MDBGN on a background of irritant contact dermatitis. The source of exposure was most likely the spin finish. Despite the construction and implementation of protective screens in front of the areas of maximum exposure, the spin finish was present as a fine mist in the whole work environment so ongoing exposure was unavoidable. The use of personal protective equipment when handling the moistened filaments and yarn was not an option because of fast-moving machinery. We advised that he be removed from the environment and be given alternative employment within the factory.

DISCUSSION

Since the mid-twentieth century, three contact allergy epidemics to preservatives have been observed: increased prevalence of formaldehyde contact allergy in the 1950s and 1960s due to exposure to textile finishes and cosmetics; methyl chlorisothiazolinone/methylisothiazolinone (MCI/MI) attributed mainly to cosmetic leave-on products in the 1970s and 1980s; and finally in the 1990s and 2000s MDBGN found in industrial and cosmetic products.[2]

We focus on the most important classes of preservatives used in the industrial and cosmetic industry, namely parabens, isothiazolinones, formaldehyde and formaldehyde-releasers, as well as Euxyl K 400 and IPBC.

Parabens

Parabens are alkyl esters of parahydroxy benzoic acid and include methyl, ethyl, propyl and butyl paraben. Exposures include predominantly cosmetics, foods, and topical and systemic medication. They are commonly combined relative to their different solubilities and spectrum of activity, and methyl and ethyl parabens are frequently combined. Parabens are more effective against fungi than bacteria, and antibacterial activity is most effective against Gram-positive organisms. For effective *Pseudomonas* coverage, parabens are combined with other preservatives such as formaldehyde releasers, isothiazolinones and phenoxyethanol. Parabens are the most commonly used preservatives in cosmetics, their usual concentrations ranging between 0.1 and 0.3%.[3]

Several cases of allergic contact dermatitis and a few cases of contact urticaria have been reported.[4] Angio-oedema and bronchospasm to intravenous medication containing parabens have been reported.[4] Systemic contact dermatitis has been reported after parenteral administration of systemic medication preserved with parabens.[4]

Patch testing is usually conducted with commercial paraben mix which contains methyl, ethyl, propyl and butyl paraben in petrolatum. Each type of paraben is included at a concentration of 4%, giving a final paraben concentration of 16%. This high concentration is necessary to overcome the epidermal barrier and avoid false-negatives. However, weak positives should be interpreted with caution as this high concentration is near the irritancy threshold.[1] Patch testing with cosmetics or

topical medication is often negative because the concentration may be too low. Repeated application of the product (use test) on eczematised skin may be positive. This has been called the 'paraben paradox'.[3]

Cross-reactions with other paraben esters are common. There have been rare reports of cross-reactivity with benzocaine, paraphenylenediamine and sulphonamides.

A European study conducted in 16 centres over 10 years showed sensitisation rates between 0.5% and 1.0%, one of the lowest of all preservatives.[5] Sensitisation rate for parabens in the UK was 0.5%, second lowest of the preservatives, with IPBC at 0.4% the lowest.[2] In a recent retrospective study analysing patch test data to preservatives collected from the Information Network of Departments of Dermatology for the period 1996-2009, sensitisation rate to parabens was found to be 1.3%, the lowest to preservatives in the standard series allergens.[6] Sensitisation reactions to parabens are mostly of low intensity and are more likely to be irritant than allergic.[6]

In a study published in 2004, parabens were found in breast tumours; however no causal role was established.[7] Despite the negative press they have received, they are still among the least allergenic of the preservatives.[5]

Methyl chlorisothiazolinone (MCI)/methylisothiazolinone (MI)

