Table of Contents

Wrinkles and Photoaged Skin ................................................................. 2
Acne and Rosacea .............................................................................. 8
Psoriasis and Eczema ....................................................................... 10
Pigmentation Abnormalities (Melasma, Vitiligo) .............................. 13
Scarring and Keloids ........................................................................ 16
Skin and Wound Care ...................................................................... 17
Warts, Plantar Warts, and Molluscum ............................................ 20
Head Lice and Scabies ..................................................................... 24
Hyperhydrosis .................................................................................. 26
Fungal Infections of the Skin and Nails .......................................... 27
Topical Anesthetics .......................................................................... 28
Miscellaneous .................................................................................. 29
How to Write a Prescription for a Compounded Medication .......... 36
Customized Medications—Compounding for Dermatology

We can prepare customized dermatologics that can improve therapeutic outcomes, increase patient compliance, decrease side effects, and save time and money. Preparations are compounded by prescription to contain the needed medications in the best vehicle (base) or dosage form (gels, creams, ointments, lip balms, powders, sprays, etc.) to most efficiently deliver the drug to the affected area.

Our compounding pharmacy utilizes state-of-the-art equipment and the finest quality bases to improve both the aesthetic and therapeutic aspects of compounded medications. Cosmetically appealing preparations can contain numerous synergistic medications, with drug particles that are fine enough to be absorbed through the skin, and penetrant enhancers when appropriate.

Therapies for Resistant Problems

- Specific therapies for resistant acne, recalcitrant viral warts and molluscum contagiosum.
- Immunotherapy to treat alopecia.
- Novel therapeutic agents to treat abnormal dermal scarring.
- Topical sodium cromoglycate for pyoderma gangrenosum.
- Natural antiviral (2-deoxy D-glucose) to inhibit the multiplication of herpes virus.
- Repigmentation therapy for patients with vitiligo.

Commercial products are limited, and sometimes unavailable. When a customized preparation is needed, such as a combination of topical anesthetics in a specialized base or dosage form, compounding pharmacists can work together with physicians to provide the most appropriate therapy. **Examples include fast-acting dermal anesthetics, fortified preparations for use prior to therapeutic tattooing for radiation therapy, and sprays which can be applied to wounds prior to dressing changes.** The efficacy of any compounded medication is influenced by the purity and quality of the ingredients, choice of vehicle (base), proper use of additives such as penetration enhancers, and the technique and equipment used during formulation.

We work together with practitioners and their patients to provide innovative solutions to challenging medical problems. Please contact our compounding pharmacist for more information or to discuss customized therapies to meet your patients specific needs.

THERAPY FOR WRINKLES AND PHOTOAGED SKIN

Many “bio-cosmeceuticals” are now available to treat aging skin, including retinoids, antioxidants, hydroxy acids, bleaching agents, moisturizers, and sunscreens. Cosmeceuticals containing antioxidants are among the most popular antiaging remedies. Topically applied antioxidants exert their benefits by offering protection from damaging free radicals produced when skin is exposed to ultraviolet light or allowed to age naturally. Appropriate formulation and use which is supervised by a knowledgeable healthcare professional will maximize the benefits while minimizing any potential side effects of these therapies.

When a proper analysis reveals areas of dry, oily, or aging skin, we can provide the appropriate correction for each skin type in a cosmetic base containing the exfoliants, emollients, and micronutrients necessary for cellular repair. Antioxidants such as Alpha Lipoic Acid and Vitamin C Ester are vital to the energy production of skin cells and formation of collagen. Amino acids such as DMAE tone and add firmness to the skin, prevent age spots, and aid in healing the micro-scarring which causes wrinkles.

Coenzyme Q10 to Prevent Photoaging of Skin

Oxidative stress (UV irradiation, free radicals) and cellular oxidation play a significant role in the processes of aging and photoaging. This may be in part due to a decline in the levels of the endogenous cellular antioxidant Coenzyme Q10 (ubiquinone, CoQ10). Hoppe et al. investigated whether topical application of CoQ10 has the beneficial effect of preventing
photoaging. They were able to demonstrate that CoQ10 penetrated into the viable layers of the epidermis and reduced the level of oxidation measured by weak photon emission. Furthermore, a reduction in wrinkle depth following CoQ10 application was shown. CoQ10 was determined to be effective against UVA mediated oxidative stress in human keratinocytes in terms of thiol depletion, activation of specific phosphotyrosine kinases and prevention of oxidative DNA damage. CoQ10 was also able to significantly suppress the expression of collagenase (which is responsible for wrinkle formation) in human dermal fibroblasts following UVA irradiation. In vivo investigations by Blatt et al. have also shown that wrinkles around the region of the eyes ("crow’s feet") could be reduced by long-term application of CoQ10. These results indicate that topical application of CoQ10 has the efficacy to prevent many of the detrimental effects of photoaging.

Biofactors 1999;9(2-4):371-8
Z Gerontol Geriatr 1999 Apr;32(2):83-8

**Coenzyme Q10** (ubiquinone, CoQ10) is an important antioxidant that is taken orally as a supplement to strengthen immune and cardiac function. The processes of aging and photoaging of the skin (due to sunlight) are associated with an increase in cellular oxidation, which may occur as the body’s own levels of CoQ10 decline. A study was done to determine if topical application of CoQ10 0.3% could prevent photoaging. A reduction in wrinkle depth following CoQ10 application was shown, and results indicated that CoQ10 has the efficacy to prevent many of the detrimental effects of photoaging. Wrinkles around the region of the eyes ("crow’s feet") may be reduced by long-term application of CoQ10.

Biofactors 1999;9(2-4):371-8
Z Gerontol Geriatr 1999 Apr;32(2):83-8

**Protection and Reversal of Photodamage with Topical Antioxidants**

Studies have shown that antioxidants can be delivered percutaneously to directly supplement the skin’s antioxidant reservoir and provide protection from ultraviolet radiation. (Oral supplementation has not been successful in raising levels of antioxidants in the skin.) Topical vitamin C, when properly formulated, effectively penetrates the skin and can produce a 20-fold increase in endogenous levels of cutaneous vitamin C. At the North Carolina Biotechnology Center, Raleigh, Darr et al. reported that, in swine skin, vitamin C is capable of additive protection against acute UVB damage when combined with a UVB sunscreen. A combination of both vitamins E and C provided very good protection from UVB radiation with the bulk of the protection attributable to vitamin E. However, vitamin C was significantly better than vitamin E at protecting against UVA-mediated phototoxic insult. When vitamin C or a combination of vitamin C and E is formulated with a commercial UVA sunscreen (oxybenzone), an apparently greater than additive protection is noted against the phototoxic damage. These results confirm the utility of antioxidants as photoprotectants and suggest the importance of combining the antioxidants with known sunscreens to maximize photoprotection.

Topical vitamins C and E, as well as topical selenium, protect skin against sunburn, suntan and skin cancer and also reverse the mottled pigmentation and wrinkles of photoaging. However, only certain forms of these antioxidants are stable and active after percutaneous absorption. Benefits of topical application are that the skin attains far higher levels of each antioxidant than can be achieved by taking these vitamins orally and topical application arms the skin with a reservoir of antioxidants that cannot be washed or rubbed off, protecting the skin for several days after application.


**The combined use of oral and topical lipophilic antioxidants increases their levels both in sebum and stratum corneum.**

**Passi S, De Pità O, Grandinetti M, Simotti C, Littarru GP.**
Centro Invecchiamento Cellulare, I.D.I. (IRCCS), Rome, Italy. invcell@idi.it

The concentration of Vitamin E (vit E) and ubiquinone (CoQ10), which together with squalene (SQ), play a key role against external oxidative insult, has been shown to decrease significantly during ageing. The aim of the present study is to inquire the effect of the combined use of topical bio-cosmetics containing natural active principles (including sebum-like lipid fractions, sebum and epidermal lipophilic and hydrophilic antioxidants), and oral antioxidant supplements on the antioxidant content of sebum and stratum corneum. We therefore treated the face and the back of 50 female volunteers aged 21-40, daily for two months, with a base cream containing 0.05% ubiquinone, 0.1% vit E, and 1% squalene. In addition 50 mg of CoQ10 + 50 mg of
d-RRR-alpha-tocopheryl acetate + 50 microg of selenium were administered orally to half of the volunteers (Group A). Group B was represented by 25 volunteers who were treated only topically. Every 15 days during treatment the levels of CoQ10, vit E and SQ were verified in sebum, stratum corneum, and plasma. The daily topical application of the cream led to a significant increase, that peaked after 60 days, of the levels of CoQ10, d-RRR-alpha-tocopherol and SQ in the sebum (Group B), without significantly affecting the stratum corneum or plasma concentrations of the redox couple CoQ10H2/CoQ10 and vit E. The concomitant oral administration of antioxidants produced in Group A a significant increase of the levels of CoQ10H2/CoQ10 and vit E both in plasma and stratum corneum after 15 and 30 days treatment respectively, compared to Group B. However the sebum levels of lipophilic antioxidants and SQ did not show a significant increase. After the treatments, the levels of CoQ10H2/CoQ10, vit E and SQ went back to basal levels within 6-8 days in sebum, 12-16 days in the stratum corneum, and 3-6 days in plasma. Therefore topical application of the antioxidants was able to increase their level in sebum, while the concomitant oral administration also affected the levels of vit E and CoQ10 in the stratum corneum.

PMID: 14695946

Clinical efficacy assessment in photodamaged skin of 0.5% and 1.0% idebenone.

McDaniel D, Neudecker B, Dinardo J, Lewis J 2nd, Maibach H.
Institute of Anti-Aging Research, Eastern Virginia Medical School, Norfolk, VA, USA.
Idebenone is an antioxidant lower molecular weight analogue of coenzyme Q10. Previously, idebenone was shown to be a very effective antioxidant in its ability to protect against cell damage from oxidative stress in a variety of biochemical, cell biological, and in vivo methods, including its ability to suppress sunburn cell (SBC) formation in living skin. However, no clinical studies have been previously conducted to establish the efficacy of idebenone in a topical skincare formulation for the treatment of photodamaged skin. In this nonvehicle control study, 0.5% and 1.0% idebenone commercial formulations were evaluated in a clinical trial for topical safety and efficacy in photodamaged skin. Forty-one female subjects, aged 30-65, with moderate photodamaged skin were randomized to use a blind labelled (either 0.5% or 1.0% idebenone in otherwise identical lotion bases) skincare preparation twice daily for six weeks. Blinded expert grader assessments for skin roughness/dryness, fine lines/wrinkles, and global improvement in photodamage were performed at baseline, three weeks and six weeks. Electrical conductance readings for skin surface hydration and 35 mm digital photography were made at baseline after six weeks. Punch biopsies were taken from randomly selected subjects, baseline and after six weeks, and stained for certain antibodies (interleukin IL-6, interleukin IL-1b, matrixmetalloproteinase MMP-1, collagen I) using immunofluorescence microscopy. After six weeks' use of the 1.0% idebenone formula, a 26% reduction in skin roughness/dryness was observed, a 37% increase in skin hydration, a 29% reduction in fine lines/wrinkles, and a 33% improvement in overall global assessment of photodamaged skin. For the 0.5% idebenone formulation, a 23% reduction in skin roughness/dryness was observed, a 37% increase in skin hydration, a 27% reduction in fine lines/wrinkles, and a 30% improvement in overall global assessment of photodamaged skin. The immunofluorescence staining revealed a decrease in IL-1b, IL-6, and MMP-1 and an increase in collagen I for both concentrations.

PMID: 17129261

J Cosmet Sci. 2006 Nov-Dec;57(6):
Development of a w/o/w emulsion for chemical peeling applications containing glycolic acid.

Yener G, Baitokova A.
Istanbul University, Faculty of Pharmacy, Department of Pharmaceutical Technology, Cosmetics Section, Istanbul, Turkey.
Glycolic acid is a member of the AHA family, which occurs naturally in foods and has been used for centuries as a cutaneous rejuvenation treatment. It is used in many cosmetic products as an exfoliant and moisturizer. When glycolic acid is used in greater amounts, however, there are greater cosmetic benefits but also potential for skin irritation as far as burning increases. The aim of this work was to investigate the feasibility of a topical delivery system as a multiple emulsion combining glycolic acid, strontium nitrate, and dexpanthenol in order to optimize the acid's cosmetic properties and lowering its side effects.

PMID: 17256078
Randomized, placebo-controlled, double blind study on the clinical efficacy of a cream containing 5% alpha-lipoic acid related to photoageing of facial skin.

Beitner H.
Department of Dermatology, Karolinska Hospital, 17176 Stockholm, Sweden. harry.beitner@ks.se

BACKGROUND: alpha-lipoic acid (LA) or the reduced form dihydrolipoate (DHLA) is a potent scavenger with anti-inflammatory properties. Previous uncontrolled studies with topical treatment with 5% LA-containing creams indicate a beneficial effect on photoageing skin. OBJECTIVE: The purpose of this study was to investigate whether a cream containing 5% LA showed any advantages concerning a number of the criteria associated with ageing of the facial skin, compared with an identical cream lacking LA. MATERIAL AND METHODS: Thirty-three women, mean age 54.4 years, were included in this controlled study. After randomization half the face was treated twice daily for 12 weeks with the LA cream and the other half with the control cream. The following methods of assessment were used: self-evaluation by the test subjects, clinical evaluation, photographic evaluation and laser profilometry. Profilometry was performed before the start of treatment and at the end. RESULTS: All four methods of assessment showed a statistically significant improvement on the LA-treated half of the face. Laser profilometry, the most objective method used, showed an average decrease in skin roughness of 50.8% (44.9-54.0) on the LA-treated side, compared with 40.7% (32.4-48.7) on the placebo-treated half of the face P < 0.001 (Wilcoxon matched pairs test).

CONCLUSIONS: It is indicated that 12 weeks of treatment with a cream containing 5% LA improves clinical characteristics related to photoageing of facial skin.

PMID: 14616378

Advancement in skin aging: the future cosmeceuticals.

Giacomoni PU.
Clinique Laboratories, 125 Pinelawn Road, Melville, NY 11747, USA. pgiacomo@edtee.com

Aging is a multifactorial process defined as the accumulation of damage. The aging of the skin is characterized by specific clinical end points, the cause of which is not always thoroughly understood. The skin is exposed to environmental aggressions and the reactive oxygen species produced during cellular metabolism. Damage to the cellular and extracellular components of the skin can be avoided or removed by the appropriate topical application of active ingredients. Sunscreens are essential to avoid damage from the most important damaging environmental agent: solar radiation. Liposomes containing deoxyribonucleic acid repair enzymes and accelerate the endogenous removal of pyrimidine dimers after exposure to ultraviolet radiation. Specific antioxidants reduce the rate of formation of secondary ultraviolet-induced damages, particularly those induced by singlet oxygen. Anti-inflammatory agents, immunostimulants, and enhancers of molecular and cellular detoxification could enter the panoply of new cosmeceuticals to avoid age spots, dark circles, wrinkles, and other clinical aspects of skin aging.

PMID: 18691516

Topical niacinamide reduces yellowing, wrinkling, red blotchiness, and hyperpigmented spots in aging facial skin.

Bissett DL, Miyamoto K, Sun P, Li J, Berge CA.
The Procter & Gamble Company, Miami Valley Laboratories, Cincinnati, OH, U.S.A.

Previous clinical testing of topical niacinamide (vitamin B3) has revealed a broad array of improvements in the appearance of aging facial skin. The study reported here was done to confirm some of those previous observations and to evaluate additional end points such as skin anti-yellowing. Caucasian female subjects (n = 50, aged 40-60 years) participated in a 12-week, double-blind, placebo-controlled, split-face, left-right randomized clinical study assessing two topical products: moisturizer control product versus the same moisturizer product containing 5% niacinamide. Niacinamide was well tolerated by the skin and provided significant improvements versus control in end points evaluated previously: fine lines/wrinkles, hyperpigmentation spots, texture, and red blotchiness. In addition, skin yellowing (sallowness) versus control was significantly improved. The mechanism by which this array of benefits is achieved with niacinamide is discussed.

PMID: 18492135
There are two main processes that induce skin aging: intrinsic and extrinsic. A stochastic process that implies random cell damage as a result of mutations during metabolic processes due to the production of free radicals is also implicated. Extrinsic aging is caused by environmental factors such as sun exposure, air pollution, smoking, alcohol abuse, and poor nutrition. Intrinsic aging reflects the genetic background and depends on time. Various expressions of intrinsic aging include smooth, thinning skin with exaggerated expression lines. Extrinsic aging is characterized by photo damage as wrinkles, pigmented lesions, patchy hypopigmentations, and actinic keratoses. Timely protection including physical and chemical sunscreens, as well as avoiding exposure to intense UV irradiation, is most important. A network of antioxidants such as vitamins E and C, coenzyme Q10, alpha-lipoic acid, and glutathione, and others can reduce signs of aging. Further anti-aging products are three generations of retinoids, among which the first generation is broadly accepted. A diet with lot of fruits and vegetables containing antioxidants is recommended as well as exercise two or three times a week.

