



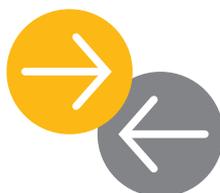
# HEALTHY SKIN FROM WITHIN

Turn on the TV, take a stroll in a mall, or open a magazine and you are bombarded with advice and product advertisements that promise a multitude of miracles for your skin. The truth is that there is no miracle cream or food that will make your skin permanently youthful overnight; if there was then no other product would be needed and the innumerable beauty products currently on shelves would not exist.

A healthy lifestyle that includes proper nutrition along with a high-quality, daily skin care routine can provide your skin with what it needs to look and feel its best. Good skin is considered purely

a cosmetic issue to some, but those people are overlooking the myriad functions that skin performs and its importance in contributing to overall health. The skin is your body's largest organ, equalling about 15% of your total body mass and serving many vital functions including roles in regulating your body temperature and water content.<sup>1</sup> It is also your first line of immune defence, providing a physical barrier between you and the rest of the world.<sup>1</sup>

The skin is also the only body organ that can be nourished from the inside and the outside! Our skin needs a well-balanced diet with quality and diversity of nutrients and phytonutrients for protection and optimal health just like the rest of our body.<sup>2</sup> Skin cells of the epidermis (known as keratinocytes) have a remarkable ability to assemble unique combinations of proteins and lipids to create water tight protective barriers and junctions.



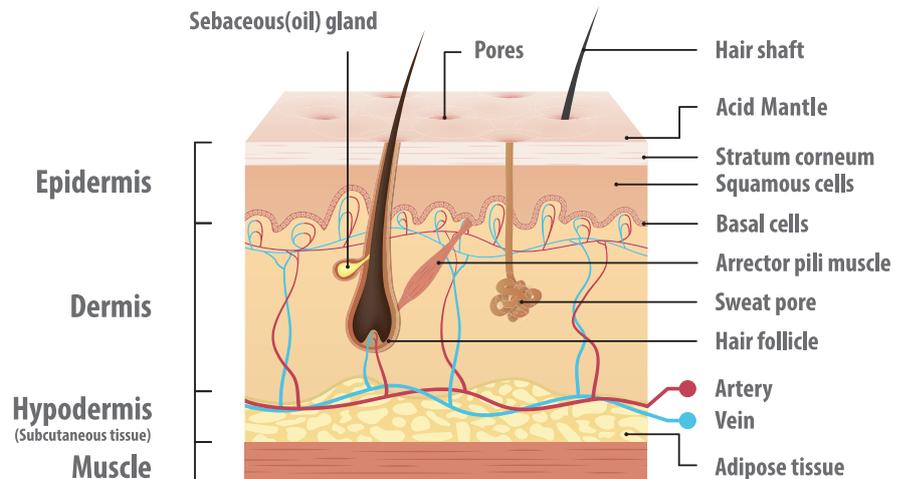
## **FUN FACT!**

The skin is the only body organ that can be nourished from the inside AND the outside!

## Skin Structure

Though your skin is one organ, it is far from a uniform mass. The skin's outer layer, the epidermis, actually has four layers (five layers on the thicker skin of the palm of the hands and feet) and together they make up the skin barrier function, keeping moisture in and many undesirable environmental factors (like microbes) out. On top of the outermost layer there is a protective film known as the acid mantle. The acid mantle protects the barrier function of the skin's surface and its acidic properties are vital to overall skin barrier function.<sup>3,4</sup>

Numerous micronutrients, such as vitamin E and selenium, and phytonutrients are known for their key roles in supporting skin cells metabolism and protection. Micronutrients are known to play key roles as enzyme cofactors for metabolic reactions of skin cells and also provide support as antioxidants to defend against damaging environmental attacks.<sup>5</sup> More recently the phytonutrients – carotenoids and polyphenols have emerged as important skin cell protectors.<sup>6,7</sup> Likewise, very important effects of optimal omega-3 and omega-6 fatty acid status have been highlighted to contribute to more favourable skin health.<sup>8</sup>



