



Understanding and Overview of Dry Skin

What happens when skin dries out

To best understand why skin becomes dry, we need to refer to the Stratum Corneum (SC) - the very top layer of the epidermis (see section one for further information). The SC is a functional structure, helping your body to respond to the environment and maintain your skin barrier's state of health. Healthy skin naturally repairs itself but when skin becomes overly dry it struggles to function optimally.

Think of the SC as a 'brick and mortar' wall (See figure 2). The 'bricks' are corneocytes while the 'mortar' are lipids. Corneocytes are connected by proteins called desmosomes. Inside each corneocyte are Natural Moisturising Factors (NMFs) which draw moisture into the cell.

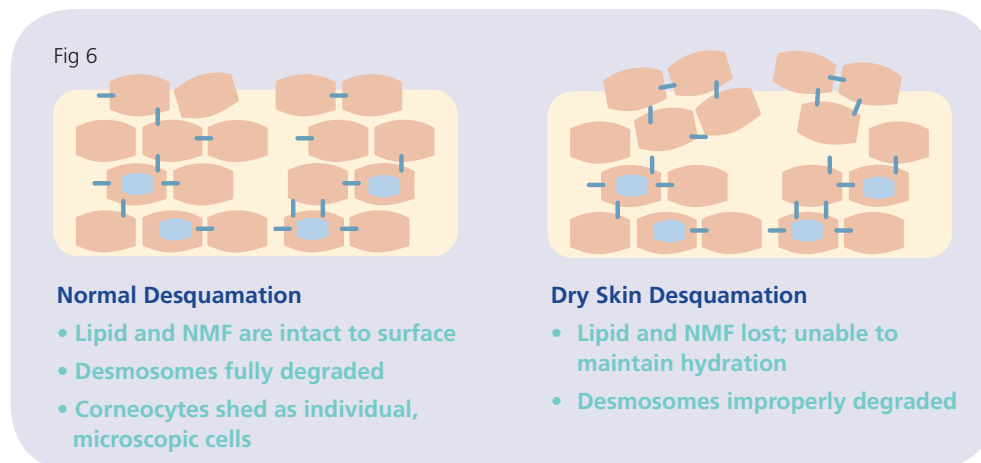
The SC regulates a natural rate of water loss in your skin, (TEWL). Normal, healthy skin loses about half a pint of water into the atmosphere a day. The TEWL process is affected by the integrity of the lipid structure and the NMF. For healthy moisturised skin, these elements regulate the rate of TEWL and help maintain the proper moisture levels in the SC.

When skin dries out, there is a breakdown of proper skin mechanisms: without moisture skin cells become stiff and inflexible, setting the stage for skin to become cracked and damaged. A loss of barrier lipids further increases exposure of cells to the environment, leading to further water loss and increased skin dryness. Because skin is becoming more vulnerable, its ability to withstand environmental (e.g. extreme weather) dryness becomes impaired.

When skin is dry, the lack of proper moisture levels disturbs the skin's desquamation processes. Desquamation is the natural elimination of cells from the SC – essentially it is the sloughing off of the top-most layer of skin. When the desquamation process doesn't function properly, dead skin cells collect on your skin and become visible as dry skin flakes.

The dry skin cells accumulating on the surface feel rough and inflexible. They can catch on clothing or other fabric and lead to dry skin itch. With continued dryness, this inflexibility and tightness can lead to physical cracking of your skin which is not only painful, but further exposes skin to drying elements.

As dryness drives deeper into the SC, physiological functions of skin (such as the natural growth and maturation of healthy corneocytes) become impaired. These under-developed, immature corneocytes reach the surface in a weakened state, further reducing skin's ability to withstand dryness and naturally recover from environmental assault.



The Kligman's Criteria

In the pharmacy, signs and symptoms of xerosis (dry skin) may be described by a number of terms including pruritus, flaking, chapping, burning, erythema, pain, scaling, stinging and tightness. The Kligman's criteria is generally regarded as the standard for the visual clinical assessment used to diagnose the severity of dry skin.⁷ There are four gradations used to classify dry-skin severity:

Grade 1 or healthy skin, shows no visible signs of dryness and has a healthy sheen and glow.

Grade 2 indicates mild xerosis and is characterised by small flakes of dry skin and whitening of dermatoglyphic triangles (the lines that form patterns on the skin such as on the fingertips and palms of hands).

Grade 3 describes moderate xerosis with small, dry flakes that cause a light, powdery appearance. Also, the corners of the dermatoglyphic triangles start to lift.

Grade 4 characterises well defined xerosis with the entire length of a number of dermatoglyphic triangles uplifted to generate large, dry flakes. Roughness and redness are readily apparent.

There are some areas of the body that are more prone to dryness than others. For instance, skin around joints, such as elbows, knees and fingers, is subjected to flexural stress, while the palms of hands and soles of feet undergo mechanical stress. The repetitive stress endured by these areas may make them more prone to the damage of protective lipid and protein components of the SC barrier, which can lead to rough, dry skin.