MCI/MI has been used in industrial and consumer products in a 3:1 ratio in a preservative system known as Kathon CG since the beginning of the 1980s. Several formulations under various trade names, such as Kathon 886, WT, LX, MW and Euxyl K100, are marketed for use in industrial products such as cleaning products, metal-working fluids, latex paints, lacquers, printing inks, glues and slime control products in paper mills.[1,8] Other isothiazolines, namely 2-n-octyl-4-isothiazoline 3-one (Kathon 893) and 1,2 benzisothiazoline 3-one (Proxel) are used in photographic solutions, plastic emulsions, dyes, air fresheners, and mould-releasing oils in the pottery industry.[1]

MCI/MI is effective in very low concentrations to control fungi, yeasts, Gram-positive and Gram-negative bacteria. In 1985, the first cases of MCI/MI contact allergy due to cosmetics were published.[9] Both animal and human clinical studies have shown that MCI and MI cause contact allergy, with MCI being a more potent sensitiser than MI.[8]

While MCI/MI is one of the most frequently used preservatives in both cosmetic and industrial products, it is also one of the most common causes of contact allergy caused by preservatives. Most allergic contact dermatitis due to cosmetics occurs with leave-on products, creams and lotions. Patients therefore present commonly with a hand or face dermatitis. Extensive involvement may occur with use of body moisturising creams and lotions. Hand dermatitis due to occupational exposure has been reported secondary to cutting oils in machinists, shampoos in hairdressers, and cleansing creams in metal-workers.

Under the current legislation in the European Union (EU) the permissible concentration of MCI/MI is 15 ppm in all cosmetics, while in the USA it is 7.5 ppm for leave-on products and 15 ppm for rinse-off products. Patch testing of MCI/MI is done at a concentration of 0.01% (100 ppm) in water. Concentrations above 100 ppm are irritant, while those below 100 ppm give too many false-negatives. Patch testing with the actual product is often negative, while a use test may be positive. Cross-reactions between members of the isothiazolinone family are uncommon.

Sensitisation rates range between 2% and 3% in Europe. Most recent sensitisation rates for MCI are reported at 2.3%.[6]

In the early 2000s MI was introduced alone into industrial products, and in 2005 permitted for use in cosmetics. Shortly thereafter the first case of industrial allergic contact dermatitis was published and in 2010, the first cases of cosmetic-related contact allergy were published. The prevalence of MI allergy is around 1.5%[6] and exposures include occupational, cosmetic and industrial products. Most of the reported cases are due to paint, either from occupational exposure or allergic airborne contact allergy to MI in consumers from the painted product or carpet glue.[8]

Formaldehyde and formaldehyde releasers

Formaldehyde, methanal, is a gas with a pungent odour, and is ubiquitous in the environment. It has been used in numerous industrial and household settings as a disinfectant in fumigations, renal dialysis and dairy equipment and in cleaning products such as household detergents. It is also used as a histological fixative and embalming fluid. Formaldehyde is combined with other compounds to form resins such as aminoplast and phenolic resins, used in paper sizing and permanent press clothing. Other formaldehyde resins, such as tosylamide formaldehyde resin, are found in nail varnish, while butylphenol formaldehyde resin is used in leather glues, contact cement and neoprene.[1] These resins are also used in plywood adhesives, fibre boards and plastics.[10]

In cosmetics, the use of formaldehyde has decreased, and when used the level of free formaldehyde should not exceed 0.2%. Products containing formaldehyde are frequently not directly labelled. Hair-straightening products such as the Brazilian blow-out have been found to contain formaldehyde. A Swedish study found that 10% of moisturisers sampled contained formaldehyde.[11]

Formaldehyde may also be present from occult sources such as release from plastic containers or impurities from raw materials, or released by other formaldehyde donor preservatives during storage and use.[3]

Formaldehyde is a moderate to strong sensitiser, with sensitisation rates ranging between 1% and 9%.[1] Most recent sensitisation rates reported by Schnuch *et al.*[6] are 1.54% for formaldehyde. The threshold for elicitation varies widely. Jordan *et al.*[12] have demonstrated that the threshold concentration required to cause dermatitis in formaldehyde-sensitive subjects was as low as 30 ppm (0.003%),[12] whereas Flyvholm and Menne[13] found that the threshold concentration was 250 ppm (0.025%). The United States Cosmetic Ingredient Review Expert Panel of the Cosmetic, Fragrance and Toiletry Association recommends that the concentration not exceed 0.2% free formaldehyde in cosmetics. This has also been endorsed by the European Economic Council, which has also regulated that products containing more than 0.05% free formaldehyde be labelled as formaldehyde sensitisers.