**Vitamin C** is a naturally occurring potent water-soluble antioxidant. Accordingly, it has been incorporated into a variety of cosmeceuticals designed to protect and rejuvenate photoaged skin. Cutaneous benefits include promoting collagen synthesis, photoprotection from ultraviolet A and B, lightening hyperpigmentation, and improvement of a variety of inflammatory dermatoses. Because of the diverse biologic effects of this compound, topical vitamin C has become a useful part of the dermatologist's armamentarium. **Ascorbyl Palmitate (Vitamin C Ester)** is a lipid soluble, neutral pH, non-acidic (thus, non-irritating and non-stinging) form of Vitamin C which can reach cells within the skin rapidly in amounts greater than can be achieved by water soluble Vitamin C (L-Ascorbic Acid). This proven antioxidant protects skin cells from damaging free radicals and provides essential Vitamin C needed for collagen production. Ascorbyl Palmitate also inhibits the endogenous production of the inflammatory arachidonic acid, which plays a role in the development of psoriasis and the micro-scarring that leads to the formation of wrinkles. Unlike L-ascorbic acid, Ascorbyl Palmitate can be mixed into creams and lotions and remain stable for an extended period of time. Ascorbyl Palmitate stimulates the growth of fibroblasts which help to produce collagen and elastin in human skin.

**Alpha Lipoic Acid** is a powerful antioxidant and scavenger with anti-inflammatory properties that is both water and lipid soluble and therefore can work on both the intercellular and intracellular levels. ALA is naturally present in the mitochondria, and promotes optimum efficiency for production of energy and removal of intracellular waste products, essential for cellular healing and elimination of wrinkles and facial scars. Glycation (attachment of sugars to cellular proteins) causes the skin to lose elasticity, and this can be prevented by ALA.

A controlled study of thirty-three women, mean age 54.4 years, investigated whether a cream containing 5% ALA showed any advantages concerning a number of the criteria associated with aging of the facial skin, compared with an identical cream lacking ALA. After randomization half the face was treated twice daily for 12 weeks with the ALA cream and the other half with the control cream. The following methods of assessment were used: self-evaluation by the test subjects, clinical evaluation, photographic evaluation and laser profilometry. All four methods of assessment showed a statistically significant improvement on the ALA-treated half of the face. Laser profilometry, the most objective method used, showed an average decrease in skin roughness of 50.8% on the ALA-treated side, compared with 40.7% on the placebo-treated half of the face. The study concluded that 12 weeks of treatment with a cream containing 5% ALA improves clinical characteristics related to photoaging of facial skin.

**Topical niacinamide** (vitamin B3) reduces yellowing, wrinkling, red blotchiness, and hyperpigmented spots in aging facial skin. Proctor and Gamble conducted a study to confirm previous observations and evaluate additional end points such as skin anti-yellowing. Caucasian female subjects (n = 50, aged 40-60 years) participated in a 12-week, double-blind, placebo-controlled, split-face, left-right randomized clinical study assessing two topical products: moisturizer control product versus the same moisturizer product containing 5% niacinamide. Niacinamide was well tolerated by the skin and provided significant
improvements versus control in end points evaluated previously: fine lines/wrinkles, hyperpigmentation spots, texture, and red blotchiness. In addition, skin yellowing (sallowness) versus control was significantly improved.


Anti-Wrinkle Effect of Topical DMAE

DMAE (2-dimethylaminoethanol, deanol) is an antioxidant found in abundance in fish, particularly salmon. Applied topically to the skin, DMAE may improve the appearance of sagging skin. DMAE boosts the effects of other antioxidants, increases smoothness, reduces fine lines and gives the facial muscles a leaner look. In a randomized clinical study, 3% DMAE facial gel applied daily for 16 weeks has been shown to be safe and efficacious in the mitigation of forehead lines and periorbital fine wrinkles, and in improving lip shape and fullness and the overall appearance of aging skin. These effects did not regress during a 2-week cessation of application. Beneficial trends were noted in the appearance of coarse wrinkles, under-eye dark circles, nasolabial folds, sagging neck skin, and neck firmness. Application was found to be well tolerated, with no differences in the incidence of erythema, peeling, dryness, itching, burning, or stinging between the DMAE and placebo groups.

The cosmeceutical agent 2-dimethylaminoethanol (deanol; DMAE) is a tertiary amine found in high concentration in numerous topical antiwrinkle preparations. At the University of Quebec, Morissette et al. hypothesized that 3% DMAE applied to the skin could maintain a millimolar drug concentration within a certain depth of the skin layers, and that cell expansion could account for the very rapid effect on the apparent skin fullness.


Transdermal Delivery of Amino Acids and Antioxidants Enhances Collagen Synthesis

One of the most visible changes associated with the aging process in humans relates to a progressive thinning of the skin. This results from a decline in both collagen and glycosaminoglycans, as well as from changes in their chemical structure and 3-dimensional organization. Transdermal administration of antioxidants, alpha-lipoic acid (ALA) 0.5% and proanthocyanidin (PA) 0.3% (a bioflavonoid found in grape seed extract) in a standard cosmetic vehicle base formulation supplemented with 2% benzyl alcohol as a penetration enhancer significantly enhanced collagen synthesis and deposition. An 0.2% mixture of essential amino acids was added to mimic serum concentrations, with supplemental methionine added for additional sulfur.

Department of Surgery, Keck School of Medicine, and Biomedical Engineering, University of Southern California, Los Angeles, CA.

Topical estrogens may reverse some of the changes in the aging skin. The coincidence of menopausal symptoms and the beginning of skin aging suggests that estrogen deficiency may be a common and important factor in the perimenopausal woman. The effects of topical application of 0.01% estradiol and 0.3% estriol compounds were compared in premenopausal women with skin aging symptoms. After treatment for 6 months, elasticity and firmness of the skin had markedly improved and pore sizes had decreased substantially in both groups. Furthermore, skin moisture had increased and the measurement of wrinkles revealed significant decreases of wrinkle depth.


Topical 2% progesterone increases elasticity and firmness in the skin of peri- and postmenopausal women. Because it is typically well-tolerated, progesterone may be considered as a possible treatment agent for slowing down the aging process of female skin after onset of the menopause.

**Topical DHEA for Aging Skin**

Dehydroepiandrosterone (DHEA) is a steroid hormone involved in physiological aging. When administered by oral route, it has been shown to positively affect the skin condition of aging people. The purpose of a pilot study, conducted in France, was to observe the effects on skin aging of topical DHEA 1%. The DHEA formulation or placebo (the cream without DHEA) was topically applied for 4 months to facial and hand skin in two groups of 20 post-menopausal women. The efficacy of the treatment was evaluated on the basis of clinical and biophysical signs linked to skin aging. Results showed that DHEA treatment increased the rate of sebum (oil) production, which was positively received by a menopausal population usually affected with a declining sebum level and dry skin. Topical DHEA tended to improve skin brightness, and to counteract papery appearance of skin and breakdown characteristic of hormone-related skin aging. Topical DHEA may also act on skin process related to wrinkles, but this remains to be confirmed. In conclusion, this study showed that DHEA has beneficial effects on skin that are rarely provided by other topical treatments.


Chemical peelings with kojic acid, glycolic acid, and trichloroacetic acid, alone or in combination, are available for treatment of hyperpigmentations. Dermatologists should have a choice of formulations to satisfy individual patient needs.

**Chemical Peel For Photo-Aged Skin**

Indications for medium-depth chemical peels include both medical conditions, such as diffuse photodamage, and cosmetic conditions, such as the aging face and solar lentigos. Trichloroacetic acid (TCA) alone or in combination with other agents is the mainstay of medium-depth chemical peels. Medium-depth chemical peeling with TCA is relatively simple and has a favorable risk/benefit ratio.

Chemosurgical peel is a technique that has been used widely by plastic surgeons and dermatologists to remove fine and deep wrinkles of the skin. At Stanford University Medical School, researchers compared the reaction of elastic tissue to the cutaneous application of commonly used chemical peeling agents, including 25% and 50% TCA, and dermabrasion. Skin analyzed at five intervals over 6 months showed there was no change in the quality, structure, or arrangement of elastic fibers in skin treated with a single application of 25% and 50% TCA or dermabrasion when compared with untreated skin.

A controlled chemical peel technique for nonfacial skin using 70% glycolic acid gel combined with 40% TCA has given consistently good results on the skin of the neck, chest, arms, hands, back, and other nonfacial skin. At Coronado Skin Medical Center, Inc. (California), more than 3100 patients were given skin peels of the neck, chest, and other areas of the body. 70% glycolic acid gel was applied to the areas to be peeled, then immediately augmented with 40% TCA. Each area was carefully monitored for the end point and then neutralized with copious amounts of 10% sodium bicarbonate solution. Clinical results were excellent, with smoother skin texture, decreased wrinkling and striae, and fading of pigmentary abnormalities. There was excellent blending into peeled facial skin and adjacent areas of nonpeeled skin. The researchers concluded that this technique can provide the benefits of skin peeling to nonfacial skin with excellent cosmetic results and minimal complications.

Plast Reconstr Surg 1997 Aug;100(2):489-98; discussion 499-500

**ACNE, ROSacea**

**Tea Tree Oil for Acne** - Tea-tree oil (an essential oil of the Australian Melaleuca tree) has long been regarded as a useful topical antiseptic agent and has been shown to have a variety of antimicrobial activities. Bassett et al performed a single-blind, randomized clinical trial on 124 patients to evaluate the efficacy and skin tolerance of 5% tea-tree oil gel in the treatment of mild to moderate acne when compared with 5% benzoyl peroxide lotion. The results of this study showed that both 5% tea-tree oil and 5% benzoyl peroxide had a significant effect in ameliorating the patients' acne by reducing the number of inflamed and non-inflamed lesions (open and closed comedones), although the onset of action in the case of tea-tree oil was slower. Encouragingly, fewer side effects were experienced by patients treated with tea-tree oil.

Topical Application of NADH for the Treatment of Rosacea and Contact Dermatitis

Among many important physiological functions played by NADH (the reduced form of beta-nicotinamide adenine dinucleotide), its antioxidative properties are remarkable. Acting directly as an antioxidant, NADH can effectively protect the cell and its membrane from destruction by free radicals. NADH can be stabilized as a suspension in hydrophobic ointments prepared in a way that prevents contact with atmospheric oxygen and water. Wozniacka et al. presented the first report of NADH as a treatment for some inflammatory dermatoses. It was found that topical application of 1% NADH in hydrophobic ointment can be very effective in the treatment of rosacea and contact dermatitis. Since no adverse effects were observed, therapy with NADH can be viewed as a potential alternative to other established treatments.


Indian J Dermatol Venereol Leprol. 2007 Jan-Feb;73(1):22-5.
The efficacy of 5% topical tea tree oil gel in mild to moderate acne vulgaris: a randomized, double-blind placebo-controlled study.
Enshaieh S, Jooya A, Siadat AH, Iraji F.
Department of Dermatology, Skin Diseases and Leishmaniasis Research Center, Isfahan University of Medical Sciences, Isfahan, Iran.

BACKGROUND: Finding an effective treatment for acne that is well tolerated by the patients is a challenge. One study has suggested the efficacy of tea tree oil in treatment of the acne vulgaris. AIM: To determine the efficacy of tea tree oil gel in mild to moderate acne vulgaris. METHODS: This was a randomized double-blind clinical trial performed in 60 patients with mild to moderate acne vulgaris. They were randomly divided into two groups and were treated with tea tree oil gel (n=30) or placebo (n=30). They were followed every 15 days for a period of 45 days. Response to treatment was evaluated by the total acne lesions counting (TLC) and acne severity index (ASI). The data was analyzed statistically using t-test and by SPSS program. RESULTS: There were no significant differences regarding demographic characteristics between the two groups. There was a significant difference between tea tree oil gel and placebo in the improvement of the TLC and also regarding improvement of the ASI. In terms of TLC and ASI, tea tree oil gel was 3.55 times and 5.75 times more effective than placebo respectively. Side-effects with both groups were relatively similar and tolerable. CONCLUSION: Topical 5% tea tree oil is an effective treatment for mild to moderate acne vulgaris.
PMID: 17314442

Topical Dapsone for Acne and Rosacea

Dapsone has antibacterial activity along with an independent potent anti-inflammatory effect, making it attractive as a therapeutic modality for moderate to moderately severe acne. Studies have found that use of topical dapsone resulted in rapid improvement in the appearance of inflammatory lesions and ultimately a decrease in lesion count. Topical 5% gel has been very well tolerated in research at Oregon Health Sciences University.

However, dapsone is highly insoluble in the aqueous solvents traditionally used in dermatological preparations; therefore, proper formulation is critical to efficacy of this preparation. The goal is delivery through the skin in two stages, with preferential uptake of the drug immediately in the skin oil near the pilosebaceous follicle, followed by slower release from a suspension of microparticles in the surrounding region. Dapsone blood levels were measured in a Phase I/II trial where 48 patients with moderate to severe acne applied dapsone 5% gel twice daily from the jawline to the hairline for 28 days. Among those subjects, the maximum concentration of dapsone in the blood reached just a few ng/mL. Overall, blood levels of dapsone were 600-fold lower than the 10 mcg/mL concentration that would pose a toxicity concern in patients being treated with oral drug, according to Dr. David Osborne, who presented these results at the 2000 annual meeting of the American Academy of Dermatology, Washington. In a phase III trial (500 patients, multi-center, double blind, vehicle controlled) dapsone 5% administered twice-a-day in proprietary topical drug delivery technology was found to be clinically and statistically superior to vehicle (placebo) in inflammatory lesion count, reduction in non-inflammatory lesion count, reduction in overall lesion count, and improvement of overall appearance.

Rosacea fulminans is a rare disease with female predominance characterized by abrupt onset of pustules, papules, and confluent nodules on the face. The conventional treatment consists of systemic glucocorticoids and isotretinoin. For one 56-year-old woman with a marked facial papulopustular eruption that had followed an initial period of severe seborrhea,
conventional treatment produced no clear improvement. Dapsone treatment achieved complete healing in 5 weeks. Two patients with granulomatous rosacea and another patient with granulomatous perioral dermatitis also responded well to dapsone.

Dapsone's postulated mechanism of alleviating itch is by inhibiting neutrophil infiltration. In addition to severe acne, dapsone has been prescribed for dermatitis herpetiformis, vasculitis, and subcorneal pustular dermatitis (a form of psoriasis), all of which are characterized by the migration of neutrophils into the skin.

Hautarzt 1997 Apr;48(4):246-8

Dermatol Surg. 2008 Jul;34(7):891-9; discussion 899
Excellent clinical results with a new preparation for chemical peeling in acne: 30% salicylic acid in polyethylene glycol vehicle.
Dainichi T, Ueda S, Imayama S, Furue M.
Department of Dermatology, Graduate School of Medical Sciences, Kyushu University, Fukuoka, Japan.

BACKGROUND: Chemical peeling by salicylic acid in ethanol or another vehicle may be accompanied by stinging and burning followed by postinflammatory hyperpigmentation in the treated area, or salicylism. We have developed a new formulation: 30% salicylic acid in polyethylene glycol (SA-PEG). A topical application of SA-PEG remodels photodamaged skin in mice and humans, without systemic absorption. OBJECTIVE: The objective was to evaluate the safety and efficacy of SA-PEG for clinical use in the treatment of acne.
MATERIALS AND METHODS: We evaluated the effects of the preparation histologically in mice and its safety and efficacy in 44 volunteers with normally aged skin and in 436 patients with acne. RESULTS: Histologic studies in animals showed no inflammatory changes in the skin following topical application of SA-PEG. Volunteers noted an improved skin texture. In the acne patients, the comedones and papules disappeared, resulting in an excellent outcome. There was a notable absence of stinging and burning, edema, bleeding, or crusting in the treated area. CONCLUSION: The SA-PEG preparation appeared to be safe and effective, with minimal associated inflammation or adverse effects, even in Asian patients who tend to develop hyperpigmentation or keloids. This preparation is thus ideal for chemical peeling.
PMID: 18363720

Psoriasis, Eczema

“For patients with localized psoriasis, and for many of those with moderate psoriasis as well, the mainstay of treatment is still topical therapy. The quality of life is greatly affected in such patients, and they often express high levels of dissatisfaction with current treatment options. Safe, convenient, and effective topical regimens, such as combination therapy with topical tacrolimus and salicylic acid, can be of great benefit in this large population.”
Arch Dermatol. 2005;141:43-6

Topical Tacrolimus and Salicylic Acid Combination for Plaque Psoriasis Treatment

The efficacy of tacrolimus ointment for the treatment of facial and intertriginous psoriasis suggests that if tacrolimus penetration can be increased, the ointment could be used for effective treatment of plaque psoriasis. To assess whether tacrolimus ointment is an effective psoriasis treatment when used in a combination regimen with the penetration-enhancer salicylic acid, Carroll et al (Wake Forest University and University of Texas) treated 30 adult subjects with generally symmetrical plaque-type psoriasis with 6% salicylic acid gel plus vehicle or 6% salicylic acid gel plus 0.1% tacrolimus ointment in a randomized 12-week left-right comparison study. There was greater improvement of the sum score in the tacrolimus plus salicylic acid–treated target plaques than in the vehicle plus salicylic acid–treated plaques at weeks 1, 2, and 8. The efficacy of the tacrolimus plus salicylic acid combination was clinically significant as evidenced by the frequency of treatment success (defined as >75% disease clearing) on the salicylic acid plus tacrolimus–treated side. Combination therapy with the salicylic acid and tacrolimus ointments was well tolerated. Despite the small size of this exploratory study, tacrolimus treatment resulted in greater improvement than vehicle treatment in erythema, scale pruritus, and investigator and subject global assessments, and the benefit reached statistical significance.

