OCCUPATIONAL ALLERGIC CONTACT DERMATITIS FROM XANTHATES AND CARBAMATES IN MINING PROCESSES.

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Objective: To describe allergic contact dermatitis to sodium isopropyl xanthate, potassium amyl xanthate and carbamates in a geotechnician, to discuss possible cross-reactions, and to report the widespread use of carbamates and mercaptobenzothiazole in mining processes.

Case Report: A 34-year-old PhD in geotechnology was conducting a research project on the stability of cemented paste backfill used to recycle ore residues and to fill the cavities created by mining. In the laboratory, he was exposed to dusts and mists of mine tailings, binders (Portland cement, fly ash and slag) and water from the flotation process. Two months into this project, he began to complain of ocular and eyelid irritation that would clear during weekends. Over 2 months, these symptoms worsened to culminate in a severe and acute facial dermatitis requiring withdrawal from work and administration of systemic corticosteroids.

Patch testing was performed 3 months later with the NACDG standard series and a metals series. Positive (2+) reactions were found to thiuram mix and carba mix. A review of the reagents used in the processed water disclosed the presence of carbamates, mercaptobenzothiazole (MBT), xanthates and diphosphonates. A second series of tests done with some of these chemicals and mining residues gave 2+ reactions to sodium isopropyl xanthate 10% pet. and potassium amyl xanthate 10% pet.

Conclusion: Xanthates, carbamates, MBT and dithiophosphates are used as collectors in the flotation process to separate sulfidic ores of copper, lead, zinc and gold from waste material (gangue). We report what is our knowledge the first case of occupational allergic contact dermatitis to carbamates and xanthates stemming from this process. Because they share a common "dithio" chemical group, we believe that xanthates and carbamates may cross-react. We also wish to increase the awareness of the patch testing community to the presence of carbamates and MBT in the mining industry.

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THE EFFICACY OF TACROLIMUS OINTMENT IN THE PREVENTION AND TREATMENT OF CONTACT DERMATITIS

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Background: Irritant and allergic contact dermatitis are common problems. Additional effective prevention and treatment options would be beneficial to patients suffering from these conditions.

Objective: The purpose of this pilot study was to evaluate the effectiveness of tacrolimus ointment in the prevention and treatment of contact dermatitis caused by either sodium

lauryl sulfate or poison ivy/oak.
Methods: A single blinded, randomized, paired comparison study was used to assess the effectiveness of tacrolimus 0.1% ointment in preventing or treating experimentally induced contact dermatitis.
Results: Tacrolimus ointment application for prevention of sodium lauryl sulfate irritant contact dermatitis showed a statistically significant improvement compared to the control at day 4 ($p=0.03$), and day 8 ($p<0.01$), and a marginally non-significant improvement at day 10 ($p=0.06$). For the sodium lauryl sulfate there was no evidence of a treatment effect at any study day.

In the urushiol prevention group, there was no difference between tacrolimus ointment use and the control group. For the urushiol exposure group, tacrolimus ointment used as a treatment showed statistically significant improvement at day 8 ($p=0.021$) compared to the control and a marginally non-significant improvement on day 10 ($p = 0.072$).
Conclusion: Tacrolimus ointment showed statistical difference in preventing irritant contact dermatitis and treating allergic contact dermatitis at various days during the study. Tacrolimus ointment was ineffective in preventing allergic contact dermatitis or treating irritant contact dermatitis. The clinical relevance of these results is still to be determined.

COSMETIC INGREDIENT REVIEW: ITS FUNCTION AND RELATION TO DERMATOLOGIC PRACTICE

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The Cosmetic Ingredient Review (CIR) was founded in 1976 by the Cosmetic, Toiletry and Frangrance Association (CTFA) to thoroughly review and assess the safety of cosmetic ingredients inan open, unbiased and expert manner and to publish its results in the scientific literature. Although funded by CTFA, the CIR is an independent entitiy and its Expert Panel is publicly nominated. The seven voting members of the present panel are all academic scientists and include three dermatologists, two toxicologists, one veterinarian pathologist and one biochemist specializing in carcinogenicity. In addition, the panel has four non-voting members: the CIR Director, CTFA's liaison and representatives from the Consumer Federation of American and the U.S. Food and Drug Administration.

In assessing the safety of cosmetic ingredients, the CIR panel uses varying criteria. Requisite among these are: 1) how the chemical is used (leave-on, wash-off, aerosol, etc.) and its concentration of use; 2) the chemical structure and physical properties of, and impurities in, the cosmetic grade chemical; 3) acute/chronic dermatotoxicity and potential for cutaneous absorption under conditions and concentrations of use; and, 4) mutagenicity studies. Depending upon the above, the panel may request more information in areas such as: 1) metabolism and excretion; 2) oral, ocular, inhalation, immunologic, etc. toxicity; 3) photosensitization/toxicity; 4) carcinogenicity; and, 5) teratogenicity/reproductive toxicity. The panel then determines whether the available data are sufficient to assess safety. If not, an insufficient data conclusion, which delineates the needed studies, is reached. When sufficient data exist to rule on the safety of a chemical, he conclusion is frequently not a simple safe or unsafe. Rather, numerous chemicals have been found t obe safe with limitations on (i) concentration; (ii) combination with other chemicals; and/or, (iii) product type (leave-on,etec.) in which used. Throughout its

deliberative process, the panel maintains open communication with industry, academia and other interested parties. The net result is an assessment of chemical safety for cosmetic use that is beneficial to both industry and the consumer. To date, the Expert Panel has determined that 635 (56.8%) ingredients are "safe as sued", 365 (32.6%) are "safe with restrictions", 9 (0.8%) are "unsafe" and 110 (9.8%) have "insufficient data" to support safety.

QUALITY OF LIFE (QoL) IN PATIENTS WITH ALLERGIC CONTACT DERMATITIS (ACD)

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This study, approved by our IRB, was conducted to investigate the impact of ACD on QoL. 149 subjects with ACD responded to QoL questionnaire modified form Skindex-16. QoL scores were correlated with demographics, disease characteristics, and management techniques to ascertain factors impacting outcomes.

