

Achieve Youthful Skin from Within



LifeExtension®
Stay Healthy, Live Better



Why Does Skin Age?

The reasons why skin ages can be divided into two groups — internal and external factors.



Combat Skin Aging from Within

The ingestion of nutrients through food and supplements allows key ingredients to go deep into the skin and repair damage.



Nourish Skin with Ceramides

Clinical studies show significant improvement in skin hydration with oral ceramides — epidermal fats that help to lock in moisture.



Rebuild Skin's Primary Barrier with Cynatine®

A new ingredient combination known as Cynatine® HNS Plus contains a solubilized keratin as well as essential B vitamins, zinc, copper, and biotin.



UV Protection with Vitamin B3

A form of vitamin B3, known as nicotinamide, provides many benefits to help treat aging skin, including protecting skin cell DNA following UV exposure.



#1

Why Does
Skin Age?



The reasons why skin ages can be divided into two groups: internal and external factors. These factors can impact the proper function of three structural proteins that are primarily responsible for the appearance and integrity of our skin — collagen, elastin, and keratin.

Why Does Skin Age?

Throughout our lives, we are exposed to many influences that change the structure of our skin. The result? Aesthetic changes such as wrinkles, fine lines or dry, dull skin. The reasons why skin ages can be divided into two groups: internal and external factors. These factors can impact the proper function of three structural proteins that are primarily responsible for the appearance and integrity of our skin — collagen, elastin, and keratin.¹⁻⁴

Internal Factors

- 1. Elevated Blood sugar and Glycation:** Excess blood sugar can result in damage to structural proteins through a complex reaction called glycation. Simply put, sugar can bind to a protein, causing a change in its structure, which inevitably changes how it functions. Glycation can damage collagen and elastin, leading to thinner skin, wrinkles, and the loss of elasticity.⁵⁻⁸
- 2. Inflammation:** An essential part of the body's healing process, inflammation occurs when the immune system tries to fight off disease-causing germs and repair injured tissue. Typically, once the tissue is repaired, the inflammation subsides; however, as we age, we're often faced with a chronic, low-level inflammation that can damage skin proteins.⁹
- 3. Loss of Hormones:** Skin thickness, hydration, and the formation of wrinkles can be impacted by the amount of certain hormones, such as estrogen, testosterone, and dehydroepiandrosterone (DHEA), found present in the body.^{10,11}
- 4. Aging:** Our body undergoes normal "wear and tear." Aging not only breaks down collagen and elastin, but also decreases the production of these proteins. Additionally, cells that produce melanin (the pigment that gives hair, eyes, and skin color) decrease at a rate of 8% to 20% every 10 years. This results in less natural UV protection.^{1,2,12-15}

External Factors

- 1. Pollution:** Your skin is often unprotected from air pollution, which has a high association with skin aging. In a study, exposure to traffic-related pollution was associated with more pigment spots.¹⁶
- 2. Excess Sun Exposure:** While there are many external factors that contribute to skin aging, UV damage resulting from excess sun exposure is one of the most detrimental. In fact, studies have shown that UV damage may account for as much as 80% of facial aging.^{13,17}
- 3. Smoking:** Known for many other health issues, smoking can also cause skin damage through a variety of mechanisms. This includes blood vessel constriction from nicotine and damage to collagen and elastin from harmful chemicals.^{18,19}



Why Does Skin Age?

Why Does Skin Age?	Combat Skin Aging from Within	Nourish Skin with Ceramides	Rebuild Skin's Primary Barrier with Cynatine®	UV Protection with Vitamin B3
--------------------	-------------------------------	-----------------------------	---	-------------------------------



Combat Skin Aging from Within



Nourish Skin with Ceramides



Rebuild Skin's Primary Barrier with Cynatine®



UV Protection with Vitamin B3



#2

Combat Skin Aging from Within

Combat Skin Aging from Within

The benefits of topical skin treatments are numerous. People who use topical products can see results such as increased moisture, reduction in the appearance of fine lines and wrinkles, as well as the lessening of redness or hyperpigmentation.

However, there are some limitations to the effectiveness of these ingredients when they are delivered topically. This is because most topical products are created to benefit the top of the skin, and they may not penetrate the lower layers of the skin that help to maintain the skin's moisture levels and structural integrity.

The absorption of topical ingredients is inhibited for several reasons. First, think of your skin cells as bricks in a wall with small channels or gaps around each brick. If a molecule within your skin care cream is too big, it will not be able to fit between the bricks and move down the channel to a deeper level in your skin.