With the decline in the use of formaldehyde in cosmetics, there has been an increase in the use and thus sensitivity to formaldehyde-releasing preservatives. These include quaternium 15 (Q-15), dimethylodimethyl (DMDM) hydantoin, imidazolidinyl urea, diazolidinyl urea, 2-bromo-2-nitropropane-1,3-diol (Bronopol). They all have formaldehyde-releasing action because of their easily detachable formaldehyde moiety. Although the concentration of free formaldehyde released is low, it may produce sensitisation if applied to damaged skin, and in those already sensitised to formaldehyde.

Q-15 is a colourless and odourless biocide, which is water soluble, and effective against yeasts, moulds and bacteria especially *Pseudomonas aeruginosa*. It is found in personal and cosmetic products such as shampoos, conditioners, bath and shower gels, liquid soap, shaving products, make-up, moisturising lotions and creams, and in the industrial industry in latex paints, metal-working fluids and glues. Q-15 is a potent formaldehyde releaser, and 0.1% concentration of Q-15 releases 100 ppm of free formaldehyde.[3]

Imidazolidinyl urea is the second most frequently used preservative in cosmetics after parabens. It is a water-soluble biocide, marketed as Germall 115, and is effective mostly against bacteria. It is often used in combination with parabens for increased coverage against yeasts and fungi. It is an infrequent sensitiser, and releases approximately one-eighth less formaldehyde than Q-15, and less than 50% of those allergic to imidazolidinyl urea show an allergic reaction to formaldehyde.[14] Cross-reactions with diazolidinyl urea may be observed.

Diazolidinyl urea was introduced in 1982 as a preservative under the trade name Germall II. It is biocidal against Gram-positive and Gram-negative bacteria and is often combined with parabens for increased coverage against fungi. It is currently believed to be a more potent sensitiser than imidazolidinyl urea, and cosensitisation with formaldehyde and other formaldehyde releasers may be found.[15]

2-bromo-2-nitropropane-1,3-diol (Bronopol) is a water-soluble diol and broad-spectrum biocide. It is used in cosmetics and topical medications at concentrations ranging between 0.001% and 1%. It is irritant above 1%. Personal products, such as shampoos, may release more than 30 ppm of free formaldehyde, which is considered to be the elicitation threshold in formaldehyde-sensitive individuals. Numerous cases of allergic contact dermatitis to Bronopol have been reported, with and without cosensitisation to formaldehyde. Schnuch *et al*.[6] reported sensitisation frequencies of 1.25%.

DMDM hydantoin is a highly water-soluble broad-spectrum biocide and is commonly used in shampoos. DMDM hydantoin contains 2% free formaldehyde and is used in concentrations of 0.1-1% in cosmetics, yielding 20-200 ppm free formaldehyde. One study demonstrated that 57% of patients sensitive to DMDM hydantoin will cross-react to formaldehyde.[16]

Patch testing to formaldehyde and formaldehyde releasers is done in aqueous vehicle, because of their relative insolubility in oils. Formaldehyde is tested at a concentration of 1%, and therefore weak reactions should be interpreted with caution as they may be irritant. Q-15 (concentration 2%) and Bronopol (0.5%) are tested in petrolatum, while imidazolidinyl urea is tested at 2% in aqueous vehicle. Diazolidinyl urea and DMDM hydantoin are tested at concentrations of 1% in water.[1]