Respondents reported being bothered most by itching, skin irritation, and persistence of symptoms. Of the four scales in the QoL, emotions had the worst score, followed by symptoms, functioning, and occupational impact. Patients with facial ACD were most bothered by their appearance. Hand involvement and occupational exposure were associated with worse scores within occupational and functioning scales. Subjects who changed jobs had the most severe QoL impairment. A history of atopic eczema improved outcomes in patients with ACD. Subjects diagnosed more than 36 mos. After disease onset had worse scores than those diagnosed earlier. Patients diagnosed $\leq$ 6 mos. Had the worst QoL scores, while the best outcomes were reported in subjects diagnosed within 6 to 12 mos. A slight decine in QoL was observed 12 mos. After patch testing, but scores did not revert to levels seen $\leq$ 6 mos. after diagnosis.

ACD has an appreciable effect on QoL, especially when it affects the hands, the face, or is occupationally related. Of the four scales included in our study, the emotions scale suffered the greatest effect. Early diagnosis and adequate counseling improved outcomes. Changing jobs significantly worsened QoL.

AQUAGENIC URTICARIA PRECIPITATED BY MORPHINE

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Aquagenic urticaria is a rare form of physical urticaria. Morphine is known to induce mast cell degranulation and cause urticaria in some patients.

A 38-year-old otherwise healthy male developed aquagenic urticaria after he began taking oral morphine for chronic headaches. Any exposure of his skin to water would rapidly result in an urticarial eruption perfectly mirroring the site of water exposure. Bathing resulted in a generalized eruption, whereas localized exposure during hand washing or sweating would induce the urticaria only in the sites exposed to the water. There were no associated systemic symptoms. Strict avoidance of water would prevent the urticaria. Exposure to water did not induce urticaria on days when the patient did not take morphine. The aquagenic urticaria

resolved spontaneously when the patient discontinued the morphine in favor of a different non-narcotic pain medication.

We propose that this patient had a latent form of aquagenic uritcaria that was unmasked by the ingestion of morphine.

UTILITY OF A STANDARD ALLERGEN SERIES ALONE IN THE EVALUATION OF ALLERGIC CONTACT DERMATITIS: A CONTINUING PROSPECTIVE SERIES OF 1854 PATIENTS

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Background: Patch testing is the gold standard for diagnosing allergic contact dermatitis. Past studies have not completely addressed the validity and usefulness of the Allergen Patch Test Kit and the T.R.U.E. Test.

Objective: The purpose of this study is to independently examine the utility of using the allergens of the Allergen Patch Test Kit or the allergens of the T.R.U.E. Test as exclusive screening methods in the diagnosis of contact allergy.

Methods: The charts of 1854 patients recommended for patch testing using NACDG screening series with or without additional supplemental allergens were reviewed for positive patch tests results. Positive reactors were distinguished on the basis of the clinical relevance of their reactions. The two groups were further analyzed to determine whether the positive reactions were to allergens present in the Allergen Patch Test Kit, the T.R.U.E. Test, or the supplementary group.

Results: Part I (Allergen Patch Test Kit allergens) Of the 1854 patients patch tested between Jan. 1, 1988 and Dec. 31, 1998, 1181 (63.7%) had a positive test results, and 784 (42.3%) had clinically relevant reactions. Only 16.2% of patients with positive patch tests reacted to allergens present in the Allergen Patch Test Kit alone and only 9.5% of patients with positive results had clinically relevant reactions detected with the Allergen Patch Test Kit allergens exclusively.

Part II (T.R.U.E. Test allergens) Of 1122 patients patch tested between July 1, 1994 and Dec. 31, 1998, 818 (72.9%) had a positive results, and 563 (50.2%) had clinically relevant reactions. Only 226 (27.6%) patients with positive patch tests reacted to allergens exclusively present in the T.R.U.E. Test, and only 125 (15.3%) patients with positive results had clinically relevant reactions detected using allergens tested in the T.R.U.E. Test alone.

Conclusion: The Allergen Patch Test Kit and the T.R.U.E. Test are of limited utility as screening methods when used exclusively in the evaluation of patients with allergic contact dermatitis. More extensive testing, including suspected supplementary allergens determined by a thorough history, is necessary to investigate the cause of contact dermatitis.

ADOLESCENT CONTACT DERMATITIS

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Objectives: 1) To determine the contact dermatitis frequency in adolescents attended in an assistance service; 2) to characterize the adolescent group with contact dermatitis; 3) to verify the

main sensitizers. **Methods**: Between January 1996 and December 2001, 1027 patients with hypothesis diagnostic of contact dermatitis were attended in the Clínica de Dermatologia da Santa Casa de São Paulo – Brazil. Of these, young people with ages ranging from 10 to19 were selected. The patients were submitted to the epicutaneous tests and evaluated according to sex, time of dermatosis evolution and location of the dermatosis, atopy association and sensitization frequency of the substances. **Results and conclusions**: Among the tried patients, 102 were adolescent, carrying the frequency of 10% of adolescent with contact dermatitis in the studied population. About 91% were women, 71% whites, 48% with atopy antecedent, 62% with dermatosis with more than a six months period of evolution and just 12% had their dermatosis related with career. The main location of the contact dermatitis was the face (36%). According to the clinical history and the result of contact tests 56% of the cases corresponded to the allergic dermatitis and 44% to the irritant contact dermatitis. The two substances with larger positive tests number were: nickel sulfate (32%) and resin tonsilamide (13%). The contact dermatitis in adolescent is related to their social habits and the use of jewelry and cosmetics.

