

Linotar Treatment Method and Psoriasis

“Whenever you see inflamed skin, regardless of cause, the stratum corneum is leaky and permeable. But, if you repair the stratum corneum, that tells the underlying tissues that they don’t have to keep reacting like there is danger in the environment”

Albert Kligman M.D. Ph.D.; 1919 -2010

Background:

Psoriasis is a common skin disorder affecting about 2% of the population. This means that almost 1.2 million residents in South Africa could be affected.

But is it a disease caused by the immune system, inherited genes or a skin barrier (epidermis) that is leaky and not properly formed?

Looking at the skin of a psoriasis patient, the lesions are red and scaly. The epidermis is thickened because the cells in the bottom (basal) layer of the epidermis divide to rapidly giving the skin a scaly appearance. The red colour of the skin is due to inflammation, telling us the immune system is involved.

We know that genetics are involved.

So it seems that there are at least two schools of thought, one considers the immune system to play the major role, the other thinks it is the skin barrier that calls the shots.

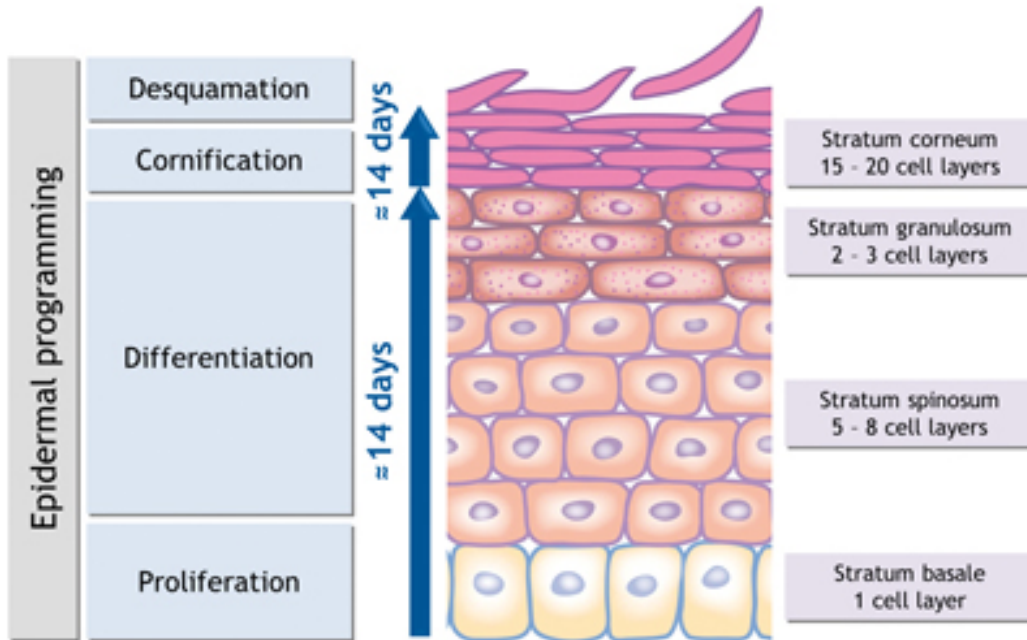
The question now arises:

- Does psoriasis start when the cells of the top layer of the skin (epidermis) behave abnormally and the immune system simply responds?
- Or does the immune system somehow react to disrupt the epidermis?

Is the answer perhaps that it is an interaction between the skin barrier, the immune system and the genes?

