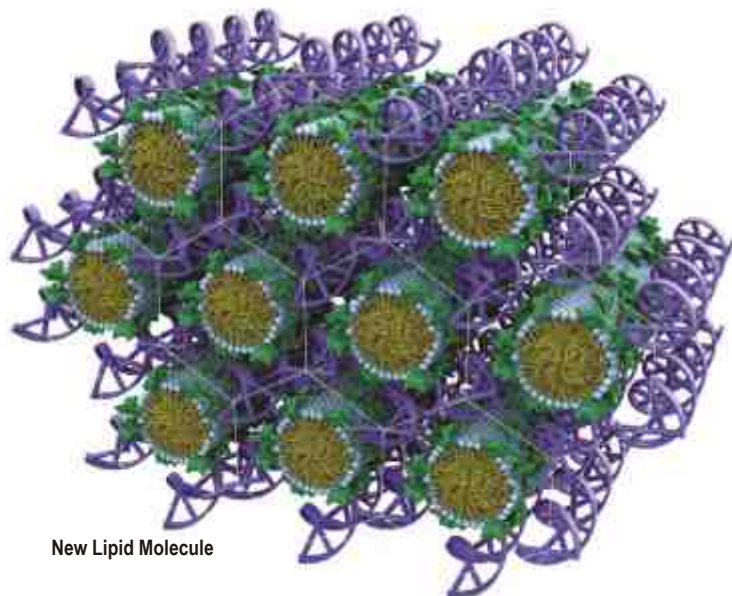


key ingredient



New Lipid Molecule

Impaired Enzyme Activity and its role in Skin Blemishes

By Gay Wardle

There is often a misconception in the industry that excessive oil in the skin is the cause of comedones and therefore when the skin has evidence of comedones and congestion it is often diagnosed as an "oily skin" and treated as such. As this may be the case in some instances there is also another consideration that needs to be examined and that is the issue of impaired enzyme activity surrounding the skin cells as the protocols in such instances are completely different. For this reason we need to examine the skin more thoroughly to identify the correct cause of the problem, as this will vastly change the way we will need to address the skin and design the correct treatment plan.

In the case of impaired enzyme activity the skin needs to be replenished not dried, which would lead to a further disturbance of the skin's acid mantle resulting in further dryness that can accelerate even more harmful bacteria than may already plague it.

THE ROLE OF ENZYMES IN THE SKIN

Enzymes are biological catalysts, mainly proteins, generated by an organism to speed up the rates of chemical reactions in the cell.

In the skin, water and essential fatty acids create an enzyme effect. The role of these enzymes is to assist the skin to break down and dissolve dead cells and contribute to the desquamation processes that leads to healthy cell turnover.

The warning signs that could point to the causes of congested skin should be identified during a thorough initial consultation. Look out for fat-free diets as well as insufficient consumption of water intake in your client's dietary habits as this could be the major cause for impaired enzymatic activity in the skin.

Ceramides or essential fatty acids present in the skin combine with water to create enzymes that dissolve desmosomes, which connect keratinocyte cells to each other. If these enzymes were not performing their activity correctly they can lead to other concerns, such as impairing our keratinocyte cells from performing their function. As the keratinocytes complete their journey through the epidermis they have specific functions to perform in every layer of the skin.



ESSENTIAL FATTY ACIDS AND THE SKIN

Discovered in 1929, essential fatty acids are groups of fatty acids, which are required by the body but cannot be manufactured by it. Essential fatty acids are like vitamins and minerals in that the body cannot make them. They must be obtained through the diet or through supplementation. There are two main families of EFAs and we need both of them. Omega-6 fatty acids which include linoleic acid and its metabolites such as GLA and Omega-3 fatty acids, alpha linolenic acids and its metabolites such as DHA.

EFAS HAVE FOUR GENERAL FUNCTIONS:

- Their metabolites are required for the structure of all membranes in the body
- They act as precursors for the production of prostaglandins, which regulate cell functions
- Their metabolites "water-proof" the skin, maintaining the impermeability barrier of the skin
- Their metabolites regulate cholesterol transport and metabolism

With the significant role in the structure of every cell and the regulation of cell function it is apparent that a lack of essential fatty acids can adversely affect every cell and organ in the body. It is therefore not surprising that an EFA deficiency may lead to abnormalities in the skin, reproductive system, the cardiovascular system, the immune and inflammatory systems, the nervous system in fact every system in the body is susceptible to the negative effects.

Omega-3 fatty acids are found in fish, such as salmon, tuna, and halibut, other seafood including algae and krill, some plants, and nut oils.

The essential fatty acid of the Omega 6 series is linoleic acid. This is provided by our diet from vegetable seed oils including sunflower and safflower oils.

Omega-3 and Omega-6 essential fatty acids are especially important for making prostaglandins in your body. Prostaglandins are hormone-like substances that regulate many activities in your body including inflammation, pain, and swelling. They also play a role in controlling your blood pressure, your heart, your kidneys, your digestive system, and body temperature. They are important for allergic reactions, blood clotting and making other hormones.

For example:

- In the germinative layer they undergo mitosis
- In the spinosum layer these cells work in synergy with the melanocyte cells to distribute pigmentation (in darker skins they do this in both the spinosum and the granulosum layers.)

Keratinocyte cells undergo identity changes in the lucidum layer and become corneocytes. They then desquamate in the corneum layer. This amazing process is all part of the skin barrier defence.

We know that cells need food to keep them healthy and to function at their optimum, but they also need ceramides or essential fatty acids and water to enable the transfer of nutrients in and out of the cell.

If we are lacking in either of these then the result is oxidative stress (loss of water from the cell membrane) and lipid peroxidisation (loss of oil from the cell membrane). Not only do we lose water and essential fatty acids from the cell membrane, but also from the extracellular space around the cell.

When you have this level of deterioration and compromise within the cells then the cells cannot release proteins and waste matter outside the cell and cannot take in food to maintain the health of the cell.

Remember that the combination of water and ceramides create enzymes to dissolve desmosomes. If there is a lack of enzymes then dead cells cannot effectively desquamate resulting in cells that become sticky and clump together with cellular debris. This debris then becomes embedded in lipids, which forms crystallisation resulting in open and closed comedones and milia.

To counteract this problem instead of drying the skin we need to increase water intake and recommended essential fatty acids in supplementation form and also included in our skincare formulation of choice.

There may be other causes to comedones and congestion like creams that are too occlusive, which can inhibit cells from desquamating, as well as makeup, or even hyper-keratinisation due to sun damage. The level of damage from cells that are not functioning will result in an impaired acid mantle making the skin susceptible to bacteria and vulnerable to environmental pollution.

When diagnosing milia, congested pores and comedones, you should be looking for poor alignment of bi-layers created by impaired enzyme activity resulting in an impaired acid mantle. Therefore only the correct diagnosis of this skin condition will result in a resolution of the problem. **APJ**

New Lipid Molecule Image: Nanoscale assembly of the new lipid (green) and DNA (purple). Credit: Peter Allen, UCSB. Copyright 2006 American Chemical Society

Gay Wardle is greatly respected as a trainer and educator in the aesthetic industry. She is a multi-award winner having received 14 business and industry awards for the achievements of her two salons in Queensland. Gay travels extensively throughout Australia training salons in IPL and equipment technology and also conducts training in Advanced Skin Analysis Pastiche Method. Gay is currently pursuing a degree qualification in Dermal Sciences with Victoria University. She trains others on her highly successful strategies that come from a strong understanding of what drives a salon to succeed and how to be known for exceptional results. Gay can be contacted on 0418 798 455.

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