Salicylic acid has been used alone as a treatment for psoriasis, but is most commonly used to increase the penetration of other topical preparations, primarily corticosteroids. In this small study, the use of 6% salicylic acid gel in conjunction with tacrolimus ointment showed statistically significant improvement for the treatment of plaque psoriasis compared with the use of salicylic acid alone.
“For patients with localized psoriasis, and for many of those with moderate psoriasis as well, the mainstay of treatment is still topical therapy. The quality of life is greatly affected in such patients, and they often express high levels of dissatisfaction with current treatment options. Safe, convenient, and effective topical regimens, such as combination therapy with topical tacrolimus and salicylic acid, can be of great benefit in this large population.”
Arch Dermatol. 2005;141:43-46

**Topical Vitamin B12 for Eczema & Psoriasis**

Treatments for eczema (atopic dermatitis) aim to control inflammation, decrease itching, and manage infections that may occur as a result of repeated skin irritation. Common treatments can cause significant side effects; for example, topical corticosteroids used to decrease inflammation and control itching may cause skin thinning and prolong the healing time of damaged skin, and topical tacrolimus can cause a burning sensation or itching.

Topical vitamin B12 offers a new therapeutic approach for eczema. Vitamin B12 inhibits production of inflammatory cytokines and can trap nitric oxide (NO). The effect of a topical application of a vitamin B12 cream (0.07% cyanocobalamin) on eczema severity was evaluated in 49 people aged 18 to 70 years, in a prospective, randomized and placebo-controlled phase III multicenter trial. Vitamin B12 cream was applied to affected areas on one side of the body, and a placebo cream to affected areas on the other side of the body two times per day for eight weeks. A ribbon of cream of approximately 2 cm in length was recommended for an area of roughly the size of the palm. The severity and extent of eczema was rated at the beginning of the study and at two, four, six, and eight week intervals thereafter. Both physicians and study participants rated the vitamin B12 cream as significantly superior to the placebo cream in effectiveness, and the treatment was very well tolerated. Avocado oil has been added to improve the formulation so that vitamin B12 cream can be distributed more easily on the surface of the skin, or we can use a specialized base that is easily applied and cosmetically appealing.

Dermal vitamin B12 levels are reduced in psoriatic plaques and in apparently healthy skin in patients with psoriasis. Vitamin B12 cream has considerable potential as a well-tolerated, long-term topical therapy of psoriasis. A prospective clinical trial demonstrated the efficacy of topically applied vitamin B12 in the therapy of psoriasis. There were no significant differences in efficacy compared to that of calcipotriol. However, after 4 weeks of therapy, there was a marked decrease in the efficacy of calcipotriol while the frequency and severity of skin irritation increased, whereas the efficacy of the vitamin B12 cream remained largely constant throughout the observation period. It can therefore be proposed that vitamin B12 cream may be suitable for long-term therapy of psoriasis.

Vitamin B12 has very poor systemic bioavailability (rapid elimination of up to 90% of a single dose of 1 mg), and oral administration of vitamin B12 for the treatment of psoriasis appears to produce no evidence of a reliable therapeutic effect. With topical application, the excellent depot characteristics of the skin ensure that a large percentage of the vitamin B12 present in the cream base remains continuously available.

Topical vitamin B12 preparation has caused local skin irritations (itching, burning and redness) in some patients. All adverse events were reversible within several days. No acneiform eruptions were reported. The red color of vitamin B12 produces a red-colored cream, but it has been accepted well by patients because the cream is rapidly absorbed and does not stain the skin.

Dermatology 2001;203:141–147

**Topical Methotrexate for Psoriasis Vulgaris**

“Methotrexate has been used as an effective systemic chemotherapeutic drug for psoriasis by dermatologists for over 30 years. Nevertheless, pharmacokinetic data indicate that oral methotrexate can cause a decrease in red and white blood cell and platelet counts and can also cause severe liver damage, diarrhea, and stomach irritation, as dose-related drug-induced side effects. Such indications have limited its prescription by physicians. However, [Syed and Nordstrom of the Department of Dermatology, University of California-San Francisco, and researchers from three other locations note that] if its incorporation in a gel as a topical agent, in a proper dosage... imparts better results without the cited side effects, then such a formulation appears to justify a clinical evaluation. Furthermore, published data have indicated that 70% of patients prefer topical therapy for treating psoriasis.”

Therefore, Syed et al. conducted a placebo-controlled double-blind study to evaluate the clinical efficacy and tolerability of methotrexate 0.25% in a hydrophilic gel (hydroxyethylcellulose 1%) applied topically to treat patients afflicted with psoriasis
Therapy for Palmoplantar Psoriasis

A total of 14 adult patients diagnosed clinically as plaque type of palmoplantar psoriasis (>30% of the palm and/or sole areas involved) applied topical methotrexate 0.25% in a hydroxygel base twice daily to the lesions for twelve weeks. The average time taken for improvement was at least six weeks, but none of the patients had complete clearance of lesions. The study concluded that methotrexate 0.25% in a hydrophilic gel is well tolerated but is not very effective in controlling the lesions of psoriasis on the palms and soles; however, a higher concentration in a different base with better penetration could possibly provide better results.

Tiwari, Kumar, et al. published a case report of topical methotrexate delivered by iontophoresis for the treatment of recalcitrant palmoplantar psoriasis. In a 46 y.o male with well-defined bilateral palmar plaques of 6 years duration which were resistant to several therapies, the right palm was treated, as it had more severe lesions. Iontophoresis was performed using cotton gauze soaked in 4 to 6 ml of methotrexate disodium solution 10 mg/ml, once a week for four weeks. The researchers reported 75% improvement after four weeks of therapy. Iontophoresis allows high concentrations of drug to be delivered to a limited area, and may offer a method of reducing total drug accumulation and reduced side effects.


Topical Calcitriol for Psoriasis

The use of vitamin D analogues for the treatment of psoriasis is well documented. Calcitriol (1,25-dihydroxyvitamin D3; calcipotriol) acts not only to inhibit cell proliferation and enhance cell differentiation in the skin of patients with psoriasis, but also appears to have effects on inflammatory mediators and immunologic markers that are thought to play a role in the etiology of the disease. Studies provide evidence of the benefit of combining calcitriol with other antipsoriatic therapies. Combination with ultraviolet (UV) B phototherapy was as effective as UVB alone over an 8-week period; however, the combination had a radiation dose-sparing effect, thus reducing the risk of adverse events. Research has shown that concurrent topical calcitriol potentiates the efficacy of PUVA in the treatment of vitiligo, and that this combination is well-tolerated and achieves earlier pigmentation with a lower total UVA dosage. Likewise, calcitriol combined with betamethasone valerate (each applied separately, once daily) was as efficacious as twice-daily betamethasone, thereby achieving a corticosteroid-sparing effect. Calcitriol applied twice daily has been found to be as effective as short-contact dithranol in terms of global improvement. However, patients favoured calcitriol over dithranol when both quality of life and treatment acceptability were assessed.

In a multicenter, prospective, observational cohort study, 3,396 patients with psoriasis of the scalp were treated with calcipotriol solution (50 microg/ml) twice daily over an 8-week period either alone or in combination with other treatments. All psoriasis severity parameters measured were reduced with a significant decrease in psoriasis scalp severity index (PSSI) scores from 18.4 to 5.6 after 8 weeks of therapy. About 80% of the patients showed very good or good clinical improvement. Side effects (e.g. irritation) occurred in only 2.4% of the patients.

Extensive clinical experience, along with several short and long term clinical trials, has shown calcitriol ointment to be an effective and well tolerated topical agent in adult patients with psoriasis. Studies have demonstrated that at a concentration of 3 micrograms/gram of ointment, topical calcitriol has no discernible photosensitizing or phototoxic potential and no skin irritant or allergic potential in healthy volunteers. Its low systemic absorption through human skin is unlikely to significantly affect calcium homeostasis. Notably, there have been very few reports of patients developing hypercalcemia or hypercalciuria during
topical calcitriol therapy, with most occurring in patients who applied in excess of 100 grams of ointment per week. Although data in children is limited, the drug was well tolerated with the nature and incidence of adverse effects similar to those observed in adult patients.

Dermatology 2001;203(2):153-6
Br J Dermatol 2001 Apr;144 Suppl 58:3-10 & 21-5

**Novel Therapy for Atopic Eczema**

Case Report by Jorge Crespo, M.D.: B is a wonderful, bright, professional woman with atopic eczema who has been one of my most challenging patients. At one time or another I have treated her with P.U.V.A. photochemotherapy, multiple courses of systemic antibiotics, topical and systemic corticosteroids, azathioprine, etc. Many years ago, during a severe flare-up and out of frustration, she sought the input of a homeopath. Unfortunately, her flare-up was due to one of the most feared complications of atopic eczema, specifically eczema herpeticum. In B’s case, Herpes simplex disseminated to her eyes, down her ear canals, and involved most of her head and neck. B almost died. She was hospitalized on I.V. acyclovir and fortunately pulled through.

One of the central themes of atopic eczema is a decreased immunity to common pathogens. B has an especially rare sub type of atopic eczema with a predilection for the head and neck. She's prone to not only recurring herpetic infections but also more often to recurrent staphylococcal infections. For years she has had standing orders for oral dicloxacillin, oral valacyclovir, etc. In this ongoing battle with her disease, there have been some recent significant victories. First, several years ago, I came across articles on the use of topical tacrolimus. I was able to call my compounding pharmacist and have this compounded for her at least two years prior to it becoming commercially available. This worked very well for her. She was able to significantly reduce her dependence on corticosteroids. Unfortunately, there appears to be an increased incidence of Staph infections in patients using topical tacrolimus. Patients with atopic eczema are already susceptible and frequently colonize with Staph. It is felt that this is one of the more common causes of disease flare-ups. B presented with a resistant Staph infection involving most of her nose, cheeks and ear. I placed her on a course of dicloxacillin and rifampin and she cleared. Over the next few months she developed recurrences and was again treated with dicloxicillin and rifampin. She finally developed a recurrence that was resistant to dicloxicillin and rifampin. Several months prior to this, my compounding pharmacist had shared with me an article discussing the use of tea tree extract in the treatment of Staph infections. I called my compounding pharmacist and had another one of our countless exhilarating conversations. We again examined the components of B’s disease and attempted to come up with a topical treatment. The formula that we decided to use included tea tree extract for Staph infections, tacrolimus, and 2-deoxy D-glucose (a natural antiviral) and micronized neomycin/bacitracin/polymixin B USP. For over six months, any recurrences have been treated effectively with this topical compound and B has been clear of lesions.

Editor’s note: Sixty-six isolates of Staphylococcus aureus were tested and shown to be sensitive to the essential oil of Melaleuca alternifolia, or tea tree oil, in disc diffusion and modified broth microdilution methods. Of the isolates tested, 64 were methicillin-resistant S. aureus (MRSA) and 33 were mupirocin-resistant. Using a TLC-bioautographic technique, three tea-tree oils - terpinen-4-ol, alpha-terpineol and alpha-pinene - were found to be active against S. aureus, Staph. epidermidis and Propionibacterium acnes. The combination of a 4% tea tree oil nasal ointment and 5% tea tree oil body wash appeared to perform better than the standard combination of 2% mupirocin nasal ointment and triclosan body wash for the eradication of methicillin-resistant S. aureus carriage.

J Hosp Infect 2000 Nov;46(3):236-7

**PIGMENTATION ABNORMALITIES: MELASMA, VITILIGO**

**Chemical Peelings for the Treatment of Cutaneous Hyperpigmentations**

Melasma is a circumscribed brown macular hyperpigmentation of areas of the face and neck that are exposed to light, and is aggravated by sunlight, birth control pills, and pregnancy. Although hydroquinone is effective as a bleaching agent, recent studies have shown that at high concentrations, hydroquinone is associated with irritation, leukoderma, and ochronosis. Kojic acid has the advantage of being pharmaceutically more stable and is also a tyrosinase inhibitor. 39 patients were treated with kojic acid on one side of the face and hydroquinone on the other. 51% of the patients responded equally to hydroquinone
and kojic acid. 28% had a more dramatic reduction in pigment with kojic acid; whereas 21% had more improvement with hydroquinone.

Chemical peelings with kojic acid, glycolic acid, and trichloroacetic acid, alone or in combination, have been introduced for treatment of hyperpigmentations. Twenty patients with diffuse melasma were treated with a gel of 50% glycolic acid (for its peeling action) and 10% kojic acid (for its whitening properties). Complete regression was observed in 30% of patients, a partial regression in 60%, and no regression in 10% of patients treated with 50% glycolic acid and 10% kojic acid. Twenty patients with localized hyperpigmentations (lentigo) were treated with 15%-25% trichloroacetic acid. Complete regression of localized hyperpigmentations was observed in 40%, a partial regression in 50%, and no regression in 10%. Based on these findings, both peelings can be considered effective in the treatment of cutaneous hyperpigmentations. Researchers concluded that dermatologists should have a choice of formulations to satisfy individual patient needs.

Pseudocatalase Cream to Treat Vitiligo

Vitiligo is a spontaneous irregular depigmentation of skin. Patients with vitiligo have low catalase levels in their involved and uninvolved epidermis in association with high levels of hydrogen peroxide. These patients cannot efficiently remove H₂O₂ due to low catalase, glutathione peroxidase, and thioredoxin reductase levels. Patients with vitiligo also have problems maintaining calcium balance in their skin. Pseudocatalase cream is an externally applied UVB-activated product containing calcium chloride, manganese chloride, and sodium bicarbonate, which functions like catalase by removing peroxides from vitiligo affected skin and inhibits the progression of pigment loss in vitiligo. This approach leads to recovery of the oxidative damage in the epidermis and remarkable repigmentation in this disorder. Melanocytes are still present in long-standing (> 25 years) depigmented skin of patients with vitiligo, and these melanocytes can recover their functionality in vivo and in vitro upon the removal of hydrogen peroxide.

Thirty-three patients with the depigmentation disorder vitiligo were successfully treated with a new topical application of pseudocatalase, calcium and short-term UVB light exposure. First repigmentation occurred in the majority of cases after 2-4 months. Complete repigmentation on the face and dorsum of the hands appeared in 90% of the group. In all patients, active depigmentation was arrested. None of them developed new lesions during treatment. No recurrence of the disease was observed during a 2-year follow-up.

Skin Pharmacol Appl Skin Physiol 1999 May-Jun;12(3):132-8
Dermatology 1995;190(3):223-9

From basic research to the bedside: efficacy of topical treatment with pseudocatalase PC-KUS in 71 children with vitiligo.