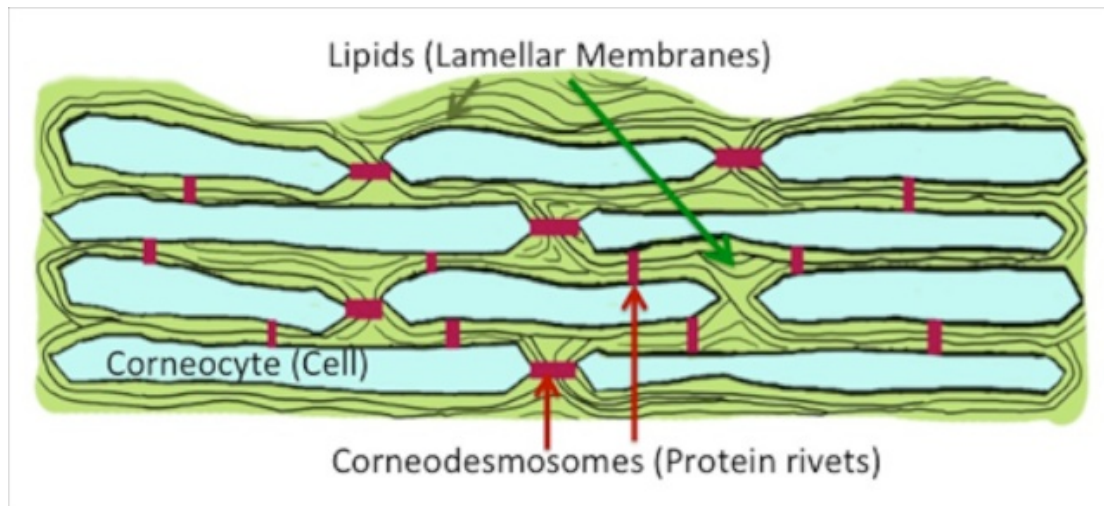
Structure and function of the epidermis:

It is mostly made up of 4 layers as the stratum lucidum only occurs where the skin is thickened as in under the feet.



After the cells of the basal layer of the epidermis divided, the cells change shape and function and are modified to form a structure simulating a wall of brick and cement. The 'bricks' are held in position by protein rivets (corneodesmosomes) and are surrounded by lipids. All of this is to a large extent made possible by a remarkable protein called **filaggrin** that is formed in the granular layer. Filaggrin plays a pivotal role in the differentiation of the epidermal cells to form a secure barrier. (1 *Filaggrin in the frontline: role in skin barrier function and disease Sandilands A et al Journal of Cell science 122, 1285-1294. Published by The Company of Biologists 2009 doi:10.1242/jcs.033969.* 2 *One remarkable molecule: Filaggrin Brown SJ and WH Irwin McLean J Invest Dermatol Mar 2012; 1329PT20 751-762*)

The 'bricks' are cells (corneocytes) made up of keratin and are surrounded by 'cement', lipids that are made up of free fatty acids, cholesterol and ceramides to form a barrier that keeps unwanted substances and organisms out. They also prevent excess water loss whilst at the same time fending harmful microbes from causing infection.



Ref: **Elias & Williams** *The inside-Out of the skin* What is the skin barrier, and does it matter. Jan 7,2013. Illustration by [Jessica C. Kraft](#)

However, in skin diseases like psoriasis, the genetic material that allows for the formation of filaggrin is suppressed (or down regulated) and this means that the formation of the top layer of the epidermis, the stratum corneum (SC) is not properly formed.

The bricks and cement are not laid down; the rivets that hold the cells together are not formed resulting in the cells shedding prematurely. Natural moisturizing factor that are usually contained within the cells of the stratum corneum is absent leaving the skin porous, dry and flaky resulting in more water loss. This usually referred to as trans epidermal water loss (TEWL).

Where it usually takes about 28 days for cells to move from the bottom (stratum basale) to the top (stratum corneum) to peel off, it can take as little as 3-4 days in the case of psoriasis.

With this cacophony taking place messages are sent to the basal layer of the epidermis to provide more cells to the top to help form a barrier, resulting in excess, immature cells arriving at the top causing more trouble. Whilst this is happening the immune system springs into action sending pro-inflammatory molecules in an emergency exercise to try and restore normality.

A vicious circle of events, if ever there was one.

The Linotar Treatment System can help to restore the normal function of the epidermis

How is this possible you may well ask so, let's return to the structure of the epidermis:

".....it is important that we do not get so carried away with our new therapeutic tools that we forget some tried and trusted old friends. Coal tar is one such old friend that is of risk of becoming distinctly unfashionable in the era of biologics, but I suggest we do so at our peril.'