Cross-reactions are common. Concomitant reactions to formaldehyde and formaldehyde releasers ranged from 15% to 50%.[6] The strongest association is seen between Q-15 and formaldehyde. Allergic contact dermatitis and contact urticaria have been reported, as well as severe anaphylactic reactions due to systemic exposure.[1]

Methyldibromo glutaronitrile (dibromo dicyanobutane)/phenoxyethanol

MDBGN, also known as dibromo dicyanobutane (Tektamer 38), is found in the formulation Euxyl K 400, which consists of phenoxyethanol and MDBGN in a 4:1 ratio. It has broad-spectrum biocidal activity against bacteria, fungi and yeasts. It was responsible for an epidemic of contact allergy in Europe which peaked in the late 1990s and early 2000s. In the cosmetic industry, it was used predominantly in leave-on and rinse-off products. In the industrial arena, it is found in latex paint, metal-working oils, adhesives,[17] dishwashing fluids, fabric softeners, liquid detergents, industrial cleaners and barrier creams. Johansen *et al*.[18] found that creams and lotions accounted for 31% of the products causing reactions and liquid soaps for 23%. The same study showed that occupational disease accounted for 14% of cases of MDBGN allergy, most of them among health-care workers.[18]

The high rate of contact dermatitis led to the subsequent total ban of MDBGN in cosmetic products in the EU.[19] The prevalence of contact allergy to MDBGN in 2008 in Denmark was 3.7%, the highest of all preservatives, but the epidemic has started to level off following the total ban in cosmetics in the EU.[2] In the UK the sensitisation rate decreased from 2.4% in 2000 to 1.1% in 2004-2005.[19]

Patch testing is done using petrolatum as the best vehicle. The optimal patch concentration of Euxyl K400 is still unclear. Most authors agree that Euxyl K400 should be tested at a concentration of 2.5% which contains 0.5% MDBGN. Concentrations of MDBGN below 0.3% result in too many false-negatives. Hence testing at concentrations of 0.5% MDBGN may result in irritant reactions, but false-negatives are less likely.[1]

Iodopropynyl butylcarbamate

IPBC is an organo-iodine fungicide, bactericide and pesticide. It has been used as a wood and paint preservative, but also in metal-working fluids, adhesives, textiles, plastics, inks and paper at concentrations ranging between 0.02% and 4%. It has been used in the cosmetic industry in concentrations up to 0.1% and is found in make-up, creams, moisturising lotions, contact lenses, baby products, shampoos and moist toilet paper.[1]

The sensitisation rate in a Danish study for the period 1996 to 2008 was 0.4%, and in another study conducted in the EU 0.88%.[2,6] Patch testing is done at a concentration of 0.1% in petrolatum.

Clinical aspects

Diagnosis of skin allergy to preservatives requires a thorough dermatological and occupational history, as well as examination of the skin. The MSD sheets provide a guide only to the exposures encountered at work and list only the main ingredients and hazardous substances included in a product; hence ingredients like preservatives may be excluded. In these situations, communication with manufacturers of products may be useful. Patch testing is essential in establishing a diagnosis. A factory visit may be invaluable in providing additional information when a cause cannot be established from history, or in determining the source of an allergen detected on patch testing.

Preservative hypersensitivity commonly presents as an allergic contact dermatitis, but unusual presentations such as systematic contact dermatitis, contact urticaria and anaphylaxis may also occur.[1,4] In occupational contact dermatitis the primary site of involvement is usually the hands. As indicated by the Male, Occupation, Atopic dermatitis, Hand dermatitis, Leg dermatitis, Facial dermatitis, Age > 40 (MOAHLFA) index,[19] certain of the preservatives are more strongly associated with occupational dermatitis where the hands are most affected, namely MI, phenoxyethanol, MCI/MI, IPBC, formaldehyde (and certain formaldehyde releasers) and MDBGN.[6] Others such as imidazolidinyl urea and

