New studies identify GENETIC MUTATION may be responsible for Severely Dehydrated Skin Disorders

Filaggrin is a type of protein found in the skin. Mutation of the filaggrin gene can interfere with the skin's ability to act as a barrier. This allows water to be lost from the skin, and also means bacteria and other substances can enter, possibly leading to allergies, irritation and infection due to a chronically dry and dehydrated skin condition.

CLINICAL SIGNIFICANCE

Scientific studies have now discovered that having a filaggrin gene mutation has been found to be associated with atopic eczema, where patches of dry skin become itchy and inflamed, and some allergic conditions such as rhinitis, where the nasal passages are irritated. The same mutation is also present in cases of ichthyosis vulgaris, where the skin becomes dry and scaly. It is thought that allergic reactions to nickel may be due to a filaggrin gene defect, because this might lead to nickel passing into the skin more easily. Currently there is no test generally available for people to see whether they have the gene mutation, but this could change in the future.

In the granular layer of the skin there are keratohyalin granules inside the cells. These granules contain profilaggrin molecules, which are converted into filaggrin. This is then used to help create the structure of the outer layers of skin. It does this by gathering together strands of a protein known as keratin, helping to form the skeletons of skin cells into tough, compact shapes. Filaggrin also helps to hold water inside skin cells, keeping the skin moisturised. This newfound knowledge of filaggrin has led to further studies to determine how to counteract this deficiency. Scientists have discovered the role of certain peptides that stimulate hyaluronic acid can benefit dry skin conditions as they become cross-reactive with filaggrin.

THE MECHANISMS OF DEHYDRATION

As we age, our skin structure changes and becomes less effective at regulating its water balance, skin cells no longer retain moisture, collagen fibres weaken and cellular regeneration slows down. The body's natural regenerative systems cannot revitalise injured or damaged cells fast enough to maintain skin quality. Trans Epidermal Water Loss (TEWL) causes lack of moisture leading to changes in barrier properties, which induces dry skin. It leads to a water-content decrease followed by Natural Moisturising Factor loss and structural change of the stratum corneum's proteins, which contribute to the abnormal differentiation of

keratinocytes, scaly skin condition and noticeable premature ageing.

Lack of water in or around cells disrupts normal metabolism and tissue repair. Therefore, dehydrated skin has a decreased capacity for repair and regeneration, thus it is far more susceptible to various forms of skin damage and is also more prone to skin infections and irritants.

The ability to retain and hold moisture is the secret to youthful, healthy, vibrant skin with breakthrough Moisture Fusion

HOW DOES THE SKIN RETAIN MOISTURE?

The following enable water molecules to enter the stratum corneum:

Intercellular lamellar lipids – ceramides, cholesterol, fatty acids

Their physical form provides a tight and partially penetrable barrier to the passage of water through the tissue.

Corneocytes Corneodesmosomes

Influence the curvy passage of the stratum corneum and thereby the diffusion path length of water.

Natural Moisturising Factor (NMF)

A natural protection shield against dehydration found exclusively in the stratum corneum and derived from filaggrin absorbs water molecules from the surrounding environment helping to retain water.

The NMF is an effective mixture of low molecular weight water-soluble compounds absorbing atmospheric water and dissolving in their own water of hydration. It mainly consists of amino acids, which increase the water-holding capacity of the stratum corneum and helps maintain its homeostasis.

The water retained by the stratum corenum increases the fluidity of corneocyte proteins giving elastic properties to the cells, which is critical for preventing and recovering from skin dryness.

MOISTURE FUSION SOLUTION

The scientific team at Christina has developed a solution for skin dehydration called the **Moisture Fusion Solution.** Clinical research and innovative active ingredients have proven to provide the optimal hydration solution, preventing the effect of ageing and skin damage. These include a unique form of Hyaluronic acid and a Hyaluronic acid boosting Peptide:

Hyaluronic Acid is a predominant glycoaminoglycan (GAG) of the skin. It occurs naturally and exists in large concentrations in the dermis and the epidermis in the extracellular matrix (ECM), which is the fluid-filled space between cells, where it plays an important role in skin-barrier function and stratum corneum hydration.

It has an excellent moisture-holding property, consisting of a long sugar chain that can bind up to 1,000 times its weight in water, leading to a gel-like framework for collagen, elastin and skin cells. It maintains an inter-cellular gap to sustain skin tissue structure and is involved in the structure and organisation of the ECM and participates in dynamic processes such as cell proliferation, migration and wound repair. It acts as filler, which helps provide the skin with mechanical cushioning.

Hyaluronic acid also supports the formation and maintenance of collagen. Loss of collagen integrity contributes to a decrease in skin tone and elasticity. During ageing the skin loses moisture and firmness due to **cross-linking** of hyaluronic acid within the skin as well as loss of collagen fibre strength. As a result, the skin starts to lose its elasticity, causing lines and wrinkles to appear.

Christina has developed a technologically advanced form of **Nano Hyaluronic Acid** with an extra low molecular weight so that it doesn't simply cover the skin's surface, but has the capacity to penetrate **deep** into the horny layers, hydrating and retaining moisture from within, providing long-lasting optimal hydration.

To further minimise the depletion of the skin's hyaluronic acid a special hyaluronic acid boosting peptide has been identified.

Tetradecyl Aminobutyroylvalylaminobutyric Urea Trifluoroacetate. A clinical study made with this Hyaluronic Acid Boosting Peptide demonstrated that it accelerates the skin's own natural production of hyaluronic acid within the epidermis, thus providing and retaining long-lasting hydration.

Simultaneously, it improves and strengthens collagen fibres resulting in a natural hyaluronic acid-based facelift effect. Slowing down the loss of moisture from the skin creates a temporary appearance of plumpness and fullness.

SUPERMOIST

Supermoist is an advanced complex developed by Christina designed to notably restore skin health and moisture in dry skin conditions. It is enriched with skin healing and regenerating agents that repair damaged skin caused by Trans Epidermal Water Loss (TEWL). It contains amino acids from the Natural Moisturising Factor (NMF) present in the skin, which enables it to preserve the natural barrier function of the epidermis by providing a refill of NMF ingredients.

With its unique molecular film structure, **Supermoist** has greater contact area with the skin, minimising TEWL while enabling active ingredients to penetrate more efficiently and provide intense hydration.

The Supermoist complex proved to induce a significant moisturising effect and an outstanding long-lasting improvement in skin health even after 24 hours of use.

Through these technological breakthroughs Christina offers you credible solutions for dry and dehydrated skin that effectively address not just the symptoms, but in fact target the problem at its source for significant skin improvement. APJ