Richard Groves, Editor of the Journal of Dermatological Treatment (2004) 15,7.

Another important player is the patented Emzaloid™ trans-delivery system which ensures that the active ingredient in Linotar Gel, **coal tar** passes through the top layer of the epidermis [*Saunders J. et al; A novel skin penetration enhancer: evaluation by membrane diffusion and confocal microscopy J Pharm Sci 199 Sep-Dec ;2(3) :99-107*] and when it gets to the granular layer it up-regulates or switches relevant genes on to activate filaggrin (our hero molecule). Filaggrin then orchestrates the proper formation of the upper layer of the epidermis to ensure a normal skin milieu. (*Epidermal Structure and Function; Van Den Bougaard EH et al, Journal of Investigative Dermatology(2013) 133,s104-s128, doi: 10.1038/jid.2013.99*)

This is a bit like the Wizard of Oz who waves his magic wand to repair and restore the epidermis to its former glory.

Thus the 'brick and cement' wall is formed, with rivets that hold the cells of the stratum corneum together. By this stage filaggrin has been broken down into natural moisturizing factor (NMF) and urocanic acid to ensure a moist normal skin with an acid pH to help fight off any harmful microbes wandering about.

The Emzaloid™ carrier system also helps to restore normality by providing some of the ingredients (ceramides and EFAs) to help make the 'cement' thus ensuring a normally constituted epidermis. The essential fatty acids (linoleic acid {omega 6} and linolenic acid {omega 3} further contribute by helping to reduce inflammation.

To ensure there is enough 'cement', it is best to use Linocream and/or Linoscalp after applying Linotar Gel. Even if the GP/Dermatologist/patient use another anti-psoriasis medication, Linocream and Linoscalp should be the 'Go To' moisturisers.

How to use the Lino-Range Treatment Method.**A. ON THE BODY**

1. Gently wash the lesions with a hypoallergenic soap and towel dry the lesions.
2. Apply Linotar Gel to the lesions. Allow to dry. If the lesion is still wet after 2 minutes you have applied too much of the Linotar Gel.
3. Apply Linocream to the lesions and gently rub it into the skin.
4. Apply Linotar Gel two to three times a day and Linocream as often as you need to keep the skin soft and moisturised.

B ON THE SCALP

1. Wash your hair with a hypoallergenic shampoo and towel dry.
5. Apply Linotar Gel to the lesions. Allow drying. If the lesion is still wet after 2 minutes you have applied too much.
2. Apply Linoscalp to the lesions and massage in gently.
3. Apply Linotar Gel two to three times a day (if practical) and Linoscalp as often as you need to keep the scalp soft and moisturised.

Attribute Comparison

Attribute	Exorex	Standard Coal Tar	Calcipotriol	Corticosteroid
Restores epidermal differentiation process 1,2,3,4,5,6	✓	✓	✓	✗
Helps restore epidermal barrier 1,2,3,4,5,6	✓✓	✓	✓	✗
Reduces Trans Epidermal Water Loss 1,2,3,4,5,6	✓✓	✓	✗	✗
Reduces inflammation 7,8	✓	✓	✗	✓✓
Reduces itching 7,8	✓	✓	✗	✓
Clinically proven efficacy 7,9,10	✓✓	✓	✓✓	✓✓
Can be used on entire body 7	✓	✓	✗	✓
Cost Effective 11	✓	✓	✗	✓
South African developed and patented product 12	✓	✗	✗	✗
Can be used in switch therapy 13	✓	✓	✓	✓
Can be used long term 7,8	✓	✓	✓	✗
Total ✓	14	10	6	9

So what have we achieved by using the Exorex Treatment Method?

- Arrested rapid division of cells in the basal layer of the epidermis
- Reduced inflammation
- Assisted in repairing the epidermis
- Resulting in a patient who can manage his/her psoriasis

Thus we have satisfied the rule of thumb set by Prof. Albert Kligman and acknowledged the wisdom of Richard Groves.

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