PREVENTION OF EXPERIMENTALLY INDUCED IRRITANT CONTACT DERMATITIS BY ISATIS TINCTORIA AND TRYPTANTHRIN AND ITS IMPACT ON UVB-INDUCED ERYTHEMA

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Background: Woad (Isatis tinctoria L.), an European indigo dye plant, has been used for medical purposes since antiquity. Lipophilic woad extracts exhibit significant pharmacological activity against several clinically relevant targets of inflammation. The alkaloid tryptanthrin has been subsequently isolated from woad as a potent dual inhibitor of the proinflammatory enzymes cyclooxygenase-2 and 5-lipoxygenase.
Objectives: To investigate the antiinflammatory efficacy of three different Isatis tinctoria extracts and tryptanthrin in sodium lauryl sulfate (SLS) induced irritant contact dermatitis (ICD) and UVB-induced erythema.
Patients/Methods: Cumulative irritant contact dermatitis was induced in 20 healthy volunteers by twice daily application of 0,5 % sodium lauryl sulfate on the backs over four days. Half of the test fields were treated with the test substances during the eliciting phase, while the remaining test fields were treated over a period of 4 days after induction of dermatitis. In a second model, we induced UVB erythema on the volunteers lower backs using the double MED. 24 hours after irradiation the test fields were treated with the test substances over a period of 3 days. All reactions were assessed visually and by non-invasive bioengineering methods (evaporimetry and chromametry).
Results: Treatment with extracts during the ICD eliciting phase led to an significant smaller increase of visual scores and transepidermal water loss compared to the untreated test field. For tryptanthrin this benefit was also observed, but the improvement was not statistically significant. When treatment was performed after completing the eliciting phase, accelerated resolution of the irritant reaction could not be observed. In the UVB-erythema model antiinflammatory effects of the test substances were not observed.

Conclusions: In developmental stages of inflammation, Isatis t. extracts showed antiinflammatory efficacy, while the effect of tryptanthrin was statistically not significant. Additional but presently unknown extract constituents may enhance the antiinflammatory action and / or penetration of tryptanthrin.

ALLERGIC CONTACT DERMATITIS IN YOUNG AND OLD INDIVIDUALS: ANTIOXIDANT ENZYMES

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This study was conducted in order to investigate aging dependent changes of enzymatic antioxidant defense system in allergic contact dermatitis (ACD) in human skin.

Diphenyl cyclopropenone (DPCP) was applied to cause ACD and 6 volunteers aged more than 70 and 5 volunteers aged under 30 showed weak positive reaction (+) after DPCP sensitization were included to this study. Activities of catalase (CAT), superoxide dismutase (SOD) and glutathione peroxidase (GPx) were measured in both normal and ACD sites. Differences according to age were compared and analyzed to detect affect of aging.

The CAT activities of the older volunteers were significantly lower than those of the younger volunteers in normal skin. In comparing normal and ACD skin, both young and old volunteers showed significantly lower CAT activities in ACD sites. In contrast, SOD and GPx showed no significant difference.

In conclusion, CAT activity of skin decreases with human skin aging and ACD. This findings suggest a possibility of cutaneous CAT playing an important role in antioxidant defense mechanism against oxidative stress in terms of aging of the skin pathophysiology of allergic contact dermatitis.

CONTACT DERMATITIS IN LEG ULCER PATIENTS: A DUAL-CENTER STUDY

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Fifty-four patients with an active leg ulcer or a history of a previous ulceration, with or without dermatitis, were chosen to participate in the study. The study was conducted in two centers: University of Ottawa, Ontario, Canada and Roger Williams Medical Center, Providence, Rhode Island, USA. In both centers, the majority of the study subjects were patients at each center's wound healing clinic. The patients were patch tested to both the NACDG Standard series of 65 allergens, as well as, a comprehensive supplemental series of 52 allergens including topical medicaments, additional rubber accelerators, preservatives, vehicles, and wound dressings. The first reading was performed at 48 hours. The second reading was either performed at 96 hours or at 118 hours. Both readings were interpreted following the NACDG protocol.

Study goals were to: 1. Identify the common allergens in this group and determine the percentage of monosensitization versus polysensitization. 2. Determine the frequency of various positive patch test related to leg ulcer therapy, and whether patients with positive reactions had longer ulcer duration or more recurrences. 3. Determine the frequency of the common allergens

in leg ulcers' patients compared to the NACDG database and 4. To compare the results from this study to previously published patch studies in leg ulcer patients.

Conclusion: High incidence of positive patch tests was noted in these leg ulcer patients. Allergic reactions occurred in a total of 34 of 54 (63%) of patients. The most common allergens were bacitracin, balsam of Peru, fragrance mix and wood tar mix. The highest allergic reaction in the ulcer-dressing group was to duoderm CGF.

OCCUPATIONAL CONTACT DERMATITIS FROM EPOXY RESIN IN FOUR AIRCRAFT INDUSTRY WORKERS

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Epoxy resins (ER) resist the elements, form high strength bonds, and are used in many industries, including aircraft industry. ER compounds are the third most frequent cause of occupational allergic contact dermatitis (OACD).

Objective: To report 4 cases of OACD in aircraft industry workers and to review the literature.

Results: Four assembly workers developed dermatitis of hands and forearms within 2 months of working with wet ER systems. All were employed by the same small-aircraft manufacturer and were seen within a 2-month period of time at our institution. All had patch test positive reactions to ER. Age range was 19 to 35 years. All wore at least 2 layers of nitrile gloves and other protective garments. The outbreaks coincided with transfer of operations, involving common ER systems, to the company where these 4 men worked. All cleared when away from work, and all were unable to return to their jobs due to repeated flares upon re-challenge.

Conclusion: These case reports provide interesting information about ACD to epoxy resins and further validate existing literature on the subject.

OCCUPATIONAL CONTACT DERMATITIS: A COMPUTER MANAGEMENT SYSTEM

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Computer systems lend themselves well to the activity of patch testing. Working with a programmer and set on Microsoft Access database, the Contact Allergy Management System (CAMS) was developed to manage both the practical and research necessities of patch testing.

The program is used to collect demographic data on that patients and their pertinent history, for clinic and allergen management, assigning allergens for testing and recording results.

