

At different times after UVB irradiation, cells were harvested for lipid extraction and for *in vitro* measurement of neutral and acidic SMase enzymatic activity. Exposure to UVB radiation resulted in rapid *in vivo* sphingomyelin hydrolysis and generation of ceramide as measured by TLC analysis. Ceramide accumulation peaked at 15' after UVB irradiation.

*In vitro* measurement of SMase activity from UVB-treated NHK extracts, using labeled sphingomyelin as substrate, showed an induction of both neutral and acidic SMase with slightly different kinetics. These data indicate that UVB can act on cellular membranes, inducing sphingomyelin hydrolysis and ceramide production through both neutral and acidic SMases.

**Prevention of Poison Ivy and Poison Oak Allergic Contact Dermatitis by Quaternium-18 Bentonite.** James G. Marks, Jr., MD, Joseph F. Fowler, Jr. MD, Elizabeth F. Sherertz, MD and Robert L. Rietschel, MD. Hershey, Pennsylvania; Louisville, Kentucky; Winston-Salem, North Carolina and New Orleans, Louisiana.

Poison ivy and poison oak are the most common causes of allergic contact dermatitis in North America.

We investigated whether a new topical lotion containing 5% quaternium-18 bentonite prevents experimentally induced poison ivy and poison oak allergic contact dermatitis.

A single-blind, paired comparison, randomized, multicenter investigation was used to evaluate the effectiveness and safety of quaternium-18 bentonite lotion in preventing experimentally induced poison ivy and poison oak allergic contact dermatitis in susceptible volunteers. One hour before both forearms were patch tested with urushiol, the allergenic resin from poison ivy and poison oak, 5% quaternium-18 bentonite lotion was applied on one forearm. The test patches were removed after 4 hours and the sites interpreted for reaction 2, 5, and 8 days later. The difference in reactions between treated and untreated patch test sites was statistically analyzed.

Two hundred eleven subjects with a history of allergic contact dermatitis to poison ivy and poison oak were studied. One hundred forty-four subjects had positive reactions to urushiol. The test sites pretreated with quaternium-18 bentonite lotion had absent or significantly reduced reactions to the urushiol compared with untreated control sites ( $p < 0.0001$ ) on all test days. When it occurred, the reaction consistently appeared later on treated than on control sites ( $p < 0.0001$ ). One occurrence of mild, transient erythema at the application site was the only side effect from the quaternium-18-bentonite lotion.

Quaternium-18 bentonite lotion was effective in preventing or diminishing experimentally produced poison ivy and poison oak allergic contact dermatitis.

**Interpretations of Ion Gradients.** Theodora Mauro MD.

Epidermal permeability barrier integrity is important to prevent the development of contact dermatitis. Recent studies have demonstrated that both irritant and allergic contact dermatitis are worsened by breakdown of the epidermal permeability barrier. The most important component of the epidermal permeability barrier is the stratum corneum lipid, which must be both secreted and processed to form a competent barrier. We have shown that extracellular  $Ca^{2+}$  and  $K^{+}$  concentrations control secretion, while processing is modulated by extracellular  $H^{+}$ . *In vivo* and *in vitro* experiments demonstrate that lipid secretion is blocked by raised extracellular  $Ca^{2+}$ , but enhanced when extracellular  $Ca^{2+}$  drops, as is seen in acutely perturbed

barriers, or when the extracellular  $Ca^{2+}$  signal is not transduced into the cell interior, as is seen in a variety of knockout mice. Conversely, lipid secretion is normal, but lipid processing is impaired when the normally acidic stratum corneum is alkalinized. Currently, we are studying which mechanisms generate the  $Ca^{2+}$  and pH gradients seen in epidermis and stratum corneum.

**Self-Reported "No Hand Eczema"—Are the Results Valid?** B. Meding<sup>1</sup> and L. Barregård.<sup>2</sup> <sup>1</sup>Occupational Dermatology, National Institute for Working Life, Solna and Stockholm County Council, Sweden, <sup>2</sup>Occupational Medicine, Göteborg, Sweden.

Questionnaires are commonly used in epidemiological studies to estimate the prevalence of hand eczema. "Yes" answers to a question on occurrence of hand eczema are in many studies followed by an invitation to a clinical examination, which gives the opportunity to verify the diagnosis. A range of 80-90% of the affirmative answers are usually correct, i.e. the positive predictive value is high. The "no" answers are, however, seldom followed up in a corresponding way. Therefore, the sensitivity, specificity, negative predictive value and the true prevalence cannot be calculated.

The aim of this study was to investigate the validity of "negative" questionnaire answers to a question on occurrence of hand eczema.

In three different prevalence studies on hand eczema, 40 car mechanics, 92 dentists and 64 computer operators, who recently had denied in a questionnaire having hand eczema during the last 12 months, were personally interviewed and their hands were inspected by an experienced dermatologist.

Fully 4/40 (10.0%) car mechanics, 11/92 dentists (12.0%) and 8/64 (12.5%) computer operators were found to have a history and/or clinical symptoms indicating hand eczema diagnosis despite previous "no" answers. In the same populations, 81%, 94% and 80% of those who reported hand eczema in the questionnaire received hand eczema diagnosis at the clinical examination. Considering false negative and positive answers, the 1-year prevalence turns from self-reported 15.0% to estimated 20.6% in the car mechanics, from 14.9% to 24.2% in the dentists and from 14.8% to 22.5% in the computer operators.

Hand eczema prevalence data obtained by "yes" answers to a questionnaire considerably underestimates the true prevalence. The tendency seems to be similar in high-risk as well as in low-risk occupations for hand eczema.

**Efficacy of a Non-corticosteroid Lotion to Reduce Sodium Lauryl Sulfate Induced Irritant Dermatitis.** Nancy A. Monteiro-Riviere, Center for Cutaneous Toxicology and Residue Pharmacology, and the Department of Clinical Sciences, North Carolina State University, Raleigh, NC.

The purpose of this study was to objectively assess in a randomized controlled experiment the efficacy of Protèque® Skin Protection Lotion to modulate sodium lauryl sulfate (SLS) induced irritant contact dermatitis in a well characterized swine model. Protèque is a noncorticosteroid lotion consisting of dimethicone, triclosan (Irgasan DP300), tocopheryl acetate, Aloe Vera gel, and Lonicera Japonica in a proprietary base formulation. SLS (1 and 3%) was applied in 4.0 cm<sup>2</sup> Hill Top Chambers on the backs of weanling Yorkshire swine (n = 4/trt). Protèque was applied 15 minutes before (pretreatment) or immediately after SLS. The effect of cleansing skin before application, and