Schallreuter KU, Krüger C, Würfel BA, Panske A, Wood JM.
Department of Biomedical Sciences, University of Bradford, Bradford, UK. K.Schallreuter@Bradford.ac.uk

BACKGROUND: The epidermal accumulation of hydrogen peroxide (H(2)O(2)) has been documented in vitiligo. AIM: To assess the effect on disease cessation and repigmentation of the reduction/removal of H(2)O(2) using low-dose, narrow-band, ultraviolet-B (UV-B)-activated pseudocatalase PC-KUS in 71 children with vitiligo. METHODS: This uncontrolled and retrospective study included 45 girls and 26 boys (mean age, 10.3 years) who applied topical PC-KUS twice daily to the entire body surface without narrow-band UV-B dose increments. The affected body areas were documented by special photography at the first visit and after 8-12 months. The response was evaluated by two independent physicians as > 75% vs. < 75% total repigmentation of the face/neck, trunk, extremities, and hands/feet. Generalized (n = 61) and segmental (n = 10) vitiligo were evaluated as different entities. The effect of total-body, low-dose, narrow-band UV-B (0.15 ml/cm²) monotherapy once daily without any increments and without application of PC-KUS was tested over 6 months in 10 children with vitiligo vulgaris (mean age, 8.4 years). RESULTS: One hundred per cent cessation was observed in 70 of the 71 children. More than 75% repigmentation was achieved in 66 of 71 patients on the face/neck, 48 of 61 on the trunk, and 40 of 55 on the extremities; however, repigmentation on the hands/feet was disappointing (five of 53). The response was independent of skin color, age of onset, duration of disease, other demographic features, and previous treatments. The follow-up after narrow-band UV-B monotherapy showed no significant repigmentation in all areas. Seven of 10 patients showed progression of their vitiligo. CONCLUSION: A reduction in epidermal H(2)O(2) using low-dose, narrow-band UV-B-activated pseudocatalase PC-KUS is an effective treatment for childhood vitiligo which can be safely performed at home.

PMID: 18613887
Treatment Options for Vitiligo

Vitiligo is a spontaneous irregular depigmentation of skin which can occur at any stage in life with a worldwide prevalence ranging from 0.5% to 4%. Conservative therapies include photochemotherapy, phototherapy with UVB radiation, systemic steroids and pseudocatalase. Modern options include treatment with topical immunomodulators (tacrolimus, pimecrolimus), analogues of vitamin D3, laser and surgery. The face and neck respond best, while the acral areas are least responsive. No single therapy for vitiligo can be regarded as the most effective as the success of each treatment modality depends on the type and location of vitiligo.

Melanocytes may still be present in long-standing (>25 years) depigmented skin of patients with vitiligo. L-phenylalanine uptake and turnover in the pigment forming melanocytes is vital for initiation of melanogenesis. Phenylalanine hydroxylase activities increase linearly with inherited skin color yielding eightfold more activities in black skin compared to white skin.

Camacho and Mazuecos performed an uncontrolled retrospective survey of a group of 193 patients (171 participants after screening) with evolving vitiligo who were treated with oral (50 or 100 mg/kg daily) and topical (10% gel) phenylalanine plus sun exposure. When the study closed, 100% repigmentation was achieved in 122 patients on the face, 35 on the trunk, and 33 on the limbs. Patients who were treated during the months of high solar radiation (and therefore also used the topical phenylalanine) achieved greater repigmentation. No side effects were reported. J Drugs Dermatol 2002 Sep;1(2):127-31

To evaluate the effectiveness of topical and oral L-phenylalanine in combination with light plus 0.025% clobetasol propionate at night, an open trial studied a group of 70 patients. 90.9% of participants showed improvement, with 68.5% of patients achieving an improvement of 75% or more (most effective on the face). Arch Dermatol. 1999;135:216-217

Peroxides are responsible for the destruction of melanocytes (pigment cells). Patients with vitiligo cannot efficiently remove hydrogen peroxide (H₂O₂) due to low catalase, glutathione peroxidase, and thioredoxin reductase levels. Patients with vitiligo also have problems maintaining calcium balance in their skin. Pseudocatalase cream is an externally applied UVB-activated product containing calcium chloride, manganese chloride, and sodium bicarbonate, which functions like catalase by removing peroxides from vitiligo affected skin and inhibits the progression of pigment loss.

On the National Vitiligo Foundation website (www.nvfi.org/pages/info_pseudo.html - Accessed 1/15/08), Dennis P. West, Ph.D., Professor of Dermatology at Northwestern University in Chicago, IL, reported that a specific compounded prescription containing pseudocatalase, calcium chloride, manganese chloride, sodium bicarbonate, and distilled water in a vanishing cream base could be applied externally to inhibit the progression of pigment loss. Pseudocatalase cream is usually applied twice daily to the entire skin surface. Light treatments or sun exposure are usually used to restore pigment. Dr West notes that patients usually begin to see control of pigment loss in 2-4 months. The duration of treatment is indefinite, or as determined by a physician, and there are no known systemic side effects.

The use of pseudocatalase cream can lead to recovery of the oxidative damage in the epidermis and remarkable repigmentation in this disorder. Melanocytes can recover their functionality in vivo and in vitro upon the removal of hydrogen peroxide. Thirty-three patients with the depigmentation disorder vitiligo were successfully treated with a new topical application of pseudocatalase, calcium and short-term UVB light exposure. First repigmentation occurred in the majority of cases after 2-4 months. Complete repigmentation on the face and dorsum of the hands appeared in 90% of the group. In all patients, active depigmentation was arrested. None of them developed new lesions during treatment. No recurrence of the disease was observed during a 2-year follow-up.

Skin Pharmacol Appl Skin Physiol 1999 May-Jun;12(3):132-8
Dermatology 1995;190(3):223-9

Skin Discoloration

Increases or decreases in skin pigmentation can be due to many conditions (such as acne, pregnancy, cirrhosis, chronic renal failure, celiac disease) or use of medication. Most types of skin discoloration are harmless from a medical viewpoint, but they may be cosmetically unacceptable. The goal of therapy in hyperpigmentation disorders is to lighten the skin so it blends into the surrounding normal skin. Most preparations that are used to lighten the skin contain the drug hydroquinone. Other commonly used medications include azelaic acid, glycolic acid, hydrocortisone, kojic acid, and tretinoin. Our compounding pharmacy can prepare customized dermatologics to meet each person’s specific needs. It may take three to six months of therapy before improvements in pigmentation are noticed. These preparations may increase sensitivity to the sun, so ask our pharmacist about an effective sunscreen.

A double-blind randomized trial of 5% ascorbic acid vs. 4% hydroquinone in melasma

Melasma is an acquired treatment-resistant hyperpigmentation of the skin. Sixteen women with idiopathic melasma were included in a randomized trial. They were instructed to use 5% ascorbic acid cream on one side of the face and 4% hydroquinone cream on the other side, nightly for 16 weeks. Sunscreen was applied daily throughout the period of observation. They were evaluated every month by colorimetry, digital photography, and regular color slides. Subjective evaluation by each patient was also taken into account. The best subjective improvement was observed on the hydroquinone side with 93% good and excellent results, compared with 62.5% on the ascorbic acid side; however, colorimetric measures showed no statistical differences. Side-effects were present in 68.7% (11/16) with hydroquinone vs. 6.2% (1/16) with ascorbic acid. The authors concluded that although hydroquinone showed a better response, ascorbic acid may play a role in the therapy of melasma as it is almost devoid of side-effects. Ascorbic acid can be used alone or in combination therapy.


Tranilast Transdermally for Treatment of Keloid and Hypertrophic Scars and for Relief of Pain and Itching - Shigeki et al of the Department of Orthopedic Surgery, Hiroshima University School of Medicine, Japan, evaluated the feasibility of transdermal delivery of tranilast [N-(3,4-dimethoxycinnamoyl) anthranilic acid], an inhibitor of collagen synthesis, for the treatment of keloid and hypertrophic scars in hairless rats and humans. Tranilast was effectively delivered transdermally (using iontophoresis) into the restricted skin tissues of hairless rats and the affected parts of four patients with hypertrophic scars with no skin damage. In four other patients, tranilast given iontophoretically for a period of 30 minutes a week reduced the patients' complaints of pain and itching after only one or two treatments. Murakami et al studied the transdermal delivery of tranilast using an ethanol solution containing oleic acid and propylene glycol as penetration enhancers. Results of these two studies indicate that transdermal delivery of tranilast using a properly compounded vehicle is a useful treatment for keloid and hypertrophic scars, particularly for relieving pain and itching, and is more beneficial than tranilast given orally.

Tranilast:
- inhibits chemical mediators by macrophages and inflammatory cells (membrane stabilizing)
- inhibits migration and proliferation of smooth muscle cells
- has an anti-inflammatory effect
- restores cytokine-induced nitric oxide production

J Pharm Pharmacol 1998;50:49-54
http://www.mayo.edu/cme-rst/dec2000/07‐Tilbury/tsld008.htm

Topical Tamoxifen for Dermal Scarring & Keloids

Abnormal dermal scarring affects a large number of people, is aesthetically disfiguring, and can be functionally disabling. Keloids are a type of excessive scar tissue formation characterized by fibroblast overproduction of collagen types I and III. Existing medical and surgical strategies to prevent or to treat scars are frequently disappointing. Tamoxifen, a synthetic, nonsteroidal anti-estrogen has been shown to inhibit the proliferation of fibroblasts and decrease collagen production. Studies of the topical use of a tamoxifen analog showed that concentrations in the skin were many times greater than levels in other tissues, including the eyes. Current studies indicate that tamoxifen has potential as a novel therapeutic agent in treating abnormal dermal scarring.

SKIN AND WOUND CARE

Dry skin can be treated with topical application of moisturizers such as silicone or urea. We utilize specialized equipment, such as an ointment mill, that allows us to compound formulations containing much higher concentrations of active ingredients than can be prepared using traditional methods.

Decubitus ulcers, venous stasis and diabetic ulcers, traumatic wounds, and burns may heal more quickly if treated topically. Medications which improve capillary blood flow can be added to a compounded medication to enhance circulation at the wound margins and promote healing of the injured area, and topical anesthetics can be added to relieve pain.

Skin Irritation
Numerous topical preparations containing cholestyramine or sucralfate have been applied for their protectant properties or for treatment of a variety of dermatologic and mucosal problems, including oral and esophageal ulcers, peristomal and perineal excoriation, decubitus ulcers, and radiation-induced rectal and vaginal ulcerations.

Topical Dexamethasone for Skin Disorders
“Pantothenic acid (vitamin B5) is essential to normal epithelial function. It is a component of coenzyme A, which serves as a cofactor for a variety of enzyme-catalyzed reactions that are important in the metabolism of carbohydrates, fatty acids, proteins, gluconeogenesis, sterols, steroid hormones, and porphyrins. The topical use of dexamethasone, the stable alcoholic analog of pantothentic acid, is based on good skin penetration and high local concentrations of dexamethasone when administered in an adequate vehicle, such as water-in-oil emulsions. Topical dexamethasone acts like a moisturizer, improving stratum corneum hydration, reducing transepidermal water loss and maintaining skin softness and elasticity... Dexamethasone has been shown to have an anti-inflammatory effect on experimental ultraviolet-induced erythema. Beneficial effects of dexamethasone have been observed in patients who have undergone skin transplantation or scar treatment, or therapy for burn injuries and different dermatoses. The stimulation of epithelization, granulation and mitigation of itching were the most prominent effects of formulations containing dexamethasone. In double-blind placebo-controlled clinical trials, dexamethasone was evaluated for its efficacy in improving wound healing. Epidermal wounds treated with dexamethasone emulsion showed a reduction in erythema, and more elastic and solid tissue regeneration... Adjuvant skin care with dexamethasone considerably improved the symptoms of skin irritation, such as dryness of the skin, roughness, scaling, pruritus, erythema, erosion/fissures, over 3 to 4 weeks. Usually, the topical administration of dexamethasone preparations is well tolerated, with minimal risk of skin irritancy or sensitization.”

Dexamethasone, at concentrations of 2 to 5% is used topically as an ointment, emulsion, or solution, as an adjunct in the treatment of various skin and mucosal lesions. Topical formulations marketed in Europe usually contain 5% concentration.

Dexamethasone 2% to 5% stimulates the regeneration of injured human skin, activates fibroblast proliferation (important for wound healing), and also accelerates epithelization, which may be the reason it has been used to treat leg ulcers and anal fissures.

“In a multicenter study, 483 patients requiring adjuvant skin care received dexamethasone in topical formulations.[34] Most patients had atopic dermatitis (41.8%), ichthyosis (19.7%), psoriasis (9.3%), or contact dermatitis (9.3%). All symptoms (dryness of the skin, roughness, scaling, pruritus, erythema, erosion/fissures) improved considerably over 3 to 4 weeks. All symptoms improved by >80%, in the case of dryness of the skin and desquamation, improvement was as high as >90%. Local irritation was observed in 1.9% of the cases only, and the cosmetic properties of the dexamethasone formulations were rated as good or very good by >90% of the patients.”


Compounded Therapies for Decubitus Ulcers commonly include drugs such as phenytoin, topical protectants, and misoprostol. The choice of topical protectants is dependant on formulation. Secundum Artem, Vol. 9, No. 2, describes a “useful” topical formulation called “decubitus ulcer gel” which contains phenytoin, lidocaine, and misoprostol. Misoprostol is a prostaglandin E1 analog that is most commonly used to prevent and treat NSAID-induced gastroduodenal damage. However, misoprostol can “promote homeostasis in tissues in addition to the stomach by similarly inhibiting the activity or release of various injurious molecules and inflammatory cytokines such as interleukin-1 and thromboxane... It is reasonable to conclude that [misoprostol’s] therapeutic and adverse effects depend on route of administration...”

Pharmacotherapy 2001 Jan;21(1):60-73
Peristomal Dermatoses: a novel indication for topical steroid lotions

Dermatoses that interfere with the normal use of a stoma appliance are common. When preventable causes, such as infection or allergy, are not identified, barrier preparations or topical steroids have been used. However, topical medications formulated in a cream or ointment base will cause stoma bags to detach, resulting in leaks. Lyon et al. of the Dermatology Centre, University of Manchester School of Medicine, UK, investigated the efficacy and suitability of corticosteroids in aqueous/alcohol lotions in the management of peristomal dermatoses. Sixty patients with a variety of noninfective, inflammatory dermatoses (irritant dermatitis, pyoderma gangrenosum, psoriasis, and constitutional eczema) were treated with topical corticosteroid aqueous/alcohol lotions for up to a maximum of 4 weeks, which proved to be particularly useful. It was determined that after the initial treatment course, occasional reapplications, approximately every 2 weeks, may be necessary to control skin disorders. This low frequency of application minimizes the risk of side effects so that the authors did not identify local or systemic side effects in any of the patients treated. They concluded that topical corticosteroids formulated in aqueous/alcohol lotions are effective and acceptable treatments for peristomal dermatoses, and if these preparations are used appropriately, the risk of side effects is low.


Debridement of Necrotic Eschar with 40% Urea Paste Speeds Healing

Four cases have been described by Pelle and Miller of the Department of Dermatology, Geisinger Medical Center, Danville, PA, detailing the beneficial use of 40% urea paste to speed healing of residual limbs and avoid further surgery.

- 50 y.o. male with diabetes S/P left below-knee amputation (BKA) for a nonhealing infected foot ulcer, referred postoperatively for wound care prior to a planned above-knee amputation (AKA).
- 62 y.o. male with diabetes S/P underwent bilateral BKA for gangrene secondary to foot ulcerations, referred for wound care of necrotic eschars of both distal residual limbs.
- 56 y.o. male with diabetic neuropathy affecting both upper and lower extremities who developed cellulitis and gangrene following thermal burns to the left sole. One month following BKA, the wound dehisced, and an adherent necrotic eschar formed at the distal residual limb.
- 62 y.o. female with diabetes with ischemic gangrene of the left toes underwent BKA. After amputation, her residual limb developed ischemic necrosis with painful adherent eschar formation.

Painful ischemic ulcerations with adherent eschar formation complicate and prevent healing of BKA residual limbs and precluded mechanical debridement of these patients’ residual limbs. BKA is preferable to AKA because preservation of the knee allows for a more functional prosthesis. However, in a study of 50 patients undergoing BKA, the wounds of 14% of patients never healed, and reamputation above the knee was required. Faced with this consequence, Pelle, Miller et al. attempted to avoid mechanical debridement by using 40% urea paste. Application of 40% urea paste to a necrotic eschar involves outlining the wound to protect the surrounding skin and use of an occlusive dressing, which is removed at 72 hours, followed by immediate debridement, as the eschar hardens within minutes if not debrided immediately. Urea paste provides fast and effective softening of large and small eschars. The rapid action of urea results from its strong osmotic effect on the skin. Urea rehydrates the stratum corneum by drawing water from deeper epidermal and dermal tissues. In these patients, complete healing of wounds was achieved between 8 and 16 weeks following urea application. None of the ulcers required a second surgical or chemical debridement to remove necrotic tissue. The occluded wounds remained pain free, and a prosthesis was successfully fitted for each patient.

Chemical debridement of necrotic eschars with enzymatic agents, including papain-urea, fibrinolysin-desoxyribonuclease, and collagenase is marginally and slowly effective and may be complicated by increased inflammation and pain. Chemical debridement with urea is painless, avoids wound traumatization, and is inexpensive. Possible adverse effects of 40% urea paste (not observed in these cases) include irritant dermatitis caused by contact with surrounding healthy skin or contact allergy to the vehicle. These cases demonstrate the ability of urea to soften and debride necrotic or devitalized skin. From their experience, these authors believe that debridement with 40% urea paste is the preferred efficient and effective method to remove adherent eschars, prevent AKA, and enhance quality of life.