In 9 years over 1500 patients have been referred to our Occupational Dermatology Clinic for testing. Of those, 62% had significant occupationally related CD, and 19% were partially occupationally related CD.

Major diagnoses included 33.3% irritant CD; 29.5% allergic CD; 16.5% endogenous eczema; 2% contact urticaria; and 1/7% latex allergy. While nickel, potassium dichromate, cobalt, fragrance and thiuram were the 5 most common positive reactions, the 5 most relevant allergens were thiuram, potassium dichromate, PPD, epoxy resin and ammonium persulfate.

The database is now used in fie patch testing centres in Australia and we will soon be able to present Australian based research data gathered via CAMS.

TWO CASES OF SYSTEMIC ACD: COBALT RECALLED WITH B12 AND PLANTS RECALLED WITH HERBAL PRODUCTS

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Systemic ACD occurs after parenteral or oral exposure to an allergen. We present two cases.

Case 1: Fifty-one year-old female with chronic hand dermatitis and widespread nummular dermatitis

Case 2: Fifty-three year-old male with recurrent periorbital dermatitis and linear dermatitis on his face and neck. Hobbies included gardening and woodworking.

Patch tested to the following:

Case 1: NACDG standard (65)	Case 2: NACDG standard
Own products	Own products
Textile series	Plant series
Steroid series	Wood series
	Glue series

Readings at 96 hours were:

Case 1:	3+ Cobalt	Case 2:	3+ Dahlia, Yang-yang oil
	2+ Formaldehyde		2+ Tansy, Goldenrod
	1+ Quaternium 15		2+ Marguerite, Chamomile
	1+ Diazolidinylurea		2+ Yarrow, Fragrance mix
	2+ Melamine formaldehyde		1+ Common ivy, Lettuce
	1+ Disperse orange dye		1+ Sunflower, Calendula
			1+ Propolis, balsam of Peru
			3+ Disperse blue dye

Case 1 was on B12 s.l. supplements. She cleared after discontinuing them.

Case 2 drank herbal tea nightly consisting of chamomile, cinnamon, lemon, chicory, licorice, cranberry and hibiscus. He also took a propolis and ginseng supplement. He improved when these were discontinued.

The results of rechallenging are discussed and we review systemic allergic contact dermatitis.

SCREENING FOR HAND DERMATITIS IN HEALTH CARE WORKERS

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Health care workers are at high risk for occupational dermatitis. Though screening I suggested as a prevention strategy, there is little information in the literature regarding its use in the workplace.

The objectives of this pilot study were to determine the feasibility o screening to identify workers with hand dermatitis in the health care sector and assess the prevalence of findings. The study as a perspective, cross-sectional study of hand dermatitis and related workplace exposures

in hospital personnel visiting an Employee Health Unit over a six week period in February and March 2002. A self-administered questionnaire and hand examination was used for the assessment.

Hand dermatitis was present in 30.5% of respondents (n=139), based on history and/or physical examination. 19% had complaints of hand dermatitis in the past 12 months, 18% had physical findings and 6 % had both. Those involved in wet work reported increased glove and hospital-dispensed cleanser use, and were 4.8 times more likely to report hand eczema in the past year than those involved in dry work.

Screening using a brief questionnaire and hand examination was feasible in this setting. The prevalence of changes was similar to that reported in population-based studies.

QUALITY OF LIFE ANALYSIS IN PATIENTS WITH HAND DERMATITIS

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Background: Hand dermatitis is a chronic dermatosis with multiple, occasionally overlapping etiologic factors, including allergic contact dermatitis. Treatment is difficult and often the condition impacts negatively on quality of life (QOL) of the patient.
Objective: To objectively measure QOL in patients with chronic hand eczema following patch testing.
Methods: Patients with chronic hand dermatitis seen between 1999 and 2000 were identified. Patients were contacted via telephone. Following consent, a modified version of Skindex-16, a validated QOL assessment tool, was completed. Results were collected anonymously.
Results: 67 patients were contacted. 43.43% (29/67) had relevant contact allergens identified while the remainder, 56.7% (38/67) did not. Patients in both groups had similar QOL indices (24.6 for ACD group and 25.6 for non-ACD). However, patients in the ACD group had a higher global level of satisfaction (4.4/5) than patients in the non-ACD group (4/5).
Conclusions: Following patch test assessment for chronic hand dermatitis, there is a high degree of patient satisfaction. Finding an identifiable contact allergen does not seem to significantly change the overall QOL score.

CONTACT URTICARIA TO AIRBORNE CURCUMIN CAUSING CHRONIC DERMATITIS IN AN OCCUPATIONAL SETTING

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The dried milled rhizome of *Curcuma longa*, a plant originally from India and tropical Asia, is the spice tumeric. Curcumin is the yellow dye within the tumeric. It has been used as a dye in foods, in furs, and is also widely utilized as a medicinal herb. Three cases of allergic contact dermatitis to curcumin have been reported, but contact urticaria has not.

A 44 year old Bosnian female, after working for a number of years at a company which makes nutritional supplements, developed a chronic pruritic dermatitis on exposed areas after a new ingredient, curcumin, was added to the powder mix which was placed in the capsules. Acute pruritus would start approximately 30 minutes after being exposed to the powder which

was airborne in the work area. Patch testing to the powder, although it initially caused some itching, was negative as was the rest of the patch test series. Scratch-testing to the powder revealed a 3mm wheal and a larger pruritic 2.5 cm patch which developed between 30-40 minutes after application of the powder. Attempts at avoidance of the powder have resulted in marked improvement of her dermatitis.

With the dramatic increase in development of nutritional supplements, this case reveals both a new substance which causes contact urticaria, as well as an unusual airborne delivery which can be considered in working up occupational dermatitis.