Breakdown and description of ingredients in moisturisers

Not all moisturisers are as effective as each other; the right combination of ingredients is required to provide the environment dry skin needs for repair and restoration. Effective moisturisers contain a well-formulated balance of the following ingredients:⁸

Humectants – attract moisture from in and outside the skin and hold it within the SC.

Occlusives – form a layer on the surface of the skin and moisturise by retarding water evaporation.

Emollients, or oils and lipids – these spread easily on the skin and provide partial occlusion that hydrates and improves the skin's appearance and feel; certain emollient ingredients contribute to the aesthetic qualities of moisturisers as well.

Other ingredients used in moisturisers, such as alpha hydroxy acids, can act as exfoliating agents by encouraging the natural desquamation process within the SC.⁹

Table 1: Examples of humectants, occlusives and emollients

Ingredient Type	Examples	Usage
Humectants	Glycerol, hyaluronic acid, panthenol, propylene glycol, sodium lactate and/or ammonium lactate, sodium pyrrolidine carboxylic acid, sorbitol, urea	Improves visual appearance of skin Maintains water content in skin
Occlusives	Petrolatum, cocoa butter, cyclomedthicone, lanolin, mineral oil, shea butter, waxes	Protects and seals moisture in the skin Facilitates natural healing process
Emollients	Dimethicone, silicone, collagen, isopropyl myrisate, isopropyl palmitate, octyl stearate, sunflower oil, soybean or other plant oils, and jojoba oil	Contributes to the flexibility, softness and smoothness of skin Adds aesthetic properties to moisturisers

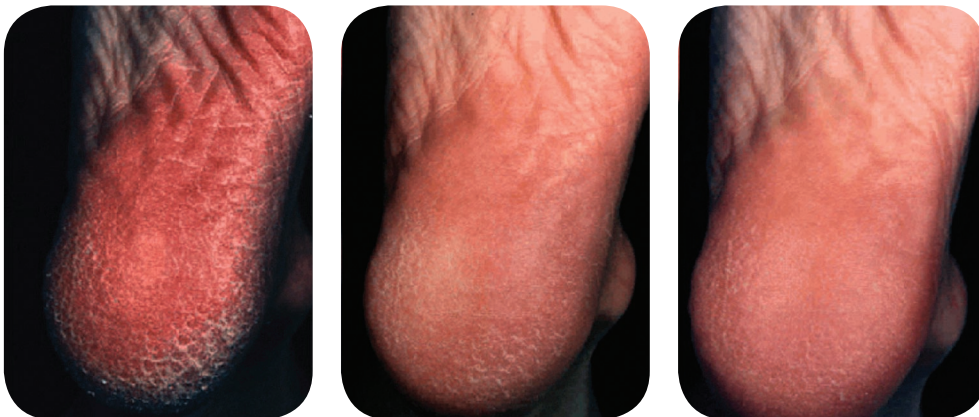
Efficacy of Ingredients

Moisturisers that encourage exfoliation are beneficial for areas that tend to accumulate dead skin e.g. heels and elbows.¹⁰ Clinical studies show that using a moisturiser containing a humectant, occlusive, or emollient ingredient alone is not as effective as using a product that is highly enriched in more than one ingredient or contains a balance of these three moisturising components (see fig 8). However the right combination of moisturising ingredients may not be the same for any one body part or dry skin condition.

Different areas of the body (eg. the skin of the hands, feet, elbows and knees) have distinct moisturising needs based on the nature and location of the specific dry skin condition, as well as the everyday functional demands on that body part. There are a myriad of products on the market offering a wide range of combinations of moisturising ingredients, and most of these offer some degree of therapeutic benefit to dry skin.

It is also important to consider the feel of a product when choosing or recommending a product containing a balance of moisturising ingredients. A patient may be less likely to use a moisturiser that does not absorb quickly or feels sticky and greasy to the touch, compared with one that is easily absorbed and leaves less residue, in particular when they are regularly moisturising their hands.

Fig 8



From this to this in 4 weeks

Regular use of emollients can have a fast effect. These images were taken over the space of four weeks, and the subject regularly applied Vaseline Intensive Rescue hydrating foot cream.

Moisturiser Analysis

Table 2: Examples of Leading Moisturiser Brands

Brand Name	Humectant	Occlusive	Emollient
Vaseline Intensive Rescue range of products	✓	✓	✓
E45 Lotion		✓	✓
E45 Cream		✓	✓
E45 Itch	✓	✓	✓
DiproBase Cream		✓	
Eucerin Dry Skin Intensive Hand Cream with 5% Urea	✓		✓
Eucerin Dry Skin Intensive 10% Urea Treatment Lotion	✓	✓	✓
Nivea body Rich Care Body Moisturiser	✓	✓	✓
Neutrogena Comfort Balm	✓		✓
Oilatum Cream	✓	✓	
Doublebase	✓	✓	✓
Cetraben Emollient Cream	✓	✓	
Aveeno moisturising range	✓	✓	✓
Dermol Cream	✓	✓	✓