Arch Dermatol. 2001 Oct;137(10):1288-90
Healing of diabetic foot ulcers in L-arginine-treated patients.

Arana V, Paz Y, González A, Méndez V, Méndez JD.

Department of Pathological Anatomy, Hospital General de Zona # 47, IMSS, Mexico City, Mexico.

Experimentally, we demonstrated the beneficial effects of L-arginine on regulation of hyperglycemia and dyslipidemia in experimental diabetes, in addition to a positive anti-aggregating effect in platelets in animals and humans. Here, the effect of L-arginine on foot ulcers from diabetic patients was studied. Three groups of diabetic patients were included: 11 patients without ulcer received neither treatment and served as controls. Eleven patients with diabetic ulcer received the standard treatment, this group served as diabetic control with diabetic ulcer. Eleven remain patients with diabetic ulcer received 10 mM L-arginine subcutaneously on the site of the wound. Biopsy with punch number 5 on wound site comprising both ulcerative and contiguous undamaged skin were performed in all patients with ulcerative lesions before any treatment. Patients with intact skin had biopsy performed with punch number 5 on external malleolar region of right lower limb. Biopsies were examined by light and confocal microscopy utilizing histochemical and immunohistochemical methods. Initial and final blood samples were collected to determine glucose, triglycerides, total cholesterol, glycated hemoglobin (HbA(1c)), low (LDL), and high density lipoproteins (HDL). Significant differences (P < 0.05) were observed between initial and final serum glucose levels for treated patients, and initial serum glucose levels between treated and control patients without diabetic ulcer. Glycated hemoglobin, triglycerides, cholesterol, and lipoprotein levels showed no significant changes. Eight patients treated with L-arginine reached total wound healing and the remaining three who abandoned the study because of change of residence showed relevant improvement. Histochemistry and immunohistochemistry methods have shown vascular impairment in both patients with diabetic ulcer (prior to treatment) and control patients without diabetic ulcer. Our observations strongly support efficacy of L-arginine for successful wound healing of diabetic ulcers.

Transdermal L-Arginine Improves Circulation and Temperature in Diabetic Feet

Patients with diabetes have abnormally low levels of L-arginine and elevated levels of endothelial nitric oxide synthase (eNOS). Normally, nitric oxide is generated in the endothelium through the oxidation of L-arginine by eNOS. Nitric oxide then causes smooth muscle to relax, resulting in increased blood flow.

To determine if transdermal administration of L-arginine would improve vascular circulation and temperature of the feet of diabetic patients, 16 subjects with diabetes and impaired foot circulation were enrolled and 13 completed a double-blind, vehicle-controlled, two period crossover protocol with washout periods of one week. The active cream contained L-arginine in a proprietary transdermal cream base. Due to the long-lasting effect of the L-arginine cream, the analysis was altered to determine the effect from cumulative exposure to L-arginine throughout the protocol. In feet which received an application of L-arginine cream twice daily for two weeks, average Doppler flow increased 33% at the metatarsal and 35% at the Achilles tendon, and average temperature increased 5 degrees Fahrenheit at the metatarsal and 8 degrees Fahrenheit at the great toe. Impaired circulation is a major cause of such diabetes-related complications as cold, painful feet and foot ulcers. Restoration of blood flow in the feet of people with diabetes may prevent ulcers and amputations. Additional research is needed to determine if L-arginine cream has any clinical benefit in preventing or reducing amputations or other foot complications.

Cracked Dry Skin on the Feet and Heels

Fungal infections of the feet are commonly associated with dry, cracked skin surrounding the plantar surface and heel fissures. Hyperkeratosis can have various etiologies, such as moccasin tinea pedis, or ichthyosis vulgaris. These are often chronic conditions that are quite difficult to treat.

Moccasin tinea pedis is typically resistant to topical antifungal therapy when used as sole therapy, because the scale on the plantar surface of the foot impedes or limits the absorption of the antifungal agent. Elewski et al of the Department of Dermatology, University of Alabama at Birmingham, evaluated the efficacy of 40% urea cream as an adjunct to topical antifungals in the treatment of moccasin tinea pedis. Patients with untreated moccasin tinea pedis were selected from the general dermatology clinic. The diagnosis of moccasin tinea pedis was made clinically and confirmed with a potassium hydroxide test or a positive fungal culture. A total of 12 patients with moccasin tinea pedis were treated with 40% urea cream once daily and antifungal cream twice daily. Patients then were evaluated after 2 to 3 weeks of treatment for the presence of erythema, scaling, and pruritus. After 2 to 3 weeks, a 100% cure rate was achieved in the 12 patients treated with topical 40% urea cream and antifungal cream concomitantly.

Cutis 2004 May;73(5):355-7
Sucralfate Topically for Treatment of Chronic Venous Ulcers, Peristomal Irritation, and “Diaper” Dermatitis

Topical sucralfate has been successfully studied in peristomal and perineal dermatoses, in moist desquamation during radiotherapy, in erosion and ulceration of the perineal area, in vaginal ulceration, in dystrophic epidermolysis bullosa, and in second and third degree burns.

Venous leg ulcers are an important medical issue due to their high incidence in the elderly and the lack of a standard curative approach. A placebo-controlled, randomized study sought to determine the effectiveness, safety and tolerability of sucralfate gel (25 g sucralfate per 100 g gel) for local treatment of non-healing, full-thickness venous stasis ulcers refractory to 8 weeks of conventional therapy. Before topical application, the ulcers were cleaned with isotonic saline and iodine solution following the surgical removal of debris. The gels were applied daily at the bottom of the ulcers. The ulcers were then covered with sterile dry gauze and in a few cases with an elastic bandage. Before the following day's treatment, the old gel was cleared from the ulcers. Results indicated that the daily application of sucralfate gel to non-infected post-phlebitis/vascular ulcers, for a median period of 42.0 days led to complete healing in 95.6% of patients against only 10.9% of cases with matched placebo. Sucralfate is able to stimulate the synthesis and release of epidermal growth factor which in turn stimulates healing and affects prostaglandin synthesis. Research demonstrated by ultrastructural analysis that the topical use of sucralfate gel was able to affect neoangiogenesis, increase wound contraction and re-epithelialization of the wound area, and diminish the inflammatory reaction.1

Vaginal ulceration has been treated successfully with vaginal douches of 10% sucralfate suspension administered twice daily. “A 10% aqueous solution of sucralfate, given as a rectal enema or vaginal douche, was also used successfully to treat radiation-induced rectal and vaginal ulcers.”2,3

Dermatoses affecting the skin around stoma sites are common and difficult to treat. Apart from forming a physical barrier to further irritation, sucralfate binds to basic fibroblast growth factor preventing its degradation and thereby promotes healing. The effectiveness of topical sucralfate in the management of peristomal dermatoses was evaluated in adults using an open study design. In 8 of 9 patients with fecal or urine erosions, daily topical sucralfate treatment was associated with healing within 4 weeks. Topical sucralfate represents a safe, inexpensive and effective therapeutic intervention, particularly for those patients with high output or short stomas where repeated stoma leakage may be unavoidable.4

3 Ann Pharmacother. 1999 Dec;33(12):1274-6

Sex Hormones and Urticaria

Chronic urticaria is characterized by mast cell/basophil activation which initiates the inflammatory response. Altered function of the neuro-endocrine-immune system due to stress and other factors has also been implicated in the pathogenesis of urticaria. Sex hormones modulate immune and inflammatory cell functions, including mast cell secretion, and are regarded as responsible for gender and menstrual cycle phase-associated differential susceptibility and severity of some autoimmune and inflammatory diseases. Chronic urticaria is approximately twice as frequent in women as in men. In addition, urticaria may be associated with some conditions characterized by hormonal changes, including the menstrual cycle, pregnancy, menopause and hormonal contraceptives or hormone replacement therapy. Lower serum dehydroepiandrosterone sulfate (DHEA-S) concentrations have been observed in patients with chronic urticaria with both positive and negative responses to autologous serum skin tests. Thus, the influence of fluctuations in the hormonal milieu and altered sex hormone expression on the suppression, maintenance or aggravation of urticaria should be taken into account. In addition, the possible impact of estrogen mimetics, in the environment and in food, on the development of disease associated with mast cell activation must be considered.


WARTS, PLANTAR WARTS, MOLLUSCUM

2% Sodium Salicylate for Plantar Warts

Twenty patients with 104 plantar verrucae received 2% sodium salicylate solution administered iontophoretically (22.5 mA-minute/electrode, 3 treatments at 6- to 9-day intervals). Nineteen subjects were followed. Verrucae area declined in 15 subjects (78.9%) and increased in 2 subjects (10.5%). One subject (5.3%) no longer had verrucae, and 1 subject (5.3%) exhibited no change. Overall, the number of verrucae and total area decreased. Four of 6 subjects with initial complaints of load-bearing pain reported diminished pain after treatment. Two subjects whose verrucae’s size increased reported an increase in pain at the end of the study.
Sodium salicylate iontophoresis appeared to compare favorably with other office-based interventions in diminishing the size of plantar warts and their associated pain. Application of iontophoresis to weight-bearing surfaces in some subjects appeared to decrease the pain and scarring associated with freezing and electrocautery and the fixation problems associated with medicated patches.

Phys Ther. 2002 Dec;82(12):1184-91

**Squaric Acid Dibutylester (SADBE) for Cutaneous Warts in Children**

Warts are a common pediatric skin infection caused by human papillomavirus (HPV). Spontaneous clearance of warts involves anti-HPV immunity, which may be enhanced by contact sensitizers. Squaric acid dibutylester (SADBE) is a nonmutagenic sensitizing agent useful for immunotherapy of alopecia areata. Contact immunotherapy with SADBE is relatively safe and an effective alternative in the management of multiple and resistant cutaneous warts in children.

An open-label, retrospective study of 61 children with warts was performed. Sensitization with 2% SADBE on the forearm was followed with home application of 0.2% SADBE to warts 3 to 7 nights per week for at least 3 months. Complete clearing occurred in 34 patients (58%), with a mean duration of therapy of 7 weeks. Partial clearing occurred in 11 (18%), and no response in 14 (24%). Clearance correlated with plantar distribution, wart duration under 2 years, and first-line therapy with SADBE. Mild side effects occurred in 1/3 of patients, and were limited most commonly to mild erythema at the site of sensitization, and necessitated discontinuation of therapy in only 2 patients.

To evaluate treatment with twice weekly applications of serial dilutions of SADBE (0.03-3%) for no more than 10 weeks, children were enrolled who satisfied at least two of the following criteria: single or multiple sites with several warts, warts resistant to repeated medical and/or surgical treatments, recurrent multiple warts, and patient or parent refusal to undergo destructive or surgical treatment. Of the 148 children who completed the study, 124 (84%) showed complete clinical resolution with no significant side effects. Of those with total clinical resolution, 101 completed a 24-month follow-up with no relapses. Twenty-four (16%) children were nonrespondent. No apparent correlation between treatment response and age, gender, anatomic site, lesion type, or atopy was found.

In an earlier study, 29 patients who had warts for a mean duration of 2.1 years were treated with SADBE for warts that were resistant to other therapies. Patients were sensitized with 1% or 2% SADBE in acetone under occlusion, then treated with 0.5% to 5% SADBE applied to their warts every 2 to 4 weeks in the office. Clearing of all warts was seen in 20 of 29 patients (69%), improvement in 3 patients (10%), and no change in 6 patients (21%). For the cured patients, mean duration of treatment was 4.2 months (range, 1 to 12 months) and mean number of treatments was 5.7 (range, 2 to 15). Adverse effects included acute contact dermatitis, with 6 patients experiencing blisters and one experiencing hypopigmentation. The researchers concluded that SADBE treatment is worth considering in patients with recalcitrant warts, especially in those who tolerate painful procedures poorly.

J Am Acad Dermatol. 2000 May;42(5 Pt 1):803-8

**Topical Treatment of Resistant Warts with Glutaraldehyde**

Therapy with glutaraldehyde was used to treat twenty-five patients with selectively resistant warts. The patients were categorized as having one or more of the following conditions: 1) the location of the warts was either periungual, palmar, or plantar, 2) the age of the patient was five years or younger, 3) the number of warts was two or more. Eighteen (72%) out of twenty-five cases were cured, with cure rates of 80%, 60%, and 68.5% respectively for the three conditions. Pigmentary changes occurred immediately after the initial topical application of glutaraldehyde, and the surface of the verruca hardened. Soon debris began to drop off of the verruca tissue little by little, and final healing was completed in less than twelve weeks without disagreeable marks. This therapy was found to be extremely useful, not only because the cure rate was high, but also due to the following advantages: 1) no pain or pruritus, 2) no evidence of scarring or permanent pigmentary change, 3) good penetration in any location, 4) no need for special instruments or reagents except the solution, and 5) no special technique required (possible home treatment). This therapy is superior to cryotherapy in that it is useful for warts on any location, regardless of the number of lesions, and it is good for young children, although the cure rates for cryotherapy and glutaraldehyde are almost equal.

Recalcitrant Viral Warts Treated by Diphencyprone (DPCP) Immunotherapy

An alteration in the immune status of the skin is thought to contribute to a number of common dermatological problems, including viral warts, alopecia areata, and some cutaneous tumors. Topical immunotherapy with a contact sensitizer offers a possibility of complete remission, or cure in some cases. Diphencyprone (DPCP; diphenylcyclopropenone) has advantages over dinitrochlorobenzene (DNCB) and squaric acid dibutyl ester (SADBE). Immunotherapy with DPCP has been used successfully in the treatment of resistant hand and foot warts, but patients must be motivated to attend for sequential applications and must be warned about potential uncomfortable side-effects.

One study involved 8 weekly applications of DPCP to 134 patients with periungual and/or palmoplantar warts. The scheduled treatment course and follow-up were completed by 111 patients. There were 49 complete and 18 partial remissions, for a positive response rate of 60%. In another study, 60 patients with a 3-year median duration of warts were sensitized to DPCP. Of 48 individuals who completed therapy, 42 (88%) cleared of all warts. The median number of treatments to clear was 5 (range 1 to 22) and the median time to clear was 5 months (range 0.5-14). Adverse effects occurred in 56% of patients, most commonly local blistering, pompholyx-like reactions, and eczematous eruptions. 25 patients were followed up for periods of 1 month to 8 years (median 2 years) and none had a recurrence. Sensitization of medical, nursing and pharmacy staff may be avoided by careful handling of the DPCP solutions. “Induction of a tolerable degree of eczema is a desired part of treatment and is not considered a side-effect, although a number of patients with warts may clear without any symptoms at all.” Patients should have ready access to medical advice in the event of development of untoward side-effects.

Unsightly pigmentation at the sensitization site occurs in many patients so sensitization for warts is best carried out on a 1-cm² area of skin on the inner upper arm. DPCP is then applied to the warts (pared down where possible) at an initial concentration of 0.1% on the fingers, periungual regions, palms, toes and heel and 2.0% on the sole. The warts are carefully covered with adhesive dressings for 48 hours to avoid passive transfer of DPCP. When any reaction to DPCP has settled, patients are instructed to begin paring the warts and can use keratolytic agents. Repeat treatments are carried out at intervals of 1-4 weeks. Most clinicians do not give patients topical sensizers for unsupervised use at home, although some allow self-treatment once patients are familiar with the mode of application.

Br J Dermatol 2001 Sep;145(3):385-405
Dermatology 1996;193(3):236-8

Comparative study on the sustained efficacy of diphencyprone immunotherapy versus cryotherapy in viral warts.
Choi MH, Seo SH, Kim IH, Son SW.
Department of Dermatology, Korea University College of Medicine, Seoul, South Korea.
This study compared the sustained clearance rate of viral warts treated with topical diphencyprone (DCP) therapy (group A) versus cryotherapy (group B). After 12 months follow-up, 93.3% (42/45) of group A and 76.3% (29/38) of group B presented sustained clinical clearance. Our data suggest that topical DCP therapy may lead to the induction of the long-term immunity to human papillomavirus (HPV).
PMID: 18577059

Treatment of palmoplantar warts with a diphencyprone and salicylic acid ointment.
Armour K, Orchard D.
Department of Dermatology, Royal Children's Hospital, Parkville, Victoria, Australia.
We report on 50 consecutive suitable patients with one or more palmoplantar warts who were treated with a patient-applied ointment comprising 0.1% diphencyprone and 15% salicylic acid in white soft paraffin. All patients sensitized to diphencyprone were followed up clinically and assessed by patient questionnaire. The intention to treat success rate in this series was 88%. The time to wart clearance ranged from less than 4 weeks to 4 months. In our patient group, 90% rated their treatment as 'excellent' or 'good', whereas 10% stated that the reaction induced by diphencyprone was 'too severe'. Our results are compared with those previously published using diphencyprone in the treatment of palmoplantar warts.
PMID: 16866999
An interesting response to diphencyprone (DPC) sensitization on facial warts: review of DPC treatment for viral warts.