diazolidinyl urea are more strongly associated with face dermatitis, indicating cosmetic exposure.[6] For example, IPBC in Denmark shows a typical occupational pattern using MOAHLFA index (male 46%, occupational 31%, hands 46%) which is in keeping with its use in cutting fluids and paints.[6] MI sensitivity has shown a significant increase in recent years and also shows a strong occupational pattern in Schnuch *et al.*'s study in the Danish population (male 47.9%, occupational 41% and hands 48%).[6] MDBGN, as in our patient, also shows a more occupational pattern using the MOAHLFA index (male 41.2%, occupational 21% and hands 36%).[6] In a study by Johansen *et al.*[18] a significant association can be seen between hand eczema and MDBGN allergy ($p<0.001$) and between occupational skin disease and MDBGN allergy ($p=0.01$).[18]

In summary, we have presented a patient with an allergic contact dermatitis to MDBGN. Since the ban of MDBGN in the cosmetic industry, sources of exposure are mostly occupational, in the case of our patient, the most likely source being the spin finish. Our patient was male and presented with a hand and face dermatitis, which is consistent with MDBGN allergy in the literature. His facial dermatitis can be explained by an airborne contact dermatitis component secondary to the fine mist of spin finish present in the work environment. This case also highlights the fact that MSD sheets only provide data on hazardous substances, and do not list all ingredients such as preservatives.

Preservatives are essential chemicals added to industrial, household and cosmetic products to prevent spoilage. Allergy to preservatives is well known. Compulsory labelling of cosmetics and complete disclosure of potential sensitisers on MSD sheets should be mandatory to avoid exposure in those already sensitised and to assist in identifying the source of exposure. Doctors should be encouraged to continue to report cases of occupational preservative allergy, to regulate the concentrations of preservatives in both the industrial and cosmetic industry, and also to recommend products that are free of potential sensitisers, or choose products with less-sensitising preservatives.

Declaration of conflict of interest

The author declares no conflict of interest.

REFERENCES

1. Sasseville D. Hypersensitivity to preservatives. Dermatologic Therapy 2004;17:251-263.
2. Thyssen J, Engkilde K, Lundov MD, Carlsen BC, Menné T, Johansen JD. Temporal trends of preservative allergy in Denmark (1985-2008). Contact Dermatitis 2010;62:102-108.
3. Orton D, Wilkinson J. Cosmetic allergy. Am J Clin Dermatol 2004;5(5):327-337.
4. Sánchez-Pérez J, Diez MB, Pérez AA, Jiménez YD, Diez G. Allergic and systemic contact dermatitis to methylparaben. Contact Dermatitis 2006;54:117-128.
5. Wilkinson JD, Shaw S, Anderson KE, et al. Monitoring levels of preservative sensitivity in Europe. A 10-year overview (1991-2000). Contact Dermatitis 2002;46:207-210.
6. Schnuch A, Lessmann J, Geier J, et al. Contact allergy to preservatives. Analysis of IVDK data 1996-2009. Br J Dermatol 2011;164:1316-1325.
7. Darbre PD, Aljarrah A, Miller WR, Coldham NG, Sauer MJ, Pope GS.Concentrations of parabens in human breast tissue. J Appl Toxicol 2004; 24(1):5-13.
8. Lundov MD, Krongaard T, Menne TL, et al. Methylisothiazolinone contact allergy: a review. Br J Dermatol 2011;165:1178-1182.
9. De Groot AL, Liem DH, Weyland JW, Kathan CG. Cosmetic allergy and patch test sensitization. Contact Dermatitis 1985;12:76-80.
10. Thyssen JP, Johansen JD, Menne T. Contact allergy epidemics and their controls. Contact Dermatitis 2007;56:185-195.
11. Gruvberger B, Bruze M, Tammela M. Preservatives in moisturisers on the Swedish market. Acta Derm Venereol 1998;78:52-56.
12. Jordan WP, Sherman WT, King SE. Threshold responses in formaldehyde-sensitive subjects. J Am Acad Dermatol 1979;1:44-48.
13. Flyvholm MA, Menne T. Allergic contact dermatitis from formaldehyde. A case study focusing on some sources of formaldehyde exposure. Contact Dermatitis 1992;27:27-36.
14. Ziegler V, Ziegler B, Kipping D. Dose-response sensitisation experiments with imidazolidinyl urea. Contact Dermatitis 1988;19:236-237.
15. Hectorne KJ, Fransway AF. Diazolidinyl urea: incidence of sensitivity, patterns of cross-reactivity and clinical relevance. Contact Dermatitis 1994;30:16-19.
16. De Groot AC, van Joost T, Bos JD, et al. Patch test reactivity to DMDM hydantoin. Relationship to formaldehyde. Contact Dermatitis 1988;18:197-201.
17. Williams JD, Frowen KE, Nixon RL. Allergic contact dermatitis from methyldibromo glutaronitrile in a sanitary pad and review of Australian clinic data. Contact Dermatitis 2007;56:164-167.
18. Johansen JD, Veien NK, Laurberg G, et al. Contact allergy to methyldibromo glutaronitrile – data from a 'front line' network. Contact Dermatitis 2005;52:138-141.
19. Jong CT, Stratham BN, Green CM, et al. Contact sensitivity to preservatives in the UK, 2004-2005: results of multicentre study. Contact Dermatitis 2007;57:165-168.