CYTOKINE RESPONSE OF ATOPIC DERMATITIS PATIENTS TO PATCH TESTING WITH DUST MITE AND YEASTS

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We determined mRNA cytokine expression on 8/14 atopic dermatitis (AD) patients (pts) following positive atopy patch tests (APT) to dust mite or yeast. Patch tests were applied to intact or scarified skin of the upper back with serial concentrations of *Malassezia sympodialis* (ms*), Candida albicans* (ca) and *Dermatophagoides pteronyssinus/farinae* (df). Application sites were examined at 1,6 and 48-72 hours after patch application. Punch biopsies were obtained from positive APT, total RNA was extracted and RT-PCR was performed with primers specific for: IL-4, IL-6, IL-8, IL-10, IL-12p35, IL-12p40, IFN?, and β actin.

Cytokine analysis of APT to df, ms, and ca suggest that allergic rather than irritant responses are detected within hours of application consistent with prior literature suggesting a Th2 to Th1 cytokine shift in APT sites. Patients with a history of severe AD were more likely to exhibit positive APT. Some patients with positive APT in this study also had dyshidrotic, nummular, or adult onset “textile pattern” dermatitis.

OUTCOME MEASURES IN WORKERS WITH CONTACT DERMATITIS

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There has been increasing interest in functional and quality of life outcomes in patients with a variety of conditions. Several reports of dermatology specific quality of life outcomes for contact dermatitis (CD) have recently appeared. Given that the hands are often involved in workers with CD, use of an outcome instrument focused on hand function may enrich outcome information.

The objectives of this study were to document quality of life and function in workders presenting with CD using three instruments; the SF36, a modification of a dermatology specific instrument and the Michigan hand Outcome Questionnaire (MHQ). 77 workers with hand involvement completed the three instruments at the time of diagnosis

Most common findings on the dermatology specific questionnaire were 81% with sensory complaints and 53% with work interference. On the SF36 the most affected item was limitation in dressing or bathing. Key findings on the MHQ were impediment of finger movement, taking

longer to do tasks at work and accomplish less at work, concerns re appearance of the hands and affect of those concerns on mood and social activities.

The MHQ added additional information about the effects of CD on hand function. There may be advantage to including some of its items in the assessment of functional and quality of life outcomes in workers with CD.

FRUIT ACIDS DO NOT CONTRIBUTE TO CUMULATIVE IRRITANT CONTACT DERMATITS IN A HUMAN TANDEM IRRITATION MODEL IN VIVO

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Bakers and confectioners are at high risk to develop occupational irritant contact dermatitis (ICD). Repeated exposure to mild irritants, such as surfactants and various food ingredients, in combination with wet work is supposed to induce epidermal barrier dysfunction and ICD. However, to date the impact of food components, particularly fruit acids, and their interaction with other irritants in the development of ICD remains unclear.

Following previous work on "tandem irritation", 20 healthy volunteers were exposed twice daily for 4 days to the organic fruit acids citric acid, maleic acid and lactic acid, either alone or in tandem application with sodium lauryl sulfate (SLS) 0.5%, a model surfactant, in a repetitive irritation test. Irritant reactions were assessed by using clinical scoring and non-invasive bioengineering methods (choromametry and evaporimetry).

Twice daily application of either malic or citric acid alone did not induce a significant barrier disruption, whereas exposure to malic acid and SLS, citric acid and SLS, or lactic acid and SLS respectively, caused marked barrier disturbance. However, the latter irritant effect was smaller compared to that obtained by combined exposure to SLS and H2O. No enhancement of SLS-induced irritation by combined exposure to the above mentioned fruit acids was observed. In conclusion, our results suggest that exposure to fruit acids at the work place does not significantly contribute to the development of ICD in the food processing industry.

SECONDARY INDIVIDUAL PREVENTION (SIP) IN GERIATRIC NURSES (GN)

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A project of SIP was condicted, aiming at clearance of skin lesions and professional continuation in GN. 103 participants completed the 6 months program, comprising educational seminars, hands-on training of the correct skin protection use and dermatologic treatment.

Severity of hand dermatitis was classified upon each visit. 66 participants revealed atopic palmar eczema, 25 with palmar hyperhidrosis, 6 with hyperkeratotic hand ezema, 44 GN suffered of chronic irritant and 6 of allergic cntact dermatitis. 51 GN suffered of more than one disease. Upon entry, hand dermatitis of 10% was severe, 51% moderate, 29% slight and 10% had no skin changes. Completing the program 59% GN had no skin changes, while 3% were slight, 6% moderate and 2% severe. 32% GN had no delayed type sensitization, 11% not work related and 57% work related. 36% GN had immediate type allergies not relevant to work, 13%

were sensitized to latex ?-TEWL measurements, declining from 6.7 to 3.2 g/m^2/h (median), revealed significant (p<0,001) improvement of the epidermal barrier during SIP in GN.

Objective dermatologic and skin physiologic data show that SIP in GN is effective n preventing work-related skin problems.

TERTIARY PREVENTION OF OCUPATIONAL CONTACT DERMATITIS

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In an intervention study employees with severe occupational skin disorders were treated as in-patients at the University of osnabrueck, from 1994 to 1999. This study focused on the tertiary prevention of skin disorders as well as on their optimized rehabilitation, aiming at maintaining the individuals occupation. For the study, cases with skin disorders resistant to conventional out-patient treatment were selected.

In order to determine the quality of such intervention, the participants, the admitting dermatologists and the work insurance companies were interviewed one year after discharge from the hospital. Results of successful tertiary rehabilitation concerning skin disorders in Germany are presented here for the first time.

65.9% (n=232) of the participants (n=353) maintained their occupation, 32.7% (n=115) had to quit, however 23% (n=81) because of their occupational skin disorder. 65.9% (n=232) still had skin changes, which were severe in 27.2% (n=63), moderate in 40/1% (n=93) and slight in 32.3% (n=75); 35.5% (n=118) had healthy skin.

Taking into account that all participants had severe skin changes and anticipated to be forced to give up their job, for most of them this tertiary prevention measure was estimated successful.