Pollock B, Highet AS.
York District Hospital, York, England. Brucepoll@doctorsnet.co.uk

BACKGROUND: This paper highlights the sometimes impressive effect of diphencyprone (DPC) sensitization on warts resistant to other treatments and is interesting in view of the fact that all the warts apparently responded, despite only a very small area being treated. METHODS: A 31-year-old woman with a 5-year history of widespread facial plane warts that had proved resistant to repeated treatments with cryotherapy and topical preparations was sensitized to diphencyprone. RESULTS: After application of DPC to the warts within only a 1-cm(2) area of the face, all the facial warts became inflamed and resolved, including those not actively treated. Complete clearance occurred with no recurrence. CONCLUSION: DPC appears to be a valuable, safe and well-tolerated treatment for resistant viral warts and can be considered as a first line treatment. We review its use and action in this paper

PMID: 12060501

KOH 5% Solution for Molluscum Contagiosum

MC is a common non-cancerous skin growth caused by a viral infection, and transmitted by skin-to-skin contact. Children tend to get MC more often than adults. Many dermatologists advise treating molluscum because they spread. If there are many growths, multiple treatment sessions may be needed every 3 to 6 weeks until the growths are gone. Discomfort is associated with freezing, scraping, electrocautery and laser therapy. Romiti et al. evaluated 35 children with MC to determine the effectiveness of treatment with topical 10% KOH (potassium hydroxide) aqueous solution. The solution was applied with a cotton swab twice daily, on each MC lesion, by the parents of affected children. Thirty-two of 35 patients achieved complete clinical cure after a mean treatment period of 30 days. Three children discontinued treatment: two reported severe stinging of the lesions and refused further applications; the other, with giant MC lesions, developed a secondary infection. A stinging sensation was reported by most children during the trial and some developed hyper- or hypopigmentation after treatment at the site of the lesions. In an attempt to reduce those side effects, a new trial of 20 children used a less concentrated KOH solution (5%). All MC cleared completely within 6 weeks using a 5% KOH aqueous solution, twice a day. The stinging sensation was absent or minimal during treatment and in no case were disturbances of pigmentation observed. Perivaginal and perianal lesions were treated the same way and severe irritation was not observed. Children with periorbital lesions were excluded from this trial. A 5% KOH aqueous solution proved to be as effective and less irritating than 10%, and spared children from more aggressive physical modalities of treatment.

Pediatr Dermatol 2000 Nov-Dec;17(6):495
Pediatr Dermatol 1999 May-Jun;16(3):228-31


Double-blind, randomized, placebo-controlled trial of the use of topical 10% potassium hydroxide solution in the treatment of molluscum contagiosum.

Short KA, Fuller LC, Higgins EM.
Department of Dermatology, King's College Hospital, Denmark Hill, London, United Kingdom. kshort@doctors.org.uk

Molluscum contagiosum is a common viral infection of the skin that frequently affects children. Lesions take between 6 and 18 months to resolve spontaneously and are a source of great embarrassment to both care-takers and children, often affecting attendance at school and limiting social activity. Treatment options to date have been poorly tolerated by children but recent studies have suggested that potassium hydroxide may be beneficial. This double-blind, randomized, placebo-controlled study compared 10% potassium hydroxide with placebo (normal saline). Twenty patients, aged 2 to 12 years, were recruited. Parents applied a solution twice daily to lesional skin until signs of inflammation appeared. Children were examined by the same observer on days 0, 15, 30, 60, and 90. Seventy percent of children receiving topical potassium hydroxide cleared, compared with 20% in the placebo group. Further dosing studies are required to identify whether weaker concentrations of potassium hydroxide are as efficacious, with less irritancy.

PMID: 16780480
**Head Lice and Scabies**

**Head lice** affect an estimated 12 million people in the United States each year, and are rapidly becoming resistant to over-the-counter and prescription medications. Additionally, prescription products such as lindane and malathion have recognized health risks. Therefore, a need exists for a safe, easy-to-use preparation that is effective against multiple strains of susceptible and/or treatment-resistant head lice.

Researchers at the University of Massachusetts Amherst have found that ivermectin, a compound used to treat intestinal worms and plant parasites, was 100 percent effective in killing head lice resistant to many standard treatments. Ivermectin is not well-absorbed through the skin, which makes it suitable for products that are used externally. Researchers applied a topical preparation of ivermectin to the skin or scalp of school children in southern Florida with resistant head lice. Formulations containing 1.0, 0.5, and 0.25 percent ivermectin were found to be 100 percent effective in killing newly hatched lice following 10 minutes of exposure. A topical formulation containing a mixture of natural ingredients was also more effective than 0.5 percent ivermectin alone, indicating that the mixture may allow ivermectin to penetrate more easily into the lice.

The effectiveness of ivermectin could save children from multiple applications of toxic chemicals. "Since most people find head lice intolerable, they often repeatedly apply insecticides without realizing their potential for harm if overused or misapplied," said J. Marshall Clark, lead investigator.

**Ivermectin for Head Lice and Scabies**

Due to reports of permethrin-resistant head lice, many physicians have been searching for effective treatment alternatives for pediculosis. Ivermectin has demonstrated promise in eliminating head lice and has been successfully utilized both orally and topically. In a clinical study evaluating the efficacy of ivermectin in the treatment of pediculosis, a single ivermectin dose of 200 micrograms/kg body weight was administered to 26 patients (2 male, 24 female, aged 5-17 years) with head lice infestation. On day 14, twenty patients were improved. On day 28, seven patients were considered healed (complete disappearance of eggs and all clinical symptoms), eight patients showed no nymph infestation, and 26 patients showed no adult infestation or excoriation. No side effects were reported.2

Approximately 100 patients with scabies received oral ivermectin in a single dose of 200 mcg/kg. After four weeks, 83% of the patients showed marked improvement. A severe headache was noted in one patient. The researchers concluded that oral ivermectin is easy to administer as a single oral dose, and induces an early and effective improvement in signs and symptoms associated with scabies.3

In another study, 75 patients were treated with a single topical application of ivermectin to investigate the effect of this drug against the human ectoparasites Sarcoptes scabiei and Pediculus humanus capitis which are responsible for scabies and head lice. Ivermectin was found to have a curative effect on head lice within 48 hours of a single topical application. In patients with scabies, the drug was also found to be effective after a single application. However, in 50% of scabies cases, another application was needed five days later.4

There is no commercially available topical ivermectin product.

---

1 Archives of Pediatrics and Adolescent Medicine, 1999; 153:969-973
2 Trop Med Parasitol 1994 Sep;45(3):253-4
3 J Dermatol 2001 Sep;28(9):481-4


**Oral ivermectin in the treatment of body lice.**

Foucault C, Ranque S, Badiaga S, Rovery C, Raoult D, Brouqui P.
Unite des Rickeòtisies CNRS UMR 6020, Laboratoire de Parasitologie-Mycologie INSERM UMR 399, Faculte de Medecine, Universite de la Mediterranee, Marseille, France.

The mainstays of treatment of body-lice infestation in humans in a community setting are insecticides and the removal of infested clothing. We report here the dramatic effect that 3 doses of oral ivermectin (12 mg each), administered at 7-day intervals, have in reducing the total number of body lice in a cohort of homeless men from a shelter in Marseilles, France. We identified a baseline total of 1898 lice in the cohort. Over a 14-day period, this number fell to 6 lice; the prevalence of infested
individuals fell from 84.9% to 18.5%. Although this effect was not sustained at day 45, it establishes that ivermectin plays a novel role in the control of body-lice infestation in humans.

PMID: 16388498

A new ivermectin formulation topically kills permethrin‐resistant human head lice (Anoplura: Pediculidae).

Strycharz JP, Yoon KS, Clark JM.
Department of Veterinary and Animal Science, University of Massachusetts, Amherst, MA 01003, USA.

This study examines the effectiveness of a new ivermectin formulation for the topical treatment of the human head louse, Pediculus humanus capitis De Geer (Anoplura: Pediculidae). Permethrin‐resistant lice originally obtained from south Florida and maintained on an in vitro rearing system were 100% susceptible to ivermectin formulations by using a semiclinical hair tuft bioassay. The formulation was 100% effective at killing lice using 1, 0.5, and 0.25% ivermectin concentrations after 10-min exposures. As judged by the lethal time (LT)50 and LT95 values, 0.5% formulated ivermectin was 3.8 and 3.2 times faster at killing lice, respectively, than 0.5% nonformulated ivermectin, indicating that the formulation may facilitate the penetration of ivermectin into the louse. The hair tuft‐based bioassay in conjunction with the in vitro rearing system provides a standardized method to assess the comparative efficacy of pediculicide formulations in a reproducible format that mimics the exposure scenario that occurs on the human scalp.

PMID: 18283945

Relationship of treatment‐resistant head lice to the safety and efficacy of pediculicides.

Burkhart CG.
Department of Internal Medicine, Medical College of Ohio at Toledo, 5600 Monroe St, No. 106-B, Sylvania, OH 43560, USA.

Head lice infestation is a common and growing problem that primarily affects school-aged children. Most cases of head lice are diagnosed and treated by nonphysicians. Misdiagnosis may lead to treatment when no lice are present. Treatment failure may lead to repeated use of and improperly applied pediculicides, potentially resulting in overexposure to pesticides. These treatment failures are primarily due to the emergence of treatment‐resistant lice. In regions where resistant lice are common, patients may self‐treat numerous times with over‐the‐counter pediculicides before seeking treatment from a physician. Resistance has decreased the efficacy of lindane, a prescription pediculicide that has been used for decades. In addition, the Food and Drug Administration recently warned of potentially serious adverse effects associated with lindane and recommended strict controls for its use. Malathion, recently reintroduced in the United States as a prescription pediculicide, has not been associated with treatment resistance or notable adverse effects, although it is flammable due to its alcohol base. Because of concerns about decreasing efficacy due to resistance and safety concerns about over‐the‐counter products and some prescription pediculicides, a reassessment of pediculicide safety is warranted. The safety and efficacy of commonly used over‐the‐counter and prescription pediculicide products are discussed, along with the safety and efficacy of other treatments, such as ivermectin, that are not indicated for the treatment of head lice but are being used increasingly.

PMID: 15132409

Natural Remedy for Head Lice

Head louse infestations are prevalent worldwide. Researchers at Department of Parasitology, Hebrew University Medical School, examined the pedicucidic efficacy and safety of a natural remedy and compared it with a known pesticide spray in an open clinical study involving 119 children. The natural remedy, which contains coconut oil, anise oil and ylang ylang oil, was applied to the hair of infested children three times at 5 day intervals. Each treatment lasted for 15 minutes. The control pediculicide was a spray formulation containing permethrin, malathion, piperonyl butoxide, isododecane and propellant gas, which was applied twice for 10 minutes with a 10 day interval between applications. Treatment was successful with the natural remedy in 60 children (92.3%) and with the control pediculicide in 59 children (92.2%). There were no significant side effects associated with either formulation.

Primary hyperhidrosis (excessive perspiration) is a physically and emotionally distressing condition which involves mainly the palms, soles, and axillae. Hyperhidrosis is a concern for many athletes, as well as members of dance teams and marching bands. Oral anticholinergic agents and beta-blockers may be effective for controlling or reducing profuse sweating, but also carry significant side effects. Topical therapies may be the most practical and most common treatment for hyperhidrosis, but many agents that have proven useful in clinical trials are not commercially available.

Placebo-controlled trials have shown that topically applied 20% aluminum chloride hexahydrate significantly reduces the symptoms of hyperhidrosis in 60%-100% of patients. Skin irritation can be minimized with 1% hydrocortisone cream or by compounding 20% aluminum chloride in a 4% salicylic acid gel base, instead of in anhydrous alcohol base (as is the commercial product Drysol®).

Luh and Blackwell of the Dept. of Internal Medicine, University of Texas Medical Branch at Galveston describe a healthy, active 27-year-old male resident physician who had excessive facial sweating with minimal exertion or stress. The sweating was especially pronounced on the forehead, nose, and upper lip. Daily topical application of a 0.5% glycopyrrolate solution to the face and forehead significantly reduced facial sweating after the first treatment, without any discomfort to the skin. No loss of efficacy was seen after multiple face washings. Facial hyperhidrosis recurred after withdrawal of the glycopyrrolate for 2 days, confirming its therapeutic effect. Two years later, he continues to use glycopyrrolate as needed.

Cladellas E, Callejas MA, Grimalt R. Department of Thoracic Surgery, University of Barcelona, Barcelona, Spain. Compensatory sweating after sympathectomy does not have a satisfactory, free-of-secondary-effects treatment. Glycopyrrolate has been successfully used to treat other types of hyperhidrosis. Compensatory sweating after sympathectomy could respond to the topical application of glycopyrrolate. Ten patients were selected with compensatory sweating after sympathectomy. One milliliter of a 2% water solution of topical glycopyrrolate was applied once a day over the affected area and massaged for 30 seconds. Treatment was maintained for 6 weeks. The results were rated using a scale from 1 to 10 of satisfaction at the end of the study. Eight of the 10 treated patients dramatically improved with the topical application of glycopyrrolate. Two patients quit the treatment due to secondary effects (accommodative failure and dry mouth). The results of the study demonstrated that local application of glycopyrrolate might be the treatment of choice for compensatory hyperhidrosis.

Kim WO, Kil HK, Yoon DM, Cho MJ. Department of Anesthesiology and Pain Medicine, Yonsei University College of Medicine, Seoul, Korea.
Gustatory hyperhidrosis is facial sweating usually associated with the eating of hot spicy food or even smelling this food. Current options of treatment include oral anticholinergic drugs, the topical application of anticholinergics or aluminum chloride, and the injection of botulinum toxin. Thirteen patients have been treated to date with 1.5% or 2% topical glycopyrrolate. All patients had gustatory hyperhidrosis, which interfered with their social activities, after transthoracic endoscopic sympathectomy, and which was associated with compensatory focal hyperhidrosis. After applying topical glycopyrrolate, the subjective effect was excellent (no sweating after eating hot spicy food) in 10 patients (77%), and fair (clearly reduced sweating) in 3 patients (23%). All had reported incidents of being very embarrassed whilst eating hot spicy foods. Adverse effects included a mildly dry mouth and a sore throat in 2 patients (2% glycopyrrolate), a light headache in 1 patient (1.5% glycopyrrolate). The topical application of a glycopyrrolate pad appeared to be safe, efficacious, well tolerated, and a convenient method of treatment for moderate to severe symptoms of gustatory hyperhidrosis in post transthoracic endoscopic sympathectomy or sympathicotomy patients, with few side effects.

PMID: 12950111
Topical glycopyrrolate for patients with facial hyperhidrosis.

Kim WO, Kii HK, Yoon KB, Yoon DM.
Department of Anaesthesiology and Pain Medicine, Anaesthesia and Pain Research Institute, Yonsei University College of Medicine, CPD Box 8044, Seoul, Korea.

BACKGROUND: Facial hyperhidrosis may negatively impact the quality of life. Although various conservative modalities have been suggested, the condition is not often treated successfully. OBJECTIVES: To examine whether topical glycopyrrolate could be an effective and safe treatment for facial hyperhidrosis. METHODS: Twenty-five patients with facial hyperhidrosis were enrolled and treated with 2% topical glycopyrrolate on one half of the forehead while the other half of the forehead was treated with a placebo. RESULTS: The sweat production rate of the half of the forehead treated with topical glycopyrrolate was significantly reduced to 37.6+/−2.8 mg min⁻¹ (mean+/−SEM) compared with 102.2+/−5.5 mg min⁻¹ at the placebo-treated half of the forehead (P<0.001). Patients evaluated their degree of anhidrosis as excellent in six (24%) patients, good in 16 (64%), fair in two (8%) and poor in one (4%). Twenty-four patients (96%) were partially or fully satisfied with their fair to excellent anhidrosis; only one patient (who developed a transient headache after treatment) was dissatisfied with its therapeutic effect. Only seven patients (28%) experienced recurrence within 1 day while 17 patients (68%) had recurrence within 2 days. One patient (4%) remained stable for up to 4 days. CONCLUSIONS: Topical glycopyrrolate application appears to be effective and safe for the treatment of excessive facial sweating in primary craniofacial and secondary gustatory hyperhidrosis following sympathectomy.

