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MOLECULES&HEALTH

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Reducing Xerosis (Abnormally Dry Skin)



Xerosis or abnormally dry skin is a common skin problem especially among older individuals. With normal (or intrinsic) skin aging, as opposed to skin aged by the sun, skin becomes thinner, has a decreased amount of blood flow and lipids, and collagen in the skin becomes fragmented resulting in drier, more colorless skin with fine wrinkles. In contrast, photoaging (or extrinsic aging) caused by UV radiation is characterized by the accumulation of abnormal elastin in the skin and the disintegration of collagen resulting in deep wrinkles, hyperpigmentation (age or liver spots) and a leathery appearance of the skin.

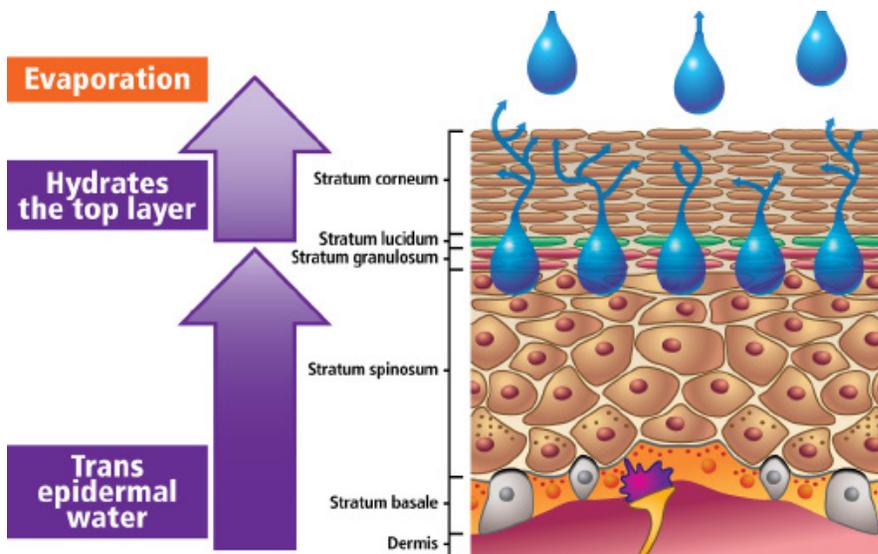
Xerosis is characterized by skin dehydration, slight to severe flaking and scaling, fine lines and

cracks or fissures, and sometimes rough areas and/or skin redness. It can occur on various areas of the body including the forearms, hands and legs. Factors contributing to xerosis are varied including, exposure to outdoor elements and climate, central heating or air conditioning, excessive bathing (especially in hot water), viral infections (including hepatitis), certain medicines (including diuretics and hypocholesterol drugs), cancers, cancer treatments (including chemotherapy and targeted therapies), medical conditions (including thyroid disorders and renal failure), diabetes and genetic predispositions such as those involving atopic dermatitis and skin inflammation.

Small Molecule Technologies skin-care products including Renewal Moisturizer contain ingredients that decrease inflammation such as the beneficial polyphenols oleuropein, resveratrol, and epigallocatechin-3-gallate (EGCG) from olives, grapes, and green tea, respectively, as well as the important small molecules, melatonin and L-glutathione. In addition, dipotassium glycyrrhizinate from licorice, avenanthramides in oats, aloe vera and shea butter possess anti-inflammatory activities.

Reducing Trans-Epidermal Water Loss (TEWL)

In order for skin to remain supple and elastic, it must contain from 10% to 15% water. Water moves



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continuously up from the dermis into the epidermis, and skin hydration is mainly controlled at the level of the stratum corneum (or uppermost layer of the epidermis) that regulates trans-epidermal water loss (TEWL). Humidity levels of less than 10% cause the stratum corneum to lose moisture. If the stratum corneum loses too much moisture, it becomes a weaker, less functional barrier.

The stratum corneum is formed by a continuous epidermal development process in which skin cells called keratinocytes change into keratin-filled cells called corneocytes (a process called keratinization). Corneocytes gradually separate and die off in a process called desquamation. This process of skin shedding occurs naturally, however, keratinization abnormalities can affect the normal process of desquamation resulting in increased skin flaking.

Moreover, during keratinization, transformation of a skin protein called profilaggrin into filaggrin occurs. Filaggrin is then broken down into natural moisturization factors (NMFs) by important enzymes called proteases. NMFs include amino acids, lactic acid, urea, sugars and mineral ions. NMFs strongly bind water within corneocytes. In addition, the process of producing NMFs results in osmolytic forces that attract water to skin. Low levels of certain NMFs are correlated with xerosis.

Maintaining Skin Hydration

Small Molecule Technologies skincare products including Renewal Moisturizer contain in-

gredients that help keep in skin moisture including dipotassium glycyrrhizinate and aloe vera, which promote skin hydration by maintaining levels of hyaluronic acid that are normally decreased during aging. Hyaluronic acid is an extracellular matrix (ECM) polymer of disaccharides that has a high capacity for retaining water. Renewal Moisturizer also contains dimethicone, which provides a protective barrier to maintain skin moisture. In fact, the silicone in dimethicone topical applications is one of the most consistently successful hydrating agents used in skin care.

The combination of dehydration and cleansing with harsh soaps can damage components of the stratum corneum including proteases, and result in xerosis. The pH of skin is also related to the quantity of water in skin. With xerosis, the natural pH of the stratum corneum is difficult to maintain. Small Molecule Technologies Clean N Moist ensures that even the most fragile skin is gently cleansed without causing irritation. Clean N Moist is perfectly pH balanced to help maintain skin's natural pH. Phospholipids, organic phytonutrients, organic shea butter and other vital nutrients in Clean N Moist strengthen and revitalize skin. Like Renewal Moisturizer, Clean N Moist also includes dimethicone to provide a protective barrier that helps keep in moisture.

Decreasing the Itchiness (Pruritus)

Xerosis is the most common cause of pruritus (itching) in older adults



and it can lead to serious complications including infections and chronic wounds due to scratching itchy skin. Small Molecule Technologies Renewal Moisturizer and Clean N Moist can help prevent or reduce inflammation that can lead to xerosis. In addition, to help prevent xerosis, it's important to avoid harsh soaps, hot baths and hot tubs. Bathing too frequently should also be avoided. Gentle cleansers like Clean N Moist should be used. Soaps are harmful because they frequently strip away natural emollients, leading to dry, irritated skin. Moreover, cold temperatures and wind can also dry out skin. When inside, using a humidifier with a setting of 45% to 60% humidified air will help prevent moisture loss caused by central heating, air conditioners or blowing fans.

It's good to know that Small Molecule Technologies skincare products include non-irritating, non-sensitizing and anti-inflammatory ingredients that provide nutrition to help strengthen skin. In addition, Small Molecule Technologies Renewal Moisturizer and Clean N Moist contain ingredients that moisturize and protect skin, as well as help skin maintain hydration.

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