



Natural Therapies & Prescriptions That Enhance Life.™

www.clearspringrx.com

CHERRY CREEK

201 UNIVERSITY BOULEVARD, #105
DENVER, CO 80206
T 303.333.2010
F 303.333.2208

LITTLETON

8031 SOUTHPARK CIRCLE, SUITE B
LITTLETON, CO 80120
T 303.707.1500
F 303.707.1717



Customized Medications for Anti-Aging

Topical Treatment of Aging Skin

Therapy for wrinkles and photoaging of the skin is an area of ongoing research. At ClearSpring Pharmacy, cosmeceuticals can be customized to treat aging skin. Optimal formulation and our use of patented bases will maximize the benefits while minimizing any potential side effects of these therapies.

Skin aging includes intrinsic and extrinsic processes, with cell damage caused by metabolic processes, free radicals and cosmic irradiation. Topical and oral administration of antioxidants such as vitamins E and C, coenzyme Q10, alpha-lipoic acid and glutathione enhance antiaging effect. Other antioxidants such as green tea, dehydroepiandrosterone, melatonin, selenium and resveratrol, have also antiaging and anti-inflammatory effects. Topical bleaching agents such as hydroquinone, kojic acid and azelaic acid can reduce signs of aging. Studies confirm the efficacy of these topical agents in combination with superficial and/or medium depth or deep peeling agents for photodamaged skin treatment. Based on individual patient needs, preparations may also contain retinoids, hydroxy acids, bleaching agents, moisturizers, and sunscreens.

Coll Antropol. 2010 Sep;34(3):1145-53.

Estrogen Therapy to Prevent or Reverse Skin Aging

Declining estrogen levels are associated with a variety of cutaneous changes, many of which can be reversed or improved by topical or systemic estrogen supplementation. Studies of postmenopausal women indicate that estrogen deprivation is associated with declining dermal collagen content, diminished elasticity and skin strength, loss of moisture in the skin, epidermal thinning, atrophy, fine wrinkling, and impaired wound healing. Keratinocytes, Langerhans' cells, melanocytes, sebaceous glands, collagen content and the synthesis of hyaluronic acid are under hormonal influence. Estrogen may attenuate inflammation in psoriatic lesions. Alone or together with progesterone, estrogen prevents or reverses skin atrophy, dryness and wrinkles associated with chronological or photoaging. Estrogen and progesterone stimulate proliferation of keratinocytes while estrogen suppresses apoptosis and thus prevents epidermal atrophy. Estrogen maintains skin moisture by increasing acid mucopolysaccharide or hyaluronic acid levels in the dermis, and accelerates cutaneous wound healing.

Low estrogen levels that accompany menopause exacerbate the deleterious effects of both intrinsic and environmental aging. Estrogens clearly have a key role in skin aging homeostasis as evidenced by the accelerated decline in skin appearance seen in the perimenopausal years. The effects of topical application of 0.01% estradiol and 0.3% estriol compounds were compared in 59 preclimacteric women with skin aging symptoms. After treatment for 6 months, elasticity and firmness of the skin had markedly improved and wrinkle depth and pore sizes had decreased by 61 to 100% in both groups. Systemic estrogen levels did not increase and no systemic hormonal side effects were noted.

At Yale University School of Medicine, the effects of long-term hormone replacement therapy (HRT) on skin rigidity and wrinkling at 11 facial locations was assessed using the Lemperle scale by a plastic surgeon who was blinded to HRT use. Skin rigidity at the cheek and forehead was measured with a durometer. Demographics including age, race, sun exposure, sunscreen use, tobacco use, and skin type were similar. Rigidity was significantly decreased in HRT users compared to nonusers at both the cheek and forehead. Average wrinkle scores were lower in hormone users than in nonhormone users. The study concluded that long-term postmenopausal HRT users have more elastic skin and less severe wrinkling than women who never used HRT, suggesting that hormone therapy may have cosmetic benefits.

In another study, the dermal collagen of 15 postmenopausal women who had received systemic estrogen replacement was analyzed before and after using a topical 0.01% estrogen treatment. Epithelial and dermal thickness improved after topical estrogen therapy. Facial skin collagen significantly increased after 16 weeks of treatment. Systemic estrogen levels did not significantly increase after topical therapy.

A randomized, double-blind, estrogen-controlled trial evaluated the effects of topical estrogen and isoflavones on facial skin of postmenopausal women, who received either 17-betaestradiol 0.01% or isoflavones 40% (genistein 4%). Skin biopsies were performed on each patient before and after the treatment. After 24 weeks of treatment, the estradiol group had significant improvement compared to the isoflavone group and to the baseline measurements: epidermal thickness (a 75% increase in the estrogen group and 20% in the isoflavone group), number of dermal papillae (a rise of 125% with estrogen, no significant gain with isoflavones), fibroblasts (a 123% accretion with estradiol, no significant gain with isoflavones), and vessels (a 77% increase with estrogen and 36% with isoflavones). This data suggests that treatment with topical estrogens may have a stronger effect on histomorphometrical parameters than isoflavones.

Exp Dermatol. 2004;13 Suppl 4:36-40

Int J Dermatol. 1996 Sep;35(9):669-74.

Exp Dermatol. 2006 Feb;15(2):83-94

Eur J Obstet Gynecol Reprod Biol. 2006 Jun 22

J Am Acad Dermatol. 2005 Oct;53(4):555-68; quiz 569-72

Fertil Steril. 2005 Aug;84(2):285-8

Am J Clin Dermatol. 2003;4(6):371-8

Am J Clin Dermatol. 2001;2(3):143-50

J Dermatol Sci. 2005 Apr;38(1):1-7

Eur J Obstet Gynecol Reprod Biol. 2009 Oct;146(2):188-92.

Effects of Topical DHEA on 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 this pilot study, conducted in France, was to observe the in vivo effects on skin aging of topical DHEA (1%). The DHEA formulation (1%) or the vehicle 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 production, which was perceived rather positively by a menopausal population usually affected with a declining sebum level. Topical DHEA tends to improve skin brightness, and to counteract papery appearance of skin and epidermal atrophy, a characteristic feature of hormone-related skin aging. Topical DHEA could also act on skin process related to wrinkles, but this result remains to be confirmed. In conclusion, this pilot study showed beneficial effects on skin characteristics that are rarely provided by topical treatments.

Maturitas. 2008 Feb 20;59(2):174-81.

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.

Br J Dermatol. 2007 Mar;156(3):433-9.

Am J Clin Dermatol. 2005;6(1):39-47.

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.

Connect Tissue Res. 2005;46(4-5):251-7.

ClearSpring Pharmacy specializes in bio-identical hormone therapy and customized antiaging preparations.