PMID: 18294315

Topical Therapy for Nail Infections

Yeast and bacterial infections of the nails are usually the result of microscopic damage to the nail plates. The nails will have either a white, thin discoloration at the tip of the nail that starts to extend toward the cuticle, or may have a greenish-black color to the nail. A mixture of 4% thymol in alcohol used twice daily until the affected area has grown out is excellent for this condition. ¹ Thymol is an antibacterial and antifungal, and alcohol also reduces moisture in skin folds and cuticles.

For treatment of onychomycosis, penetration of the topical antifungal agent through the nail plate from the surface of the nail and diffusion of the systemic antifungal drug through the nail bed may increase the total amount of antifungal activity at the site of infection. Results from an initial study in patients with onychomycosis suggest that this approach can enhance the overall efficacy of therapy. Using a combination of antifungal drugs in this manner may potentially reduce the duration of therapy and allow a reduction in dose of the oral agent, which may reduce systemic adverse effects. Physicians may also consider combining topical antifungal therapy with topical urea. Urea degrades protein, including keratin—a major component of the nail plate. Potentially, urea can soften the nail plate, making it more porous and penetrable to topical antifungal drugs. ² Urea ointment (40 to 55%) can be applied to the nail twice daily for two weeks. Then, topical formulations such as clotrimazole 2% and ibuprofen 2% in DMSO USP (“apply to affected nails BID for 6 weeks”)³ can be applied to the affected nail.

¹ Audrey Kunin, M.D. http://www.AAAskindoctor.com/nailfungus.html
³ Timothy J. Scott, DPM, FACFAS, Clarion, PA

Therapy for Onychomycosis (Fungal Nail)

Studies have shown that antifungal agents can be of benefit in treating the elderly, children, and immunocompromised individuals (e.g., transplant patients, Down’s patients, HIV patients, and diabetics) with onychomycosis. The treatment modality of onychomycosis in special patient populations should take into account the clinical presentation of onychomycosis, causative organism, patient and physician preference, concomitant medications that the patient is taking, and the potential for adverse events associated with antifungal therapy. Topical treatment of onychomycosis, as opposed to oral therapies, offers a distinct advantage by allowing the patient to apply medication directly to the affected area, thus decreasing the potential for serious adverse events, such as drug toxicity and drug interactions.
At the Nail Disease Centre, Cannes, France, 13 patients with onychomycosis, aged 25-78 years, most with involvement of the matrix region, were treated with a solution of 1% fluconazole and 20% urea in a mixture of ethanol and water, applied once daily at bedtime. In four patients there was complete resolution of the condition; four patients who had involvement of one nail only demonstrated a 90% improvement. Of the four patients who had presented with involvement of both big toenails, two showed 50% improvement bilaterally and in the remaining two patients there was a 90% improvement in one nail and a 50% improvement in the other.

J Dermatolog Treat. 2005 Feb;16(1):52-5

40% Urea Cream for Moccasin Tinea Pedis

Moccasin tinea pedis is a chronic dermatophyte infection of the foot that is recalcitrant to topical antifungal therapy. Furthermore, most patients with moccasin tinea pedis also have onychomycosis, thus adding to the recalcitrant nature of the infection. Topical antifungals used as sole therapy are generally ineffective because the scale on the plantar surface impedes or limits the absorption of the antifungal agent. A study at the Department of Dermatology, University of Alabama at Birmingham evaluated the efficacy of 40% urea cream as an adjunct to topical antifungals in the treatment of moccasin tinea pedis. Patients with untreated moccasin tinea pedis were selected from the general dermatology clinic, and the diagnosis was made clinically and confirmed with a potassium hydroxide test or a positive fungal culture. A total of 12 patients with moccasin tinea pedis were treated with 40% urea cream once daily and ciclopirox cream twice daily. Patients then were evaluated after 2 to 3 weeks of treatment for the presence of erythema, scaling, and pruritus. After 2 to 3 weeks, a 100% cure rate was achieved in all 12 patients treated with topical 40% urea cream and ciclopirox cream concomitantly.

Cutis. 2004 May;73(5):355-7

Clotrimazole 2% “Anti-Fungal Nail Solution”

Timothy J. Scott, DPM, FACFAS, regularly prescribes a compounded preparation containing clotrimazole 2% and ibuprofen 2% in DMSO (to enhance penetration through the nail) for the treatment of fungal nail with directions to “apply to affected nails BID for 6 weeks”, dispense 30 ml with two refills. Patients (n=32) who originally received prescriptions for the preparation over one year ago were interviewed. Ten patients reported a “cure” defined as “100% improvement”. Twenty additional patients noted partial improvement. Only 2 of 32 patients reported treatment failure, and both said they did not comply with the directions for use.

The podiatrist and his patients note that they prefer this therapy to oral therapy with antifungal agents because lab work is not needed at baseline and to monitor therapy, the “Anti-Fungal Nail Solution” is not problematic when a patient has pre-existing liver disease, and it is easy to apply.

TOPICAL ANESTHETICS

Laser and cosmetic procedures require adequate analgesia for patient comfort and tolerability of optimal treatment settings necessary for maximal results. A topical anesthetic that has a faster onset of action may result in less systemic absorption and a higher safety profile. Convenience of application without need for occlusion is another important consideration. Triple anesthetic gel “containing permeation enhancers can provide effective cutaneous anesthesia as early as 15 minutes after application without occlusion.”

Cosmetic Dermatology 2003 Apr;16(4):35-7

“BLT” Gel Prior to Laser Therapy

A study evaluated the clinical efficacy of a triple-anesthetic gel containing benzocaine, lidocaine, and tetracaine (“BLT”), and compared it with three other topical anesthetics for induction of local anesthesia prior to treatment with a 532-nm KTP laser. Some patients were also treated with an 810-nm diode laser to standardize responses to different wavelengths. The other anesthetics included a eutectic mixture of lidocaine 2.5% and prilocaine 2.5%, with and without occlusion; lidocaine 5% cream; and lidocaine 4% microemulsion gel; versus a control. At all intervals (15, 30, 45, and 60 minutes after application), pain scores
were significantly lower with the BLT gel than with the 3 other topical anesthetics, and all topical anesthetics were superior to the control. BLT gel produced the fastest anesthesia and no adverse side effects. BLT gel which is properly formulated can provide effective cutaneous anesthesia as early as 15 minutes after application without occlusion, reaching a maximum effect 30 minutes after application. BLT gel was used to treat thousands of patients over a 3-year period with no allergic reactions or signs of systemic toxicity.

Cosmetic Dermatology 2003 Apr;16(4):35-7

Lidocaine-Adrenaline-Tetracaine Gel for Topical Anesthesia in Linear Scalp and Facial Lacerations

“The search continues for a topical anesthetic that affords painless, safe application, does not contain narcotics or controlled substances, and has a maximum safety with complete anesthesia.” A randomized, prospective, double-blinded clinical trial compared topical LAT gel (4% lidocaine, 1:2000 adrenaline, 0.5% tetracaine) to topical TAC gel (0.5% tetracaine, 1:2000 adrenaline, 11.8% cocaine) for analgesic efficacy, side effects, and cost in 95 adults as well as 95 children aged 5 to 17 years with linear lacerations of the face or scalp. Gels were applied into and around the wound edges using a cotton-tipped applicator, taking care to avoid mucous membranes. Onset of anesthesia was 10 to 30 minutes. Evaluation by physicians and patients/parents indicated that LAT was statistically equal to TAC in effectiveness. Follow-up of over 90% of patients revealed no reported complications for either medication. Considering the advantages of using a non-controlled substance, avoidance of potential serious side effects associated with cocaine administration, and substantially less expense with LAT, LAT gel appears to be better suited than TAC gel for topical anesthesia in laceration repair. Clinical experience has shown that adrenaline (epinephrine) in the gel helps to stop bleeding secondary to injury, and application of the gel makes it much easier to cleanse the wound. LAT can also be compounded as a spray.

Pediatrics 1995 Feb;95(2):255-8

Topical Piroxicam vs. EMLA Cream to Relieve Pain and Inflammation After Laser Hair Removal

Fifty female volunteers were enrolled in a prospective, randomized, double-blind, clinical study over a 6-month period to compare the efficacy of piroxicam 0.5% gel and EMLA cream on pain control and subsequent inflammation in neodymium:yttrium-aluminum-garnet (Nd:YAG) 1,064 nm laser hair removal. Patients were randomly assigned to receive topical piroxicam (group P) or EMLA cream (group E). Topical analgesics were applied to the treatment sites for 60 minutes. The pain scores and side effects were recorded using a visual analog scale (VAS) before the hair removal, during the hair removal, at the end of the hair removal, and 1 hour, 2 hours and 24 hours after the hair removal. Patients’ characteristics and the treatment settings of the Nd:YAG 1,064 nm laser were similar in the two groups. The pain scores (VAS) were similar, and satisfaction was high in both groups after the hair removal. The number of blanching and erythema episodes were significantly higher in group E than in group P. Inflammatory side effects were less frequent in group P than in group E after the procedure. This study showed that topical piroxicam and EMLA provided adequate and similar pain relief after Nd:YAG 1,064 nm laser hair removal in female volunteers. Topical piroxicam was associated with fewer inflammatory side effects than was EMLA cream, because of its anti-inflammatory effect after the procedure.


MISCELLANEOUS

Sunscreens

We can compound sunscreen formulations with low-allergenicity UVB protectors in combination with chemicals such as oxybenzone that extend protection to UVA wavelengths. For broad spectrum coverage that blocks or reflects UVA and UVB, physical sunscreens containing titanium dioxide or zinc oxide may be preferable.
**Topical NSAID for Sunburn Pain & Inflammation**

Diclofenac is a non-steroidal anti-inflammatory drug used for a variety of inflammatory and painful conditions. A low-dose, topical gel form of diclofenac sodium has been developed in Europe for pain relief and reduction of redness after sunburn.

A randomized, double-blind, vehicle-controlled clinical trial was conducted to assess the efficacy and tolerability of diclofenac sodium 0.1% gel in 172 subjects suffering from acute first-degree natural sunburn. Patients with skin phototypes II-IV were randomized in a ratio of 2:1 to receive two applications of either diclofenac sodium 0.1% gel or its base (placebo), 6 hours and 10 hours after the end of sun exposure. Subjects were drawn from a target population of healthy volunteers and outdoor sunbathers with normal tolerance to ultraviolet light and the sun. Previously untanned areas were exposed to carefully determined standardized doses of sun (2.8 individual minimal erythema doses) on 15% body surface area to induce first-degree sunburn. After administration of diclofenac sodium 0.1% gel, subjects reported a significant reduction in spontaneous pain intensity compared with those who received only the gel. Pain relief was rapid with a reduction in erythema, which was apparent within the first few hours after the first application of the trial medication with a maximum effect observed up to 30 hours after sun exposure. A “good”, “very good”, or “excellent” cooling effect was recorded by 85% of subjects after treatment. Reported treatment-emergent adverse effects were infrequent, generally mild and none were considered to be related to the trial medication.

A study was done to compare the difference in blood and urine levels between oral diclofenac and diclofenac 0.1% topical gel, after application to normal skin and skin with ultraviolet-induced erythema. Results showed that the systemic exposure after topical application of 25 mg diclofenac sodium on sunburned skin was similar to that of normal skin and less than 3% of the systemic levels produced by 75 mg oral diclofenac sodium. The study concluded that diclofenac sodium 0.1% gel can be applied safely to superficially sunburned skin as well as to normal skin.

In a clinical study, diclofenac sodium 0.1% gel was applied to the buttock skin of adult male subjects, 6 and 10 hours after sunburn had been induced by irradiation with UVA + UVB rays. The gel was efficacious in alleviating pain as well as reducing erythema, edema and skin temperature. In a single- versus 2-application comparison study, a single application of 0.1% gel was sufficient to alleviate the pain and accompanying symptoms of sunburn with an onset of action 2 hours after application. A second application of gel 4 hours after the first maintained the analgesia and reduction of other symptoms for a period of up to 48 hours after irradiation.

**Skin Pharmacol Physiol. 2005 May-Jun;18(3):144-52**

**Itching Relieved with Topical Naltrexone**

Pruritus is a very common and distressing skin problem. Currently available therapies are not very effective, so there is a need for new effective topical drugs against itching. Two studies used a topical formulation of 1% naltrexone (or placebo) for 2 weeks to treat patients with localized and generalized atopic dermatitis with severe itching. More than 70% of the patients using the 1% naltrexone cream experienced a significant reduction of pruritus. The cream containing naltrexone had an overall 29.4% better effect than placebo. The naltrexone formulation required a median of 46 minutes to reduce itching by 50%; the placebo, 74 minutes. The antipruritic effects of the placebo emphasizes the importance of rehydration for dry skin.

Aquagenic pruritus is an intense prickling sensation that develops in affected individuals immediately after contact with water at any temperature. It is most commonly associated with polycythemia rubra vera. Common but often ineffective treatments include anticholinergics and antihistamines. Other moderately successful treatments include capsaicin cream, UVB phototherapy, and sodium bicarbonate bath water. Endogenous opiates, like naltrexone, can modify pruritus by influencing the peripheral and central sensation of itch, and have been found to be successful in suppressing the perception of pruritus from many diverse origins including aquagenic pruritus.


**Topical Sodium Cromoglycate for Treatment of Moderate-to-Severe Atopic Dermatitis**

Atopic dermatitis is a common inflammatory allergic disease of children. The primary therapy is topical steroids; however, it would be desirable to have an effective treatment that did not produce the topical and systemic adverse effects of corticosteroids.
In a double-blind, controlled study, children aged 2-12 years with atopic dermatitis were randomized to 12 weeks of treatment with a lotion containing 4% sodium cromoglycate (n=58) or the lotion base (n=56). Topical steroid usage was reduced in both groups but more significantly in the sodium cromoglycate-treated patients. Treatment-related adverse events (primarily moderate irritation, redness and burning at the site of application) were reported in 11 subjects (drug 7, placebo 4). The study showed a clinically useful benefit of sodium cromoglycate lotion in children with moderately severe atopic dermatitis.

Unsatisfactory treatment results for severe atopic dermatitis have led to investigation of alternate therapies, including cromolyn sodium in various vehicles at concentrations ranging from 1% to 10%. Results suggest that the vehicle used to deliver the cromolyn is relevant to its effectiveness. Moore et al. of the Department of Pediatrics, LSU Medical Center, New Orleans, tested the efficacy of low concentrations of cromolyn sodium (0.21%) in a water-soluble emollient cream base for the treatment of moderate-to-severe atopic dermatitis in a double-blind, placebo-controlled crossover study. Twenty-six pediatric patients who had failed to respond to conventional therapy were randomized into 2 treatment groups. Upon enrollment and at each follow-up visit, every patient was given a severity score based on extent and severity of skin involvement. At enrollment, there were no significant differences between groups A and B in severity scores, age, sex, race, skin test and/or RAST positivity, eosinophil levels, IgE concentrations, or the presence of concomitant rhinitis or asthma. After the first phase of the study treatment, severity scores had decreased for both groups with a significant difference between group A (cromolyn) and group B (placebo). After crossover, both groups had significantly lower severity scores than at entry into the study. The study concluded that treatment with topical cromolyn in a hydrophilic emollient vehicle has a significant anti-inflammatory effect on moderate-to-severe atopic dermatitis, and the physicians incorporated the treatment into their clinical practice.


**Topical Niacinamide for Treatment of Inflammatory Skin Conditions**

Various skin disorders with an inflammatory component often have been treated with steroids and/or oral antibiotics. However, long-term use of these agents may induce numerous serious side effects so alternative treatments have been investigated. Many clinical reports have identified niacinamide (also known as nicotinamide) as a beneficial agent in the treatment of a variety of inflammatory skin disorders such as acne vulgaris and rosacea, and its exceptional safety profile makes it a potentially ideal long-term therapy. Topical application of niacinamide (such as in a 2% cream) has a stabilizing effect on epidermal barrier function, seen as a reduction in transepidermal water loss and an improvement in the moisture content of the horny layer, and it may be used as a treatment adjunct in atopic dermatitis. Niacinamide leads to an increase in protein synthesis (e.g. keratin), has a stimulating effect on ceramide synthesis, speeds up the differentiation of keratinocytes, and raises intracellular NADP levels. In aging skin, topical application of niacinamide improves the surface structure and pigmenary disorders, smooths out wrinkles and inhibits photocarcinogenesis.