## A Vital Organ

Research on skin care and aging is continuing to advance and today we know more about the skin than ever before. For example, aging is a natural process, however, we now have solid evidence revealing the tremendous impact that environmental factors can have in damaging effects and acceleration of the natural intrinsic aging process. These elements are often overlooked but understanding them helps us better protect our skin

and adopt a preventative approach. In addition to prevention, there are many well-researched ingredients and nutrients that target different aspects of the skin and work to improve it in different ways. Some ingredients act topically, some nutrients work by being consumed and some work both from the outside in and from the inside out. In this issue of News You Can Use, we will explore the enemies of healthy aging and reveal powerful fact-based solutions to help you nourish your skin from the inside and cultivate beautifully healthy skin.

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## Supporting and Protecting Your Skin from the Dehydrating Impact of Seasons and Indoor Heating and Cooling:



**A humidifier** can reduce the impact of indoor heating and cooling by adding moisture back to the air.



**Antioxidant and polyphenol-rich foods and supplements** can provide support from within by protecting your skin against the ultraviolet (UV) rays of the sun and the resulting skin inflammation that occurs from this UV exposure.<sup>10</sup>



**A powerful moisturiser\*** can hydrate your skin and prevent further water loss by strengthening its barrier function with lipids and reducing the rate of transepidermal water loss (TEWL).<sup>9</sup> High quality moisturisers have significant amounts of active ingredients that are proven effective.

*\*It is advisable to use products with integrated Sun Protection Factors.*



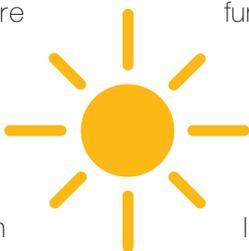
**Proper hydration is key.** Water requirements for males and females range from 2.7 to 3.7 litres per day (or 11 to 15 cups a day). Not only does proper hydration help with skin dryness but proper hydration can lead to plumpness, elasticity and resiliency of the skin.<sup>11</sup>

## The Environment's Impact on Your Skin

Just about everything around you affects your skin, though you may ignore much of the sensory stimuli on your skin because of a process called habituation. Habituation is when the response to a stimulus decreases after repeated or prolonged exposure. An example is feeling itchy when you first don a wool jumper, but the feeling fades after a few minutes.

# ELEMENTAL EXPOSURE

Something subtler that you may acclimatise to without even noticing is humidity. In certain climates the humidity is relatively constant, but others have wild variations between seasons. Changes are obviously noticeable when you are travelling from the desert climate in Arizona to the humid heat of the Florida coast, but what about more subtle changes? Do you notice a difference in humidity when stepping from the street into an air-conditioned office? Warm air can hold more water than cold air, which is why hot summers days often feel muggy too. But the average person spends significantly more time indoors than outdoors. Air conditioning



is found everywhere indoors, from office buildings to homes to supermarkets. Air conditioners actually pull moisture from the air to reduce humidity, which changes the skin's pH and has a negative impact on the skin's barrier function.<sup>12</sup> A study exposed participants to low humidity for six hours and found that there was significant water loss in the stratum corneum (the outermost layer of the epidermis, also known as the "horny layer").<sup>13</sup> Additionally, researchers found that skin roughness parameters increased in the participants, causing researchers to conclude that a dry environment contributed to skin

dehydration and the formation of fine lines.<sup>13</sup>



Winter packs a double punch of drier, colder air outside combined with the drying effects of indoor heating. In a study of 440 Chinese women, the skin's hydration level and barrier function decreased during the cold, dry winter season.<sup>14</sup> Sebum production was decreased, as were lipids and other natural hydrating factors that play a vital role in the skin's barrier function. The barrier dysfunction was increased particularly in older groups and led to a higher rate of water loss through the skin, called transepidermal water loss (TEWL), further drying out the skin.<sup>14</sup>