Additionally, some ingredients are water-soluble, which means that they will dissolve in water. Because water cannot penetrate our skin, these ingredients have difficulty absorbing into deep levels of our skin, so they primarily impact the top layer.

Following a skin care regimen that incorporates dietary elements will alleviate the challenges of topical-only applications. The ingestion of nutrients through food and supplements allows key ingredients to go deep into the skin and repair damage, providing a complete approach to combating the signs of aging.



There are limitations to the effectiveness of skin care ingredients when they are delivered topically. Most topical products are created to benefit the top of the skin, and they may not penetrate to the lower layers of skin that help maintain moisture levels and structural integrity.

Foods for Your Skin

It's already well-known that having a healthy diet can help prevent chronic illnesses. However, these same foods can also promote healthy skin aging.

Foods for Healthy Skin²⁰

Common Foods	Nutrient(s)	Skin Benefit
Salmon, tuna, snapper, shrimp, oysters, crab, Brazil nuts	Selenium	Protects skin from free radicals
Berries, tomatoes, beets, spinach, beans, peppers, sweet potatoes	Antioxidants	Slows and prevents damage from free radicals
Carrots, oranges, eggs, leafy greens, low-fat dairy	Vitamin A	Moisturizes skin and reduces dryness
Citrus fruits, broccoli, Brussels sprouts, red bell peppers	Vitamin C	Necessary for collagen production and reduces damage to skin proteins
Nuts, seeds, olives, leafy greens, asparagus	Vitamin E	Antioxidant that combats UV damage and inflammation
Olive oil, flaxseed, walnuts, salmon, sardines	Omega-3 and Omega-6	Supports your skin's natural oil barrier to reduce blemishes and dryness



Why Does Skin Age?



Combat Skin Aging from Within



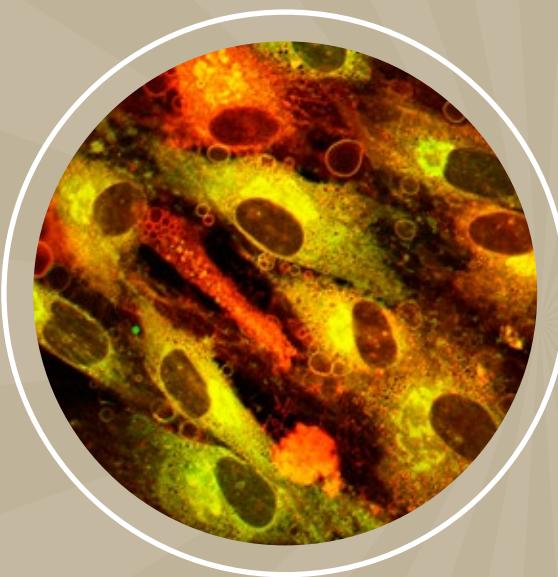
Nourish Skin with Ceramides



Rebuild Skin's Primary Barrier with Cynatine®

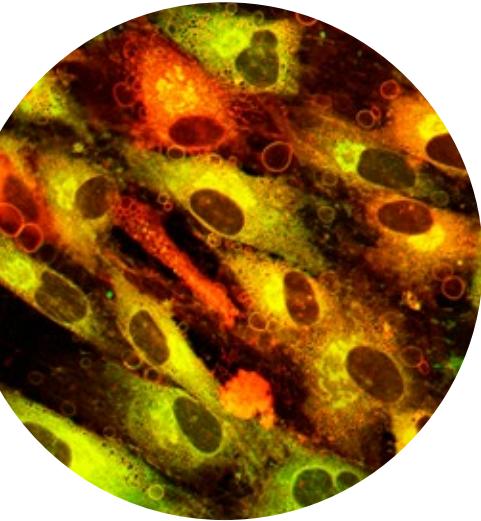


UV Protection with Vitamin B3



#3

**Nourish Skin
with Ceramides**



When taken as a food supplement, ceramides are delivered more naturally through the bloodstream to restore the moisture barrier of the skin.²¹

Nourish Skin with Ceramides

Ceramides are natural fats that make up 35% to 40% of the "glue" that holds the skin's epidermal layer together.²¹

Ceramides also protect against enzymes that break down collagen and elastin. As we age, however, ceramide production decreases in our body, causing skin to lose water, which over time can lead to wrinkles and sagging.

Research has shown that applying ceramides directly to the skin results in improvements in skin moisture levels. However, when taken as a food supplement, ceramides are delivered more naturally through the bloodstream to improve skin hydration.²¹

Clinical studies in 2005 showed significant improvement in skin hydration by more than 35% when women with dry to very dry skin took a daily ceramide supplement for 3 months.²¹



Three Vitamins for Healthier Skin

Vitamins are often found in many topical skin treatments — however, including them in your diet will show added benefits to your skin's appearance.



