Snow Algae And Novel Peptides Revive Aging Skin

By Robert Goldfaden and Gary Goldfaden, MD.

Snow algae thrive in frigid high mountain areas and have the unique ability to survive brutal changes in temperature. When applied to living cells, **snow algae** activates a **longevity gene** and the enzyme **AMPK**, which in turn enhances **DNA repair**.[1,2] The ability to **repair DNA** is crucial for health and longevity. Most ***Life Extension***® members take affirmative steps to internally boost **AMPK** cellular activity and turn on their **longevity genes**. Researchers are now finding that topical application of snow algae produces a restorative effect to the skin. In addition, a group of novel **peptides** along with **hyaluronic acid** addresses a broad array of deleterious structural changes that occur in aging skin. The result is improved moisture, minimized wrinkles, and restoration of a more youthful outward appearance.

Rejuvenation Effects Of Snow Algae

For years, scientists have been intrigued with a phenomenon known as "red snow"[3,4] that occurs every winter in high mountain areas around the world. Red snow refers to the unique ability of **snow algae** to thrive in freezing temperatures with high ultraviolet radiation that would otherwise destroy most plants. In the spring, cells of **snow algae** turn green due to energy production. They then turn red as winter approaches. This color change is related to the growing presence of **carotenoid** pigments that protect them against harmful UV rays.[5,6] Curious about this ability to survive extreme temperature changes, scientists cultivated snow algae in the laboratory and observed two specific anti-aging activities. At the cellular level, snow algae activates an important **longevity gene** (Klotho) and the cellular energy enzyme **AMPK** (*adenosine monophosphate-activated protein kinase*). Both of these mechanisms help faciliate **DNA repair**.[2] When activated, AMPK acts to clear cellular debris that generate low-grade chronic inflammation and improves cellular stress resistance to slow down skin aging.[1] Snow algae has been shown to prevent the age-related decline in AMPK activity that accelerates the aging process. In an *in vitro* study conducted by scientists, snow algae stimulated AMPK activity by **105%** compared to a control in human skin cells. [2] And in another *in vitro* experiment, snow algae increased **collagen production** and inhibited destructing collagen enzymes by up to **47%** in human fibroblast cells.[2,7] Together, these studies demonstrate the anti-aging effects of snow algae and its unique ability to improve the healthy longevity of skin cells.

Cumulative sun exposure, pollutants, cold, and wind all weaken the skin's barrier function, robbing it of vital moisture.[8-11]Since snow algae can resist and adapt to these harmful environmental influences, researchers investigated whether its topical application would provide a similar benefit to human skin. In a controlled clinical study, 21 human volunteers ranging in age from 30 to 57 applied **snow algae** extract to one half of their face and a **placebo** to the other half three times a day for only 21 days.[12] During the second week of the study, subjects spent time in the harsh climate of the Alpine mountains. The subjects' skin was evaluated for transepidermal water loss prior to treatment, on day 14, and on day 21. The results showed that transepidermal water loss was **12%** lower on the side of the face in which snow algae was used, confirming an improvement in the skin's barrier function.[4] In addition, age spots were less visible in **67%** of treated subjects—after only **21** days![2] In a recent clinical trial, **snow algae** extract was applied twice a day to the inner side of the forearm of 20 women aged 40 to 60 years old, while their other forearm was treated with a **placebo**. Skin hydration was measured using a device called a Corneometer®, which determines the level of skin hydration. The snow algae-treated side showed a **10%** increase in skin hydration over the placebo side in just 14 days. This moisturizing effect was observed in **100%** of participants, thus demonstrating snow algae's effectiveness as a hydrating compound.[2]

Novel Peptides Enhance Collagen Renewal

The smooth and plump appearance of youthful skin can be attributed to its large amounts of **collagen**, a key protein that holds skin together. As a major component of a fibrous framework known as the extracellular matrix, collagen provides structural support to the surrounding cells in the dermis.[13,14] With age and increased UV exposure, collagen production declines and its breakdown increases.[15,16] This results in the appearance of wrinkles, fine lines, and sagging skin.[17-19] A novel combination of **peptides** has been found to stimulate the synthesis of different types of collagen in the dermis and dermal-epidermal junction (DEJ), a surface area that connects the dermis to the epidermis above it.[20] This collagen-boosting effect enhances the ability of the dermis to retain water and properly hydrate the skin, leading to visible improvements in both smoothness and firmness. This was apparent in a placebo-controlled

trial in which a topical mixture containing the peptide **palmitoyl dipeptide-5** was shown to increase skin smoothness by **12.2%** and skin firmness by **10.8%** after just **two months** compared to a control.[20]
Another innovative peptide that combats skin aging is **palmitoyl tripeptide-5**. This peptide has been shown to boost dermal collagen production through activation of latent tissue growth factor beta in turn exerting anti-wrinkle effects.[21-23]
In a 12-week study, a serum containing **palmitoyl tripeptide-5** reduced fine wrinkles by **13%** and deep or coarse wrinkles by **30%** compared to baseline. This study also revealed significant improvements in several skin parameters including firmness, radiance, tone, and tactile roughness.[24] Other research shows immediate results from using topical **palmitoyl tripeptide-5**, with one study reporting a **20%**decrease in fine lines and **28%** reduction in deep wrinkles around the eyes *within minutes* of initial application.[23]Together, these studies indicate that **palmitoyl tripeptide-5** improves the structural integrity of the dermis immediately and long term to fight the tell-tale signs of aging.

WHAT YOU NEED TO KNOW

Novel Compounds Combat Skin Aging

- The age-related decline of the skin's matrix components and weakening of the epidermal barrier function contribute to moisture loss and a lack of hydration for the skin.
- Novel compounds have been identified that target these structural changes in aging skin, leaving it visibly smoother, softer, and younger looking.
- Snow algae strengthens the skin's barrier function. In a controlled clinical trial, the use of snow algae significantly increased skin hydration in 100% of participants in just two weeks!
- Novel peptides enhance the production of different types of collagen in the dermis and dermal-epidermal junction (DEJ) to boost skin smoothness and firmness.
- Palmitoyl tripeptide-5 improves the structural integrity of the dermis to diminish the appearance of wrinkles within minutes and after long-term use.
- Hyaluronic acid maintains adequate hydration in the different layers of the skin due to its ability to absorb 1,000 times its volume in water.

Hydrate With Hyaluronic Acid

Hyaluronic acid is a naturally occurring[25] polysaccharide that maintains skin hydration by acting as a powerful sponge and absorbing up to **1,000 times** its own volume in water.[26,27] Its outstanding water-holding capacity adds both volume and thickness to the dermis. The latest research also suggests that hyaluronic acid helps hydrate the stratum corneum layer of the epidermis and, via the CD44 receptor, supports the skin's barrier function.[28,29] The aging process and damaging free radicals depletes the skin of **hyaluronic acid**. Replenishing this vital nutrient restores moisture that leaves aging skin softer, smoother, and younger looking.

Summary

It may surprise you to learn that drinking plenty of water each day is only half the battle for keeping aging skin hydrated, smooth, and young looking. Scientists have identified compounds, including **snow algae** extract, **palmitoyl dipeptide-5**, **palmitoyl tripeptide-5**, and **hyaluronic acid**, that help correct structural changes in aging skin to improve moisture, minimize wrinkles, and restore a youthful appearance.

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