Volume 34, Issue 6, Page 10 (June 2003)

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Allantoin is an extract of the comfrey plant, which is native to Europe and temperate areas of Asia.

This keratolytic agent is recognized for its potent healing and soothing properties and has been a popular ingredient in many folk remedies. For centuries, poultices made from comfrey leaves were used to promote the healing of minor fractures by reducing swelling in the area of the break.

Allantoin began to gain acceptance in the U.K. medical community in the early 20th century based on longstanding anecdotal evidence supporting its beneficial activity. This provided the foundation for the current use of allantoin in a broad spectrum of personal care formulations, including hand lotions and creams; sun and after-sun products; shave and aftershave products; shampoos and other hair care products; antiperspirants; deodorants; talcum powders; tooth pastes; mouth washes; baby products; soaps; detergents; and preparations for the feet, eyes, and rectum. The presence of allantoin stimulates cell proliferation, contributing to internal and external wound healing.

Serum Allantoin

Small amounts of allantoin are found naturally in humans, a phenomenon that is under much investigation because of its association with in vivo free radical activity.

In fact, some researchers attribute these amounts to free radical action on urate and believe that the presence of allantoin can be a stable marker of in vivo free radical activity (Clin. Chim. Acta 318[1-2]:63-70, 2002).

Several studies suggest that measuring changes in serum and urinary levels can serve as a reliable index of in vivo free radical activity (Free Radic. Res. 32[2]:235-44, 2000; Biochem. J. 243[3]:803-08, 1987).

Cutaneous Application

Topical application of allantoin is intended to somehow thwart free radical activity. In fact, in addition to the strong anecdotal and traditional support for allantoin, data suggest that the topical application of allantoin-containing formulations has certain cutaneous benefits.

One double-blind, placebo-controlled study showed that an alcohol-free instant hand sanitizer containing surfactants, allantoin, and other ingredients served as an effective substitute for soap and water when the latter were not available (J. Sch. Nurs. 17[5]:258-65, 2001). The study took place in an elementary school and was predicated on the established belief that hand washing is the most effective method of preventing communicable diseases. After 5 weeks of using the product containing allantoin, students were 33% less likely to have been absent from school due to illness, compared with those using a placebo product.

Another study showed that an alcohol-free sanitizer containing surfactant, allantoin, and benzalkonium chloride (SAB) outperformed an alcohol-based product (J. Am. Podiatr. Med. Assoc. 91[6]:288-93, 2001).

In a 10-month, hospital-based study, an antimicrobial nail solution containing SAB was effective, in conjunction with periodic débridement, in significantly treating and improving the appearance of pedal onychomycosis (J. Am. Podiatr. Med. Assoc. 89[3]:124-30, 1999).

Other dermatologic indications for allantoin or preparations containing allantoin include or have included wounds, ulcers, burns (sunburns and scalds), eczema, psoriasis, impetigo, and acne and other skin eruptions.

Allantoin 2% in combination with coal tar 5% as a relatively useful treatment for mild to moderate psoriasis has been displaced by more effective products and combination therapies (Am. J. Clin. Dermatol. 2[2]:95-120, 2001). Studies also have shown that 140-mg sulfanilamide suppositories containing allantoin effectively reduced the symptoms of trichomonas vaginalis or vaginal trichomoniasis, but that oral metronidazole was more effective in reducing symptoms (Sex. Transm. Dis. 24[3]:156-60, 1997).

Nevertheless, allantoin is seen as a strong and safe keratolytic agent with useful cell-proliferating, healing, and moisturizing properties that are suitable for several dermatologic conditions. Effective in concentrations as low as 0.1% and up to 2%, allantoin cleans areas of application, acting as chemical debrider of necrotic and scaling tissue. Allantoin also protects against UV-induced cell damage in vitro (Yakugaku Zasshi 118[6]:241-47, 1998).

Allantoin Products

Allantoin is a popular ingredient in a wide range of modern over-the-counter products.

In addition to assisting in the healing of minor wounds, allantoin is believed to promote healthy skin through its activity in anti-acne formulations, after-sun products, cold creams, hand lotions, hair products, and clarifying lotions.

Allantoin's amphoteric nature allows it to combine successfully with various chemical substances to form salts and other compounds, and that compound is believed to mitigate the irritating properties of other ingredients.

Allantoin is the key active ingredient in Contractubex gel (50 g, $24), a popular preparation for improving the texture and appearance of scars. Also, allantoin is now included, along with aloe vera, in a new Gillette foamy shaving cream designed for sensitive skin (11 ounces, $2).

Skin Biology uses allantoin in its copper peptide Protect and Restore skin protection formulation (2 ounces, $21.95). Eris Pharmaceris touts the anti-inflammatory activity of allantoin as a key benefit of its Intensive Repair Complex with 3% vitamin A (1 ounce, $30) and Revitalizing Serum with 5% vitamin E (1 ounce, $35).

The allantoin included in Derma-E Scar Gel with panthenol (2 ounces, $19.95) is believed by the manufacturer to be the key ingredient that helps rebuild, soften, and smoothen the skin and improve the appearance of scars.

Comfrey root and leaf extract, sources of natural allantoin, are important active ingredients in both Burt's Bees Hand Salve and Dr. Burt's Res-Q (formerly Comfrey) Ointment (0.6 ounces, $5.50), which is indicated for bumps, bruises, burns, stings, and scrapes.

Topical products that contain allantoin appear to be safe, but efficacy and safety data are limited. While I think the risks of using such products are low, I would like to see randomized, double-blind, case-controlled studies to quantify any benefits.