A necessary nutrient that aids in the maintenance and repair of your skin, vitamin A, as with all antioxidants, combats the impact of damage from free radicals, reducing inflammation. If you do not get enough vitamin A from your diet, you may experience dry, flaky skin — an indicator of a vitamin A deficiency.²²



Also known as ascorbic acid, vitamin C has antioxidant properties, protecting against UV damage, increasing cell survival after prolonged sun exposure. It also helps to synthesize collagen, which is necessary to support the stability and structure of the skin. Multiple studies have shown that people with higher levels of vitamin C intake were associated with better skin appearance and decreased wrinkling of the skin.²³



Research has shown that vitamin E can help protect the skin against sun damage and even reverse skin pigmentation and wrinkling associated with age. This antioxidant helps to repair skin and may even inhibit further damage.²⁴

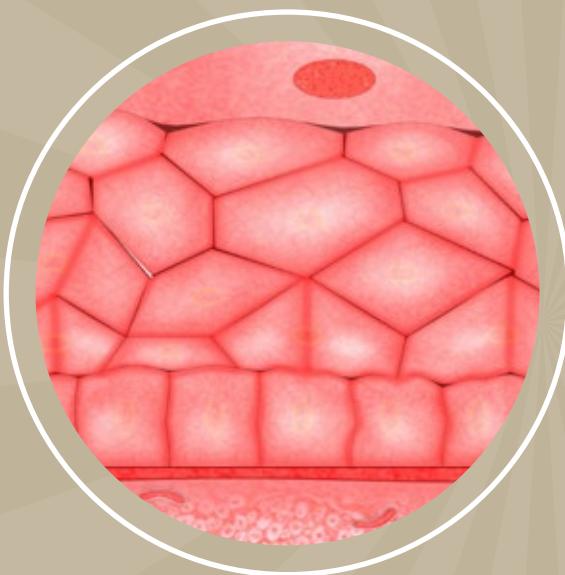
Why Does Skin Age?

Combat Skin Aging from Within

Nourish Skin with Ceramides

Rebuild Skin's Primary Barrier with Cynatine®

UV Protection with Vitamin B3



#4

**Rebuild Skin's
Primary Barrier
with Cynatine®**

Rebuild Skin's Primary Barrier with Cynatine®

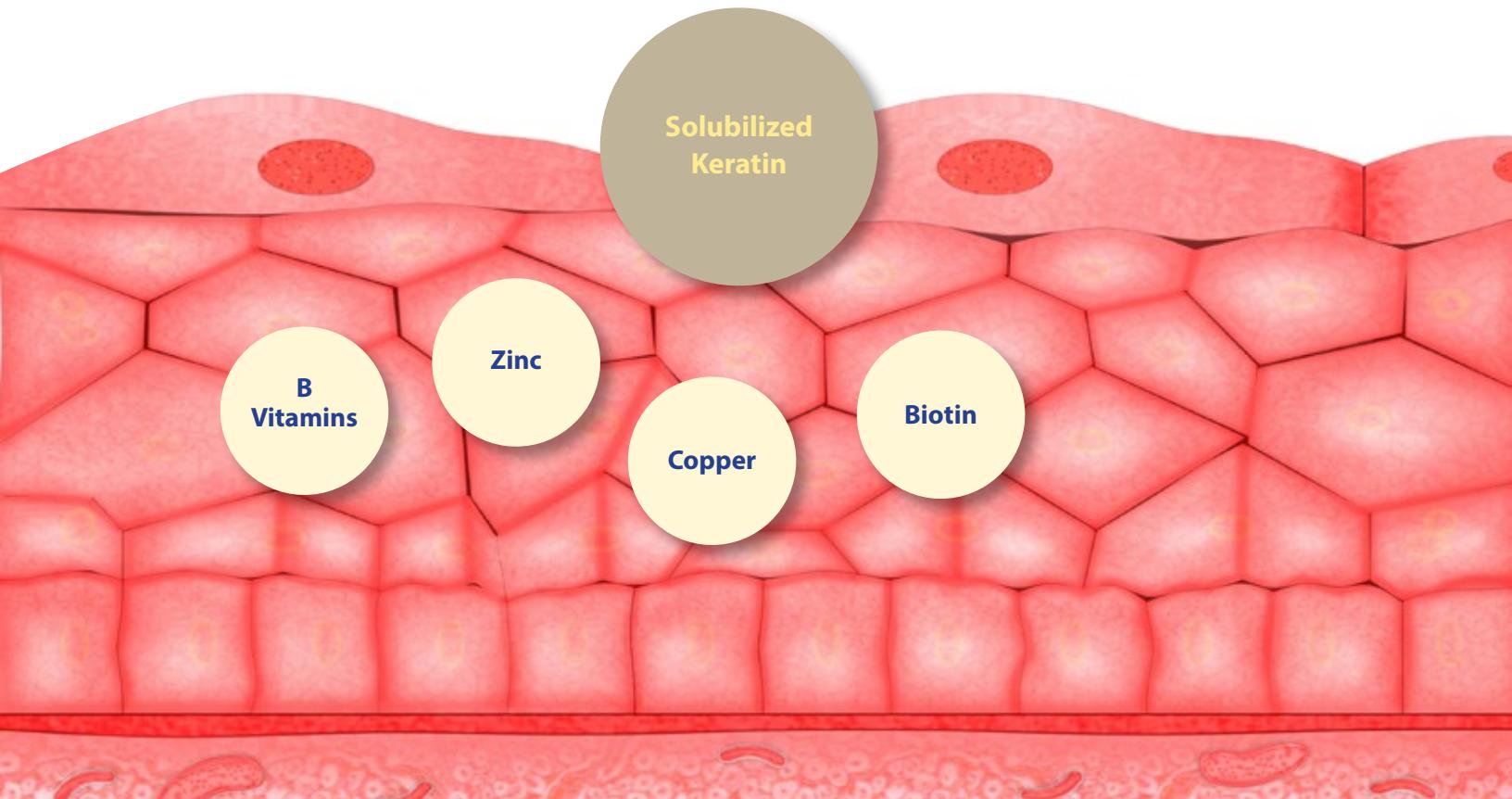
Keratin is a structural protein that is a major component to healthy skin, hair and nails. Unfortunately, many keratin supplements are made from sources that are difficult for the human body to process.