# Powerful Antioxidant Vitamins C and E in Synergy for Skin Protection!

## Vitamin C

Vitamin C is often associated with a healthy immune system, but it also plays a really important role in skin health. Normal skin contains high concentrations of vitamin C while aged and photodamaged skin has been found to contain lower amounts.<sup>15</sup> Vitamin C plays a number of important biological roles including the potent antioxidant ability to neutralise and remove harmful oxidants, such as those developed after exposure to UV light and environmental pollutants.<sup>15</sup> Additionally, its role in promoting collagen formation, which naturally decreases with age, has been well established. Collagen is a protein found throughout the body and provides key structural support for the skin, playing a role in skin firmness. *In vitro* studies have shown that when vitamin C is absent, cells decrease total synthesis and crosslinking of collagen fibres, weakening the structure of the



vitamin C, whether from whole foods, supplementation, or a combination of the two, is important for overall health and for skin health.

Vitamin C also works from the outside in and can affect your skin when applied topically.

It works by many different mechanisms and additional research is still needed to fully understand these. But research has already shown that topical vitamin C has a range of activities including being an antioxidant, contributing to photoprotection (protection from the sun) and helping prevent pigmentation that forms dark spots.<sup>17</sup>

## Vitamin E

Vitamin E plays an antioxidant role, protecting the skin against harmful free radicals. When combined with vitamin C, there is a synergistic effect and together they provide increased photoprotection to the skin.<sup>18</sup> Vitamin E supplements can influence the skin from the inside out and outside in if topically applied. Vitamin E first accumulates in the sebaceous glands before it is delivered to the skin surface through sebum.<sup>19</sup> Following oral ingestion, it takes at least seven days before the vitamin E content of sebum is altered. Healthy skin needs the full range of tocopherols and tocotrienols and these can be obtained from NeoLife Vitamin E.



**Vitamin E Complex**  
#621 - 100 capsules

Exposure to UV light or ozone lowers the vitamin E content in skin, primarily in the stratum corneum.

## Phytonutrients

If you've spent any time around NeoLife, you've surely heard about the significant benefits of phytonutrients. Phytonutrients, also referred to as phytochemicals, are found in plants and include a broad spectrum of compounds, including carotenoids and polyphenols such as flavonoids, isoflavones and curcuminoids, just to name a few. Phytonutrients play innumerable, important roles in health and higher intakes are correlated to better overall health and a reduced risk for cardiovascular and other diseases.<sup>20</sup> Let's now focus on their many benefits to skin. Phytonutrients have roles in maintaining skin health and appearance whether consumed or applied topically.<sup>21</sup>

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**Vitamin C**  
Threshold Controlled  
#615 - 200 tablets  
**Neo-C**  
#616 - 250 tablets, 230mg

skin.<sup>15</sup> Vitamin C is an additional nutrient that can nourish the skin both from the inside out and the outside in! Studies show that oral supplementation with vitamin C increases the levels in blood serum, allowing the skin to take up sufficient levels and enhance its role as an antioxidant free-radical scavenger.<sup>15,16</sup> Getting enough

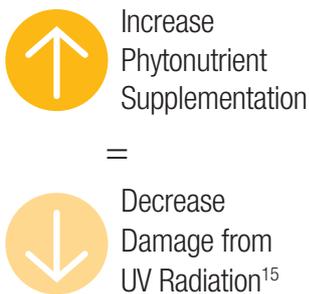
"Vitamin C also works from the outside in and can affect your skin when applied topically."



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- PhytoDefense**  
#661 - 30 packets
- Cruciferous Plus**  
#658 - 60 tablets
- Carotenoid Complex**  
#660 - 90 capsules



- Pro Vitality**  
#665 - 30 packets
- Tre-en-en**  
#639 - 120 capsules
- Salmon Oil Plus**  
#641 - 90 capsules

