

Management of dry skin

Christine Clarke discusses the treatment of a common condition

Dry skin (xerosis) is a feature of conditions such as eczema, psoriasis and ichthyosis, but many people experience temporary episodes of dry skin as a result of factors such as frequent washing, the use of harsh soaps and detergents, hard water, temperature extremes and air conditioning. Dry, itchy skin can also be a problem for elderly people. This is partly associated with the natural changes of ageing, such as decreased sebum and ceramide production, but can be aggravated by environmental factors such as central heating and use of harsh wash products.

Dry skin can be mildly troublesome or it can involve extensive dryness, fissuring of the skin or impairment of function if, for example, the hands are affected. It can also be a cosmetic problem because it looks and feels unattractive. Dry, itchy skin is at risk of infection because of frequent scratching. Failure to treat the dry skin of eczema and psoriasis effectively can lead to deterioration of these conditions.

This is an area where self-care with support from a community pharmacist can play an important role. Most people with dry skin will treat themselves at some point and many will benefit from some help in choosing the most appropriate products and guidance in their effective use. Advances in our understanding of skin physiology and improved design of dermatological products make the outlook for the dry skin sufferer better than it used to be.

Healthy skin and dry skin

Normal, healthy skin is smooth and pliable. It is a remarkably effective barrier that prevents excessive loss of water from skin and underlying tissues and prevents ingress of bacteria, irritants and allergens. Skin is made up of the dermis and the epidermis, the surface layer. The dermis is 3-5 mm thick and contains blood vessels, hair follicles and sweat glands. The epidermis varies in thickness from about 0.06 mm on the eyelids to 0.8 mm on the palms and soles and comprises mainly keratinocytes (skin cells) in various stages of development. The skin barrier is located in the epidermis — four layers of densely-packed keratinocytes. Keratinocytes are continually formed in the basal layer and gradually move upwards to the horny layer (stratum corneum, horny layer). As they move they change progressively from plump, nucleated cells to flattened, dead cells (corneocytes) that are



Light micrograph of section through normal healthy skin. The epidermis is stained red and comprises an outer horny layer and, below it, layers of densely packed keratinocytes

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shed. The whole process takes about 28 days.

Several factors contribute to the epidermal barrier. Tightly-packed, well-hydrated corneocytes in the epidermis and multi-lamellar intercellular lipids can be envisaged as being like a brick wall where the corneocytes are the bricks and the intercellular lipids are the mortar. The intercellular lipids are released from the lamellar bodies in maturing keratinocytes at the point where the stratum corneum is forming. The corneocytes contain water-retaining substances called natural moisturising factors (NMFs). These are complex mixtures of protein (filaggrin) breakdown products, and other substances. In addition, the corneocytes are linked by corneodesmosomes — protein bridges that are cleaved by proteases when the time comes for cells to be shed. Normally, skin protease activity is balanced by protease inhibitor activity. Disturbances of any of these components lead to impaired barrier function, allowing loss of water from the skin, shrinkage of the corneocytes, disorganisation of the barrier and further water loss.

In atopic eczema, the intercellular lipids are not formed normally and, as a result, the epidermal barrier is less effective.¹ There is increased water loss from the stratum corneum and the cells of the stratum corneum shrink, with cracks opening up between them. The result is dry skin, which can neither retain water effectively nor prevent the ingress of

irritants or allergens. Similar changes can also be seen in normal skin when some of the epidermal lipids are removed by repeated washing with soap or strong detergents or exposure to solvents.

Genetic variations

Several genetic variations have been identified recently that go some way towards explaining the changes seen in eczema and the ichthyosis but also for the numerous people with so-called "sensitive skin". One of the most exciting recent developments has been the discovery of two separate, loss-of-function variants in the gene that codes for filaggrin. People who have these variants produce little or no filaggrin protein in their skin and this appears to be the underlying defect in

Skin and water

The healthy stratum corneum has a relatively high water content, typically 15-20 per cent, and is elastic and pliable. Dry skin (xerosis) is the result of abnormal water loss. When the water content of the stratum corneum falls below 10 per cent, fine scaling is visible, the skin feels rough and dry and there can be sensations of tightness and itching.