PRODUCT NEWS

AstraZeneca encourages patients to 'stick' with asthma compliance programmes

AstraZeneca Pharmaceuticals has unveiled a new asthma awareness campaign to educate patients on correct inhaler technique as well as boosting patient compliance with their daily asthma management.

The campaign is centred on the Turbuhaler which features an innovative design that allows for accurate dosage of asthma medications Symbicord and Pulmicort without any propellant gas or other additives. 'The campaign has two distinct aims: to improve patient compliance by dispelling any patient uncertainty around using the inhaler through the introduction of an innovative way for patients to personalise their Turbuhalers and to help alleviate the stigma around asthma,' says Dr Bhana, Senior Manager: Medical, Regulatory and Quality Assurance for AstraZeneca.

When the Turbuhaler was introduced in 1987, it was welcomed as a revolutionary inhaler design - the first powder inhaler synchronised to operate with the patient's breathing, thus replacing the need for propellant gas. 'As with any novel design, patients may be uncertain on how to use the Turbuhaler correctly. Unfortunately, this uncertainty can lead to poor administration of medication, a lack of trust in the medicine's efficacy and poor compliance,' says Dr Bhana.

To combat this, AstraZeneca Pharmaceuticals will be distributing step-by-step instruction stickers to doctors' rooms and pharmacies. These stickers are to be applied to the exterior surface of the Turbuhaler and provide a quick and easy explanation of how to use the device correctly.

To meet the second objective, AstraZeneca will be introducing the 'Style My Turbuhaler' at doctor's rooms. 'Style My Turbuhaler is a collection of removable themed stickers that allows patients to personalise their Turbuhaler. The concept draws on the trend of customisation by offering 25 bold designs in a variety of themes including sports, nature and the arts,' adds Dr Bhana. The stickers are easy to apply and remove, allowing patients to swop as they please.

'The rationale behind Style My Turbuhaler is that customisation allows patients to identify with their inhalers and therefore encourages proactive ownership of the disease,' says Dr Bhana, 'and destigmatisation of the disease.'

'We know so much more about treating asthma effectively these days. The right medicines and following the correct regimen should have a positive impact on both patients' asthma and quality of life. Using an inhaler correctly and as often as prescribed is a key part of any such regimen.'

Symbicord, Pulmicort and Turbuhaler are registered trademarks of the AstraZeneca group of companies.

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