CONTACT ALLERGY TO METAL AND TOTAL JOINT ARTHROPLASTY

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Here we report the case of a 48 year old woman with a history of metal allergy who was patch test positive to: cobalt chloride and nickel sulfate. She required total knee replacement for severe osteoarthritis. Subcutaneous metal discs were implanted to test for possible skin and/or systemic reactions prior to joint replacement. There were no local reactions at the implantation sites but the patient did have a significant recall reaction at her nickel patch test site. Approximately eight months later the patient received a left total knee replacement, stainless steel. At one month post-op, the patient developed eczema over the left nee and at the left ankle (site where a stainless steel plate had once been). Once year later, the right knee was replaced with a stainless steel prosthesis. Two years after this, the patient continues to get episodic flares of allergic contact dermatitis over the incision sites bilaterally, on the mid-back and at the left ankle.

Based on this case and a review of the literature we conclude that: allergic contact dermatitis to implants can occur but it is rare, it is more likely if the implant is static (screws in plates) and the patient has a history of metal allergy, the reactions are not usually severe enough to require removal of the implant, aseptic loosening of the prothesis is not related to metal

sensitivity and subcutaneous implants of metal discs are not helpful in predicting the potential for skin reactions.

ACRYLIC REACTIONS: A REVIEW OF 56 CASES

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Objective: To update the Cleveland Clinic's patch test data on acrylic allergy.
Method: Chart review of 56 patients with positive patch test reactions to acrylics, seen between January 1988 and October 2002.
Results: There were 43 females and 13 males with ages ranging from 11 to 96 years. Twenty-seven were atopic; 34 had involvement of the hands and 20 had facial dermatitis; average duration of dermatitis was 3.2 years. Occupations included industrial workers (14), dentists/dental assistants (8), manicurists/nail technicians (7), laboratory technician (1), homemakers (7) and office workers and miscellaneous (19). The most frequent exposure sources were acrylic nails (25), dental material (13), and adhesives (7). Highest patch test reactivity was seen for ethylene glycol dimethacrylate (EGDMA) (30), hydroxy-ethyl methacrylate (28), hydroxy-propyl methacrylate (HPMA) (21), and methyl methacrylate (19).
Conclusions: In acrylic nail users positive patch test reactions to HPMA (2% and 5%) were most common. EGDMA was the most frequent reactor in dentists/dental assistants. Aimed patch testing with the acrylic tray and /or dental tray is important in high-risk groups. The addition of EGDMA to the standard screening tray should be considered.

RISK FACTORS FOR WORK-RELATED DERMATOSES IN YOUNG FARMERS

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A group of 304 random students of 11 agricultural schools consented to participate in the study on prevalence and risk factors for farm work-related skin diseases (participation rate 98%).
Methods: (approved by the ethical committee) comprised standardized questionnaire, skin prick tests and patch tests with common and farm allergens, total IgE and Phadiatop. Obtained data (144 variables) were tested statistically as possible risk factors for work-related dermatoses. For each variable, predictive values were calculated, as well as the significance level for differences between students with work-related dermatoses and their symptom-free classmates (Fisher's exact chi-square test).
Results: work-related dermatoses were identified in 18 students (5.9%): dermatitis in 10, urticaria in 4, and both dermatitis and urticaria in remaining 4. The most important risk factor was history of atopic dermatitis, with positive predictive value (PPD)=0.286, negative predictive value (NPD)=0.952, p=0.006. This was followed by history of cosmetics intolerance (PPD=0.194, NPD=0.956, p=0.005), ACD (PPD=0.182, NPD=0.956, p=0.007), metal and detergent intolerance, and respiratory allergy. Positive allergy test results did not prove to be risk factors.

Conclusion: Identified risk factors deserve special attention during prophylactic health checks at farming schools.

PATCH TESTING: TRENDS IN PHYSICIAN PRACTICE AND RESTRICTIONS BY THIRD PARTY CARRIERS

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Objective: Review recent Center for Medicare and Medicaid Services (CMMS) data on patch test usage and reimbursement, including the integral roles of AMA advisory committees and local Medicare review policies (LMRP's) in CMMS determinations.
Method: Review of: 1. Medicare data for CPT code 95044 from 1994-98. 2. Relevant AMA committee recommendations. 3. Medicare LMRP's on patch testing.
Results: The number of patch tests applied by physicians increased from 139K (1994) to 339K (1998); approximately 90% were applied by dermatologists. Reimbursement has gradually increased. LMRP'S exist in at least four Medicare regions and may restrict the number of patch tests allowed. The AMA CPT Editorial Panel recommended an increase in the number of allowed patch tests from 50 to 100. The AMA Practice Expense Advisory Committee (PEAC) is currently reviewing patch testing.
Conclusion: Continued monitoring of Medicare (CMMS) and AMA committee activities is warranted to prevent future restrictions on patch testing by third party carriers.

INTOLERANCE TO TOPICAL PRODUCTS MAY BE DUE TO DERMOGRAPHISM

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Background: Patients with reactions to topical products may be eliciting a physical urticaria, dermographism, by rubbing. These reactions may be misinterpreted as allergic.

Objective: Review the ways in which patients experiencing reactions to topical products due to underlying dermographism can be evaluated to achieve an accurate diagnosis. **Methods**: Three cases demonstrating this phenomenon will be presented. **Results:** All patients with reactions to topical products due to dermographism improved with counseling and anti-histamine therapy. Repeat open application testing confirmed the safety of previously suspect medications in two of the three cases, preventing unnecessary changes in medication regimen and inaccurate diagnoses of medication allergy. **Conclusion:** When intolerance to topical medications is due to dermographism, it can usually be managed without extensive testing or treatment.

EXACERBATION OF PHOTO-DERMATITIS WITH THE USE OF SUNSCREENS

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Objective: We present five patients with a history of a photo-dermatitis with exacerbation related to sunscreen use. The goals of our investigations were to assess for photosensitivity, allergic contact dermatitis (ACD) and photo-ACD.
Methods: All patients were photo-tested. Patients were patch tested to the North American Contact Dermatitis Group standard tray, and photo-patch tested to sunscreen agents.
Results: All patients had a decreased minimum erythematous dose to UVA, UVB or both. In all patients, there was a positive reaction to sunscreens alone. In four patients, this reaction was enhanced on the photo-irradiated side.
Discussion: ACD to sunscreens may be direct or secondary to photo-activation. In a patient with a photo-dermatitis, UV light alone, sunscreen alone or photo-activated sunscreen may be implicated in the mechanism of the dermatitis. In photosensitive patients made worse by sunscreen application, it is important to perform both standard and photo-patch testing.