Cutis 2006 Jan;77(1 Suppl):11–6.
J Cosmet Dermatol 2004 Apr;3(2):88–93

**Stretch Marks**

Topical application of tretinoin (retinoic acid) has been shown to significantly improve the appearance of pregnancy-related stretch marks. In a double-blind, randomized, vehicle-controlled study, 22 women with early, clinically active stretch marks applied either 0.1% tretinoin or vehicle daily for 6 months to the affected areas. Patients were evaluated by physical exam monthly and by analysis of biopsy specimens of stretch marks obtained before and at the end of therapy in comparison with untreated normal skin. After 2 months, patients treated with tretinoin had significant improvements in severity scores of stretch marks compared with patients who received vehicle. After 6 months, 8 of the 10 tretinoin-treated patients had definite or marked improvement compared with one of the 12 vehicle-treated patients. An open-label, multicenter, prospective study of 20 women found that tretinoin cream 0.1% applied daily for 3 months to pregnancy-related stretch marks in the abdominal area resulted in significantly improved clinical appearance.

Another study reported that elastin content within the reticular and papillary dermis can increase with topical 20% glycolic acid combined with 0.05% tretinoin emollient cream therapy.

Arch Dermatol. 1996 May;132(5):519–26
Diaper Rash (Dermatitis)

Approximately two-thirds of infants experience diaper rash. Customized diaper rash preparations—ointments, powders, or creams—tailored to treat each baby’s specific symptoms, can be compounded using ingredients which will protect the skin from additional irritation, soothe and encourage healing, and prevent secondary infections. Skin protectants (zinc oxide, petrolatum) provide a physical barrier against external irritants such as urine or gastrointestinal enzymes in stool. Antifungal creams can be used when a yeast (Candida) infection is suspected. Topical steroids (such as hydrocortisone 1%) should be reserved for severe diaper rash, because a baby’s skin can absorb enough medication to lead to systemic effects.

Decreased gastrointestinal transit time can mean less time for bile acid resorption in the distal ileum, and high concentrations of bile acids in the stool can irritate the anus and buttocks in a manner similar to the skin irritation associated with ostomies. When applied topically, cholestyramine, a bile acid sequestrant, can irreversibly bind the bile and bring relief to the patient. Annals of Pharmacotherapy 30(9):954-956 reported the case study of a two-month old boy with reflux and regurgitation who was treated with a promotility agent. He developed a rash on his buttocks and anal irritation that progressed in severity despite the use of numerous topical products and extended diaper-free periods. A compounded topical cholestyramine ointment was administered and resulted in complete resolution within three days.

Cholestyramine Ointment for Severe Diaper Rash

If high concentrations of bile acids are contained in the stool, they can irritate the anus and buttocks in a manner similar to the skin irritation experienced by patients with ostomies. When applied topically, cholestyramine, a bile acid sequestrant, can irreversibly bind the bile and bring relief to the patient. A two-month old boy with reflux and regurgitation was treated with the promotility agent cisapride. He developed a rash on his buttocks and anal irritation that progressed in severity despite the use of numerous topical products and extended diaper-free periods. A topical cholestyramine ointment was compounded and administered, resulting in complete resolution within three days.

Six patients status post continent reservoir operation and ileoanal anastomosis developed severe perianal skin inflammation resistant to ordinary therapy. Twice daily treatment with cholestyramine ointment resulted in a “cure” within ten days.

Sucralfate Topically for Treatment of Chronic Venous Ulcers, Peristomal Irritation, and “Diaper” Dermatitis

Topical sucralfate has been successfully studied in peristomal and perineal dermatoses, in moist desquamation during radiotherapy, in erosion and ulceration of the perineal area, in vaginal ulceration, in dystrophic epidermolysis bullosa, and in second and third degree burns.

Venous leg ulcers are an important medical issue due to their high incidence in the elderly and the lack of a standard curative approach. A placebo-controlled, randomized study sought to determine the effectiveness, safety and tolerability of sucralfate gel (25 g sucralfate per 100 g gel) for local treatment of non-healing, full-thickness venous stasis ulcers refractory to 8 weeks of conventional therapy. Before topical application, the ulcers were cleaned with isotonic saline and iodine solution following the surgical removal of debris. The gels were applied daily at the bottom of the ulcers. The ulcers were then covered with sterile dry gauze and in a few cases with an elastic bandage. Before the following day’s treatment, the old gel was cleared from the ulcers. Results indicated that the daily application of sucralfate gel to non-infected post-phlebitis/vascular ulcers, for a median period of 42.0 days led to complete healing in 95.6% of patients against only 10.9% of cases with matched placebo. Sucralfate is able to stimulate the synthesis and release of epidermal growth factor which in turn stimulates healing and affects prostaglandin synthesis. Research demonstrated by ultrastructural analysis that the topical use of sucralfate gel was able to affect neoangiogenesis, increase wound contraction and re-epithelialization of the wound area, and diminish the inflammatory reaction.\(^1\)

Vaginal ulceration has been treated successfully with vaginal douches of 10% sucralfate suspension administered twice daily. “A 10% aqueous solution of sucralfate, given as a rectal enema or vaginal douche, was also used successfully to treat radiation-induced rectal and vaginal ulcers.”\(^2,3\)

Dermatoses affecting the skin around stoma sites are common and difficult to treat. Apart from forming a physical barrier to further irritation, sucralfate binds to basic fibroblast growth factor preventing its degradation and thereby promotes healing. The effectiveness of topical sucralfate in the management of peristomal dermatoses was evaluated in adults using an open study design. In 8 of 9 patients with fecal or urine erosions, daily topical sucralfate treatment was associated with healing within 4 weeks. Topical sucralfate represents a safe, inexpensive and effective therapeutic intervention, particularly for those patients with high output or short stomas where repeated stoma leakage may be unavoidable.\(^4\)
Prurigo Nodularis is a poorly understood disease with the central feature of intense pruritis. In prurigo nodularis, a person feels intense pruritus at discrete points and cannot control the urge to rub or scratch these points on the body. The results are multiple nodular, hyperpigmented/purpuric lesions with surfaces that are scaly, excoriated, and may be crusted. This disease is often termed “Picker’s nodules”. Prurigo nodularis can become debilitating- the intense itching and extent of body surface area involved can become so severe that some patients no longer feel functional for work or other everyday activities. Serial biopsies at various stages of lesional development utilizing immunoelectron microscopy and immunofluorescence have demonstrated that nerve fibers within lesional skin have multiple dense-core granules, many of which expressed calcitonin gene-related peptides. In addition, these axonal fibers are frequently found in proximity to mast cells and eosinophils, suggesting a neurogenic etiology for the inflammation seen in this condition. The number of granules, nerves and mast cells within lesional skin are markedly greater than that seen in the non-lesional skin in these subjects or in the skin of the control subjects. The practitioner discussed this problem with his local compounding pharmacist and a formulation was developed containing the mast cell stabilizer tranilast, beta 1,3 glucan, and meclofenoxate which has helped many patients with this disease.

Pyoderma Gangrenosum is a probable auto-immune disease of unknown etiology which many times results in severe spontaneous ulceration and skin hyperreactivity (pathergy) at the site of trauma. This condition is potentially associated with many other diseases, notably inflammatory bowel diseases such as Crohn’s and ulcerative colitis but also rheumatoid arthritis, lymphoma, etc. A significant percentage of cases are idiopathic.

Case Report: Twenty-two year old white male presented with acute toxic megacolon secondary to ulcerative colitis. Following hemicolecotomy, he developed spontaneous ulceration at the surgical site. Within the following few weeks this extended rapidly to involve the perineum and scrotum. Over the next two years numerous interventions were attempted including systemic and intralesional corticosteroids, Cyclosporin A, and thalidomide. He was referred for hyperbaric oxygen treatments. During these numerous interventions, side effects included significant weight gain, hypertension, and peripheral neuropathy. I found an article on the use of topical disodium cromoglycate in the management of pyoderma gangrenosum. Cromolyn is an effective stabilizer of mast cell membranes and has a direct effect on neutrophils. In pyoderma gangrenosum, the infiltrate consists predominantly of neutrophils and mast cells. Topical cromolyn may suppress leukocyte hyperactivity, inflammation and subsequent tissue destruction. I immediately called my compounding pharmacist and explained that due to the anatomic location of his disease, this patient would have great difficulty applying the cromolyn solution. The compounding pharmacist was able to prepare a paste containing cromolyn 8% and ibuprofen. Within a couple of weeks of beginning application, this patient began to heal.

Editor’s note: Tamir et al evaluated the effect of topical 1% sodium cromoglycate solution on pyoderma gangrenosum in 5 hospitalized patients 25-30 years of age, including 2 who were receiving systemic steroid treatment. Initial improvement was noted in all 5 patients after 3-7 days of sodium cromoglycate treatment. Systemic corticosteroids were further added in 2 patients whose initial improvement was inadequate. Complete healing of the ulcers occurred within 5-8 weeks. The authors concluded that topical treatment with sodium cromoglycate can be effective as adjunctive or sole treatment in pyoderma gangrenosum. Dermatology 1996;192(3):252-4

Thiabendazole Topically for Creeping Eruption (cutaneous larva migrans)

Cutaneous larva migrans is a distinctive serpiginous eruption caused by a reaction to burrowing hookworm larvae, which are in the feces of infected dogs and cats. The condition occurs mainly in the Caribbean and New World, and is the most frequent skin disease among travelers returning from tropical countries. Anyone walking barefoot or sitting on a contaminated beach is at risk. The infection is usually self-limited, normally lasting 2-8 weeks, but may persist for more than a year if misdiagnosed. The lesions, called creeping eruptions, are characteristically erythematous, raised and vesicular, linear or serpentine. Complications (impetigo and allergic reactions), together with the intense pruritus and the significant duration of the disease, make treatment mandatory. Biopsies rarely reveal an organism. Thus, it is important for the infection to be recognized clinically, so that effective treatment may begin.
One study of 44 patients found that lesions mainly affected the feet (39%), buttocks (18%) and abdomen (16%), but the lower leg, arm and face were also involved. Multiple lesions were seen in seven of 44 cases (16%). Laboratory abnormalities were absent in all patients. Thirty-one patients received oral albendazole 400 mg daily for 3-5 days and 24 were cured (77%). Four patients received oral thiabendazole 1.5 g daily for 3 days and all required further therapy. Five patients received 10% thiabendazole cream topically for 10 days and four were cured (80%).

Physicians at the Department of Dermatology, Mount Sinai School of Medicine, NY, NY found topical thiabendazole to be fast and effective in treating a case of cutaneous larva migrans of six months’ duration.


Topical Estrogen Therapy for Androgenetic Alopecia in Menopausal Females

Androgenetic alopecia (AGA) is a common, cosmetically disfiguring and often difficult-to-treat medical problem with a significant psychosocial impact. Commercially available topical or systemic modalities achieve only retardation of the hair loss process and, possibly, minimal regrowth. Another management option is the topical application of lotions containing estrogens with or without the addition of corticosteroids. To evaluate safety and efficacy, 75 postmenopausal females aged 48-71 years were studied. Those at high risk for breast cancer were excluded from the study. Treatment groups received a lotion containing estradiol valerate 0.03% and were instructed to apply 15 drops of the lotion to the affected area of the scalp every evening for 4 weeks, and then every other evening. Group 1 was treated for 12 weeks, and G2 for 24 weeks, and women were followed for 6 months after completion of therapy. No significant adverse effects were noted. Among women treated for 12 weeks, no systemic side effects were observed. However, 2 women (9.1%) of those treated for 24 weeks experienced postmenopausal uterine bleeding and were withdrawn from the study, after which estradiol levels returned to normal.

Results suggest that topical estrogen therapy is significantly more effective than placebo in AGA of menopausal females, as far as the improvement of the growth to resting phase ratio and reduction of hair shed. Side effects are probably dose-dependent and associated with the form of estrogen used, extent of systemic absorption, and duration of therapy, and may be more prominent in females with menopause of recent onset.

A 3-month course of estradiol valerate 0.03% did not differ significantly in efficacy from a 6-month course. AGA is a continuing process; therefore, repeated courses of therapy are necessary. The authors recommend, “in this context, 3-month courses of topical estrogen therapy would be safer and more cost effective than 6-month courses [and] a 12-week treatment achieves considerable therapeutic value with minimal side effects.”

Dermatology. 2004;208(2):178-9

Topical Colchicine Therapy for Actinic Keratoses

Topical colchicine has been reported to be an effective treatment for actinic keratoses. To investigate the optimal concentration, and to compare the efficacy and safety of 0.5% and 1% colchicine cream, 16 patients with actinic keratoses were enrolled in a comparative randomized study. Patients applied either 0.5% or 1% colchicine cream, twice daily on their lesions for 10 days. Patients were examined before treatment and at 10 days, and followed up at 1, 2 and 6 months of treatment. Both groups showed significant clinical improvement. Complete healing of actinic keratoses were observed in six of the eight patients in the 1% colchicine group, and in seven of the eight patients in the 0.5% colchicine group. The reduction rate in number of actinic keratoses at the end of treatment in the 1% colchicine group was 73.9% (48/65), and the reduction rate in the 0.5% colchicine group was 77.7% (52/67). Systemic side effects were not seen in either concentration.

Twenty patients with actinic keratoses on the scalp, most of which had been previously treated with 5-fluorouracil or cryotherapy, were included in a double-blinded protocol. Ten patients applied a hydrophilic gel (placebo) or colchicine 1% twice daily on the forehead. A complete healing of the solar keratoses was observed in 7/10 patients treated with 1% colchicine gel; these showed no recurrence after 2 months of follow-up. Burning and itching occurred only in the colchicine group after 2 or 3 days of application. Repeated blood controls showed that there was no systemic absorption.

“Rhus Tox”: Desensitization for Poison Ivy, Oak, and Sumac

Urushiol is the oleoresin that causes the severe allergic reaction seen in individuals sensitive to poison ivy, oak, and sumac. “Allergenic extracts that contain offending antigens have been used for almost 90 years for the diagnosis and therapy of various allergic conditions. Hyposensitization with poison-ivy extract was first investigated in the 1930s. The use of commercially available oral and parenteral products for hyposensitization became common practice... [The FDA] announced its intention to revoke licensure of all injectable toxicodendron oleoresinous preparations in February of 1986.”

The effects of an oral solution of *Rhus Toxicodendron* extract taken by patients during 2002 for the prevention of contact allergic dermatitis were reviewed. The 0.0001% solution (6X/12X) was prepared from a mother tincture provided by Boiron. A total of 73 patients, ages 12 to 75 years, received a prescription for 30 ml of *Rhus Toxicodendron* oral solution from their physicians, with instructions to administer a sublingual dose of 3 ml on days 0, 7, and 14, followed by a maintenance dose of 3 ml administered at monthly intervals for 7 additional doses. Each dose was to be held under the tongue for 30 seconds after which any remaining dose was swallowed. Since “Rhus Tox oral solution” is used to desensitize individuals prior to the allergy season and maintain the protection throughout the exposure period, therapy was intended to be initiated prior to March and continued through September, although this was not always the case. Of 58 patients available for follow-up in November, two did not suffer from an urushiol reaction the previous year (2001) and so were excluded. Analysis of 56 remaining patients showed that 25 (44%) had no “poison-ivy reaction” in the year they took the oral solution. An additional 27 patients (48.2%) reported fewer or less severe poison-ivy reactions while using the oral solution. 96.6% of respondents said they would use the preparation again, and 93% said they would recommend Rhus Tox oral solution to their family and friends, and to their physicians for use in other patients.

Side effects were minimal. The development of pruritus ani has been reported in other studies which used oil-based oleoresinous preparations. However, alcohol-based preparations such as those used in this study appear to be better tolerated, and no occurrences of pruritus ani were reported.

Although this study was small and lacked a control group, reported reductions of severity of allergic symptoms in 92.9% or respondents indicated that this therapy is useful.

*Int J Pharm Comp.* 7(4); Jul/Aug 2003:273-6

**Hydrocortisone Oral Suspension & Solution**

Hydrocortisone suspensions of both 1 mg/mL and 2 mg/mL extemporaneously compounded in a 1:1 mixture of Ora-Sweet and Ora-Plus (for oral administration) were found to be physically and chemically stable for a period of up to 91 days, with or without refrigeration. Another report noted that a “beyond use date of 30 days should be appropriate” for a specific formulation of Hydrocortisone Oral Liquid (refrigerated).

*J Inform Pharmacother* 2003;13:100-110

*Int J Pharm Comp.* Jan/Feb 2004; 8(1):56
How to Write a Prescription for a Compounded Medication
Our pharmacists will be happy to discuss formulations and answer any questions.

Rx

Compounded Medication*

Generic Name of Active Ingredient(s) / Strength or Dose (i.e., mg or %)
Dosage Form (i.e., Topical Gel, Suppository, Troche)
Quantity
Directions for Use
Refills

*prescription should begin with the phrase “Compounded Medication”

We work together with practitioners and patients to customize medications which solve problems and meet specific needs.