The skin benefits of phytonutrient supplementation have been well-established. A clinical study recorded various measures of skin health in women and then gave one group a phytonutrient blend supplement for eight weeks. Researchers measured skin damage induced by UV radiation and saw noticeable improvements in a number of facial skin attributes: improved overall appearance, elasticity and radiance along with a reduction in TEWL.<sup>22</sup> They concluded that the phytonutrients had a protective effect and limited damage from the harmful UV radiation. Many phytonutrients have antioxidant action and protect the skin by scavenging free radicals that are caused by exposure to environmental hazards like the sun's UV rays.<sup>23</sup> Phytonutrients have been studied extensively, but new research is unlocking answers to how some of the mechanisms work. Phytonutrients have had observed anti-inflammatory effects and now the molecular targets of inflammation have been more clearly identified, giving us information about how they work in the body.<sup>24</sup>

### The Importance of Lipids

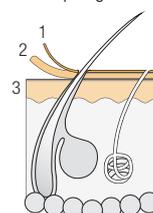
Lipids in the skin are vitally important, particularly omega-3 and omega-6 fatty acids. They play diverse structural and protective roles, contributing to the maintenance of the stratum corneum, or "horny layer," permeability barrier (which affects the rate skin loses water), inhibit proinflammatory factors and promote wound healing.<sup>25</sup>

A wide variety of lipids, including cholesterol, phytosterols and ceramides, are integrated in the skin and are crucial for proper structure and function. They affect the composition of the skin's microbiome, which is important for maintaining proper pH levels and allows the skin barrier to function properly.<sup>26</sup>

Fish oil is the most scientifically validated source of omega-3 and an incredibly popular supplement for cardiovascular health. The latest research shows that omega-3s also contribute to the skin's lipid composition and promote skin's elasticity and flexibility.<sup>25</sup> A review paper analysing existing studies on fish oil found that it indeed had multiple positive impacts to the skin including inhibiting UV-induced inflammation, improved barrier function and reduced rates of dermatitis (an inflammatory and itchy skin condition).<sup>27</sup> These benefits can be achieved through oral supplementation.<sup>27</sup>

#### MAIN ELEMENTS OF THE SKIN BARRIER FUNCTION

1. The skin's Acid Mantle
2. The skin's outer layer – the Horny Layer (with lipids)
3. Active cell renewal – "morphing" keratinocytes



Linoleic acid, an omega-6 essential fatty acid and the parent of the family is the most abundant fatty acid in the epidermis and must be obtained from food as it cannot be synthesised in the body. It and its derivatives play a central role in the structure and function of the stratum corneum permeability barrier.<sup>25</sup> Insufficient levels of essential fatty acids lead to increased water loss through the skin.<sup>25</sup> **Neolife's Tre-en-en** provides valuable amounts of linoleic acid. Other lipids play roles and more research is being done on plant oils and compounds. For example, argan oil has been studied and shown to significantly decrease the rate of TEWL and significantly increase water content in the epidermis as well as its elasticity.<sup>28,29</sup> This effect was found in postmenopausal women and interestingly, both consuming the argan oil and applying it to the skin were effective in improving the measures.

Not all lipids are the same; the control group consumed and/or applied olive oil and did not see skin improvements. Researchers hypothesised that this is because argan oil has higher antioxidant levels due to the presence of vitamin E.<sup>29,30</sup> This also shows that a single nutrient or ingredient can have multiple mechanisms of efficacy and that things often work in synergy with some nutrients enhancing the function of others.



# HEALTHY SKIN RENEWAL

## Conclusion

Your skin is an amazing and complex organ. It is your body's largest organ, equalling about 15% of your total body mass and has many important functions such as regulating your body temperature and water content.<sup>1</sup> Your body is constantly shedding old skin cells and manufacturing new ones at such a rapid rate that your skin replaces itself approximately every month.

Adopting a healthy lifestyle - which includes a well-balanced diet with quality nutrients, staying properly hydrated, adequate and regular sleep, reducing stress, and avoiding tobacco and alcohol - has a positive impact on your skin's quality and appearance.<sup>31</sup> Your skin is vitally important to both your health and your appearance. A holistic, preventative approach is the most effective way to keep your skin at its healthiest best through life. Everyone ages, but healthy nutrition and protective skin care habits can help your skin age gracefully. ■

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