THE FOLLOWING ABSTRACTS WERE PRESENTED AS POSTERS:

A Review of Patch testing with Preservatives at St John's Institute of Dermatology from 1995 to 2000

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Patients who attend St John's Institute of Dermatology for patch testing are tested to several preservatives which are included in the extended standard series. These include formaldehyde 1% aq., paraben mix 15% pet., methylisothiazolinone and methylchloroisothiazolinone 0.01% aq., (MCI/MI), quaternium –15 1%pet., methyldibromo glutaronitrile 0.3% pet. (MDGN), diazolidinyl urea 2% aq., imidazolidinyl urea, 2-bromo-2-nitropropane-1,3-diol 0.5% pet., (bronopol). This retrospective analysis looks at allergy rates to common preservatives from 1995 to 2000.

7362 patients attended the St John's Institute of Dermatology patch test clinic from January 1995 to December 2000. Patch tests were applied to the upper back using Finn Chambers™ with Scanpor™ and the patches were read at day 2 and day 4.

The rates of formaldehyde allergy have remained steady in both men (1% to 2.1%) and women (1.5% to 2.5%). The most common primary site in women was face and neck eczema and in men hand eczema. There was also little change in paraben allergy over this period (men: 0 to 1.8%; women 0.6% to 1.3%). Rates of contact allergy to quaternium-15 have remained steady in men (0.5% to 1.2%) with hand eczema as the most common site and in women (1.3% to 1.8%) with face and neck eczema more common. Rates of contact allergy to diazolidinyl urea have risen in men from 0.6% in 1995 to 1.4% in 2000 although in women rates have remained steady (0.2% to 0.7%). The rates of allergy to imidazolidinyl urea in men and women have been somewhat variable in men with rates from 0 to 0.8% although higher in 1998-1999 at 1.4%. Hand eczema is the most common primary site with bronopol allergy in both sexes and positivity varies in men from 0% to 1.4% and in women from 0.2% to 1.3%.

Rates of contact allergy to MCI/MI have shown an upward trend in men with a rate of 2.2% in 2000. Indeed this was one of the two commonest allergic reactions to preservatives

along with MDGN. In women the rate of positivity to MCI/MI was slightly lower throughout this period and in 2000 this was 1.2%. The rates of allergy to MDGN have increased markedly over the last few years making it one of the most common allergens amongst preservatives in both men and women. Rates of positive reactions in 1995 were 0.2% in men and 0.3% in women and in 2000 were 2.2% in men and 1.5% in women. The most commonly affected sites of MDGN allergy are face and neck in women and hands in men. This data supports the EC Scientific Advisory Committee's recommendation to remove MDGN as a preservative in leave-on cosmetics.

CONTACT DERMATITIS AND FABRIC SOFTNERS. FACT OR FICTION?

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Fabric Softeners have a controversial reputation and have ben criticized for not providing a relevant benefit to the user even though they have improved their performance in recent years. They also continue to be recommended against and are often blamed for being the cause of adverse skin reactions. But what are the facts? Is this reputation really deserved?

In this report, we provide an overview of the composition and skin safety profile of 2 different forms of fabric conditioners, sheets and liquids. An exposure-based risk assessment conducted with a perfume ingredient for both types of products showed that the margins of exposure versus the no effect level for the corresponding perfumes from a human Repeated Insult Patch Test ranged between 6,000 and 60,000 for the liquid and the sheet form, respectively. To confirm that the use of these products caused no adverse skin reactions in sensitive subpopulations, three clinical tests were conducted with representative liquid fabric softener products. Two studies, a Cumulative skin Irritation Patch test and an 8-weeks Home Use Test, were conducted among volunteers with self-assessed and medically confirmed subjects and demonstrated a very mild skin profile and no evidence of increased skin irritation when compared to the control leg. An additional 8-week Home Use Test was conducted to evaluate the skin tolerability of a fabric conditioner in a toddler population. This study showed that there were no skin effects due to the wearing of softened clothes by toddlers for an extended period of time. Furthermore, there were no differences between softened and unsoftened clothes on the prevalence of any skin reaction.

WORKERS' HEALTH CARE UTILIZATION & PERCEPTION OF HELPFULNESS OF CARE: A PILOT STUDY

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The purpose of this pilot project was to explore health services utilization and perceived helpfulness of care for patients with occupational contact dermatitis.

Over a 7 week period in 2002 individuals with suspect work-related contact dermatitis were invited to participate in a pilot study on health service utilization and the perceived

helpfulness of services received.

22 patients with work-related dermatitis participated. 36% used workplace services, 95% saw a family physician and 70% saw a dermatologist. Detailed exposure information was solicited in only one instance (5%) by a family physician but by 36% of dermatologists. 43% of patients reported help in understanding their problem and 40% in solving their problem by either their family physician or dermatologist. There was a relationship between satisfaction and shorter length of time with dermatitis.

Patients with work-related dermatitis utilize significant health care resources. The level of satisfaction reflected as whether or not the physician helped the worker understand or solve their problem, was not high. One factor strongly related to these issues was length of time between presentation and tertiary intervention. As outcome is also influenced by length of time between onset and diagnosis, intervention to make services more available might lead to better clinical and work outcomes and more satisfied patients.

EXPERIMENTAL CONTACT SENSITIVITY: A MODEL FOR BOTH ANTIGEN (HAPTEN)-SPECIFIC AND INNATE IMMUNE MECHANISMS

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Introduction: It was shown that in contact hypersensitivity reaction (CHS) not only antigen-specific but also proinflammatory effects of haptens contribute to the elicitation of CHS, highlighting the importance of mechanisms of innate immunity. In the present study, experimental model of contact sensitivity to dinitrochlorobenzene (DNCB) in inbred AO rats was employed to determine both antigen (hapten)-specific as well as parameters of antigen-non-specific aspects of CHS response.