However, scientists have recently developed a process that solubilizes keratin, making it more easily digestible, thereby delivering keratin proteins directly to the skin cells.

A new ingredient combination known as Cynatine® HNS Plus contains a solubilized keratin as well as essential B vitamins, zinc, copper, and biotin. These ingredients are the perfect combination to support keratin development, with clinical studies showing an 11.5% reduction in the appearance of wrinkles.^{25,26}



The ingredients in Cynatine® HNS Plus are the perfect combination to support keratin development.



Why Does Skin Age?

Combat Skin Aging from Within

Nourish Skin with Ceramides

Rebuild Skin's Primary Barrier with Cynatine®

UV Protection with Vitamin B3



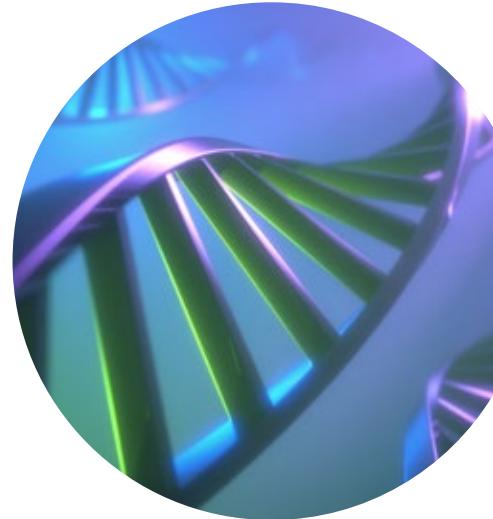
#5

UV Protection
with Vitamin B3

UV Protection with Vitamin B3

A form of vitamin B3, known as nicotinamide, provides many benefits to help treat aging skin. Nicotinamide is essential for healthy cell maintenance and encourages the production of ceramides, helping to boost skin hydration and increase skin firmness.

Nicotinamide has also been shown to combat the negative effects of UV exposure. It not only encourages the body's immune response to prevent UV damage, but also promotes healthy DNA function after the skin has been exposed.²⁷⁻²⁹