Methods: Ear swelling assay and dermal infiltrate density were employed for quantification of CHS reaction. Draining (axillary and suprascapular) lymph node cell activity and phenotype were determined 72 h following sensitization. Peripheral blood granulocytes activity was determined 24 h following challenge.

Results: Following local epicutaneous application of 2% DNCB, increased spontaneous, hapten-stimulated and interleukin (IL)-2-driven draining lymph node cell (DLNC) proliferation was detected, reflecting the antigen (hapten)-specific aspect of CHS. At the dose of DNCB employed for the elicitation of CHS in sensitized animals, increased activity of peripheral blood granulocytes (including activation, adhesion and cell survival) was detected.

Conclusion: Collectivelly, these data demonstrate the activation of both antigen (hapten)-specific and innate immunity in CHS reaction, and importance of studying both aspects of reaction in the same animal model.

LONG TERM STUDY ON PRIMARY PREVENTION OF IRRITANT CONTACT DERMATITIS

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Irritant skin changes provide a serious problem in health care professions. The aim of our study was to investigate the efficacy of a regular dermatological training on skin care concerning occupational skin problems during the first three years on nursing duty. The study was approved by the ethical committee of the university.

521 nursing trainees were included and divided into a trained and a non-trained group. At begin, skin changes were documented and an irritant patch test with SLS (evaluation by measurement of TEWL) was performed. After one as well as after three years skin changes were re-evaluated and the behavior of the trainees concerning risk activities and skin protective measures was recorded.

After three years we found in the trained group better skin conditions, a lower drop out rate because of skin problems and a better knowledge of the subject matter. Irritant skin changes at begin seemed to be a risk factor for developing severe skin changes. SLS-test, revealed no predictive value regarding development of skin changes in the future. We conclude that an appropriate training of dermatitis prevention can improve the skin condition and may prevent irritant dermatitis in nurse trainees.

SKIN ORGAN CULTURE IN THE EVALUATION OF CONTACT HYPERSENSITIVITY REACTION INTENSITY

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Introduction: Contact hypersensitivity (CHS) is a local inflammatory response of the skin following challenge of hapten-sensitized animals. The intensity of inflammation could be quantitated by ear swelling which is the classical manifestation of contact hypersensitivity. In this study skin-organ culture system was employed to evaluate CHS.
Methods: Rat model of contact hypersensitivity to dinitrochlorobenzene (DNCB) was employed. Levels of TNF-α (determined by ELISA) and nitrite accumulation (by Griess assay) were determined in conditioned medium (CM) of ear skin following challenge with DNCB.
Results: Dose-dependent increase in TNF-α and in nitrite levels were noted in CM following application of 0.65%, 1.3% and 2.6% of DNCB to the ears of sensitized rats. The correlation between ear swelling and the levels of TNF-α ($r=0.924$, $p<0.001$) in CM as well as between ear swelling and nitrite levels ($r=0.79$, $p<0.001$) was found.
Conclusion: Presented data suggest that this skin-organ system might be employed for evaluation of contact hypersensitivity.

ALLERGIC CONTACT DERMATITIS OF THE FEET

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Allergic dermatitis of the feet is becoming a more common problem. The typical picture of foot dermatitis is a dermatitis over the dorsal aspects of the feet which frequently spreads to the joints of the toes. Several allergic cases were analyzed in our contact dermatitis unit. Patch testing was performed for all cases. Rubber, chromated leather, formaldehyde and topical medicaments were found to be positive allergens. Allergic contact dermatitis of the foot can be prevented by

recognition and avoidance of the allergens responsible. Patch testing is important to exclude other causes of foot dermatoses.

CONTACT ALLERGY IN PSORIASIS

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It is suggested that allergic contact dermatitis is common in palmo-plantar psoriasis and not in other types of psoriasis.

The aim of our study was to determine the frequency of contact allergy to the common allergens in psoriatic patients. We patch tested 88 (47 males, 41 females) psoriatic patients (mean age 48.7 years), using European standard series of allergens. 52 (59%) patients had palmo-plantar together with erythemato-squamos and nail psoriatic lesion while the control group consisted of 36 (41%) psoriatic patients without psoriatic lesions on palms and soles. By patch testing hypersensitivity to contact allergens was established in 37 (42%) out of 88 patients, while 51(58%) were negative. Out of 37 positive patch test 33 were patients with palmo-plantar lesions. The most frequent positive allergens were: potassium dichromate-10, cobalt chloride-9, wood tars-9, carbo mix-8, thimerosal-7, nickel sulfate-6, fragrance mix-5.

The study showed an incidence of contact allergy in psoriatic patients with palmo-plantar involvement.

Hypersensitivity to contact allergens in palmo-plantar psoriasis can be considerd as provocative factor in the pathogenesis of psoriatic lesions.

ALLERGIC CONTACT DERMATITIS TO PETROLATUM

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Background: Very few cases have been reported of allergic hypersensitivity to petrolatum, which is a rare sensitizer.

Objective: The aim of this report is to show how petrolatum allergy evidenced in the vehicle of the test substances used in the patch test.

Methods: A 72-year old woman, presenting a widespread chronic eczematous lesions in legs, arms and trunk, was patch tested to Brazilian series of 30 allergens, and 2 months later to yellow petrolatum and to the patch test vehicle (white).

Results: Readings were performed at 48 and 96 hours, and it showed positive reactions to 29 out of the 30 allergens to Brazilian series, which were found in petrolatum and to the patch testing vehicle. The only negative allergen was formaldehyde, whose vehicle was aqueous.

Conclusions: The case shows hypersensitivity to petrolatum, which is a rare sensitizer. Although the allergy was detected to the patch testing vehicle, it remains the best vehicle for most patch testing allergens.