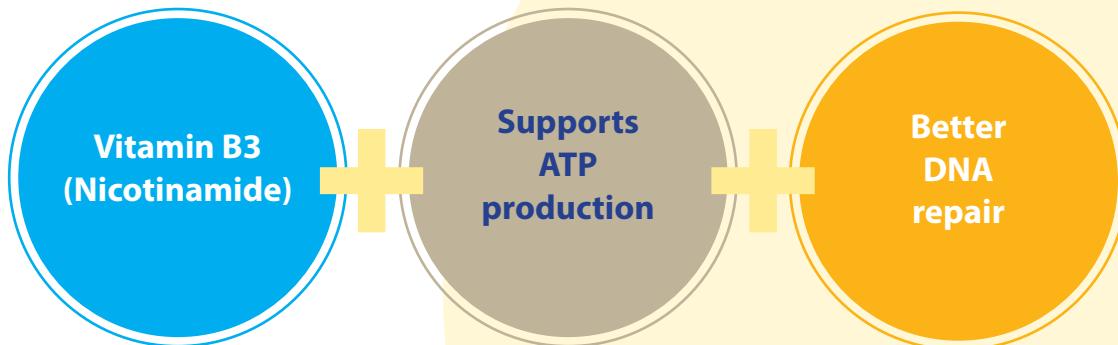


What makes nicotinamide so powerful against the most common forms of skin cancer? The answer lies in two of nicotinamide's most fundamental properties:

- Its role in producing cellular energy.
- Its ability to protect against ultraviolet-induced immunosuppression.

The body relies on an ample supply of cellular energy (ATP) to repair and remove the damaged portions of DNA and restore their normal sequence.

By helping the body produce more ATP, nicotinamide helps to ensure continuous and efficient DNA repair mechanisms. This translates into healthier, more youthful skin — that looks and feels good!



Why Does Skin Age?

Combat Skin Aging from Within

Nourish Skin with Ceramides

Rebuild Skin's Primary Barrier with Cynatine®

UV Protection with Vitamin B3

References

1. *Exp Dermatol*. 2011 Sep;20(9):759-61.
2. *Biomol Concepts*. 2013 Feb;4(1):65-76.
3. *J Cell Sci*. 2007 Jun 15;120(Pt 12):1955-8.
4. *Nurs Stand*. 2012 Sep 19-25;27(3):35-42.
5. *Diabetes Care*. 2011 Aug;34(8):1816-20.
6. *Dermatoendocrinol*. 2012 Jul 1;4(3): 259-270.
7. *Korean J Physiol Pharmacol*. 2014 Feb;18(1):1-14.
8. *Pathol Biol (Paris)*. 2010 Jun;58(3): 226-31.
9. *Climacteric*. 2013 Oct;16(5):514-21.
10. *Exp Gerontol*. 2010 Oct;45(10):801-13.
11. *Clin Geriatr Med*. 2001 Nov;17(4): 661-672, vi.
12. *Menopause Int*. 2007 Jun;13(2):60-4.
13. *J Pathol*. 2007 Jan;211(2):241-51.
14. Changes in the Body with Aging. Merck Manual Consumer Version Website. www.merckmanuals.com/home/older-people's-health-issues/the-aging-body/changes-in-the-body-with-aging. Copyright 2016. Accessed September 13, 2016.
15. Aging in Epidermal Melanocytes: Cell Cycle Genes and Melanins. [www.jidsonline.org/article/S1087-0024\(15\)30203-3/pdf](http://www.jidsonline.org/article/S1087-0024(15)30203-3/pdf)
16. *J Invest Dermatol*. 2010 Dec;130(12): 2719-26.
17. Micronutrients and Skin Health. Linus Pauling Institute Micronutrient Information Center. lpi.oregonstate.edu/mic/micronutrients-health/skin-health. Updated September 2011. Accessed September 13, 2016.
18. *Przegl Lek*. 2012;69(10):1111-4.
19. Effect of the sun on visible clinical signs of aging in Caucasian skin. www.ncbi.nlm.nih.gov/pmc/articles/PMC3790843/
20. Foods for Healthy, Supple Skin. WebMD. www.webmd.com/beauty/ss/slideshow-skin-foods. Updated October 20, 2016. Accessed February 2, 2017.
21. *Int J Cosmet Sci*. 2011 Apr;33(2):138-43.
22. Looking Good — From the Inside Out. WebMD. www.webmd.com/beauty/features/looking-good-from-inside-out#1. Updated May 10, 2004. Accessed February 2, 2017.
23. Vitamin C and Skin Health. Linus Pauling Institute Micronutrient Information Center. lpi.oregonstate.edu/mic/health-disease/skin-health/vitamin-C. Updated September 2011. Accessed February 2, 2017.
24. Skin Care Vitamins and Antioxidants. WebMD. www.webmd.com/beauty/features/beauty-skin-care-vitamins-antioxidants#1. Updated April 24, 2012. Accessed February 2, 2017.
25. *Int J Cosmet Sci*. 2013 Dec;35(6): 608-12.
26. *Scientific World Journal*. 2014;2014: 641723.
27. *N Engl J Med*. 2015 Oct 22;373(17): 1618-26.
28. *Pathology*. 2013 Apr;45(3):331-41.
29. *Carcinogenesis*. 2009 Jan;30(1):101-5.