Exploring Optimal Supplement Ingredients

Dr Eugenia Bonelli provides an overview of some key ingredients in supplements for the skin

Regenerative medicine in aesthetics is a revolutionary tool that allows us to stimulate the body's natural ability to regenerate skin, boost collagen production and repair tissue. Vitamins and supplements play a crucial role in supporting these regenerative processes, providing essential nutrients for skin health, collagen synthesis and tissue repair, as well as contributing to the wellbeing and overall health of individuals.

Supplements can also enhance the results of aesthetic treatments by providing essential nutrients that support skin health and healing.[1,2] They work synergistically with procedures like injectables and lasers, boosting collagen production and improving elasticity.[3] By nourishing the skin from within, supplements may help support both the immediate and lasting benefits of aesthetic interventions.[4]

Recent discoveries in this space, especially the role of nicotinamide mononucleotide (NMN) and nicotinamide adenine dinucleotide (NAD+) in improving cellular energy, have revolutionised the treatment of ageing.[5] The exciting potential of NMN and NAD+ in reversing the ageing process and the anticipated emergence of senolytics (substances that selectively clear senescent cells from our body) promise new tools to expand the benefits of regenerative treatments.[6]

This article will explore how various vitamins and supplements can optimise results in regenerative medicine, contributing to improved skin rejuvenation, healing and longevity, as well as enhancing the results of aesthetic and skin treatments.

The role of vitamins and supplements

Oral vitamins and supplements tablets play a crucial role in supporting regenerative aesthetic treatments. They can contain ingredients which enhance skin health, promote faster healing and help maintain the long-term results of these procedures. There is some scepticism in the specialty on this subject due to previously low levels of evidence, but as more research is conducted, the measurable clinical benefits are gradually being substantiated, as this article will indicate.

When taken orally, vitamins and supplements formulated in a liposomal form are absorbed more effectively by the body, ensuring maximum efficacy.[1] This advanced formulation enhances bioavailability, allowing the body to make the most of its benefits for skin health, faster healing and sustained results in regenerative aesthetic treatments.[7]

Supplements can benefit patients looking to enhance the effectiveness of aesthetic treatments, especially those undergoing skin rejuvenation, healing or antiageing procedures. They are particularly recommended for individuals with nutrient deficiencies, patients with slower healing responses or those seeking to maintain and prolong the results of treatments like platelet-rich plasma (PRP) or microneedling.[3,4] Additionally, individuals with lifestyle factors that impact skin health – such as stress, poor diet or consistent environmental exposure – can benefit from supplements that support skin repair, reduce inflammation and improve overall skin resilience.[1,8]

Below are some examples of the most commonly used vitamins and supplements in these instances, and their main mechanisms of action.

Vitamin C: Collagen production and skin repair

Vitamin C is critical in collagen synthesis and essential for maintaining skin structure, elasticity and firmness. It is also a potent antioxidant that protects the skin from free radical damage caused by environmental factors like UV radiation and pollution. Combining vitamin C with regenerative treatments like PRP and microneedling accelerates tissue repair and enhances the skin's ability to regenerate.[9]

Liposomal vitamin C, a form of vitamin C encapsulated in liposomes, ensures better absorption, allowing for higher bioavailability than traditional supplement forms. This results in more effective collagen production and skin healing.[10]

Vitamin A: Skin renewal

Vitamin A, particularly retinoids, is known for its ability to increase skin cell turnover and stimulate collagen production. Retinoids are particularly beneficial after microneedling or PRP, as they enhance the skin's renewal process and reduce the appearance of wrinkles and pigmentation.[11] This is possible because retinoids accelerate the shedding of dead skin cells and promote the growth of new, healthy cells.[4] By increasing cell turnover, they help to fade hyperpigmentation and even out skin tone.[4]

Liposomal vitamin A formulations further improve absorption, enhancing the skin's ability to repair and rejuvenate.[7]

Vitamin E: Antioxidant and healing support

Vitamin E is an antioxidant that protects the skin from oxidative stress and promotes healing.[5] It is particularly beneficial post treatment, reducing inflammation and supporting tissue repair after procedures like microneedling, PRP or laser treatments.[12]

Liposomal delivery ensures that vitamin E is better absorbed, improving its ability to hydrate and heal the skin.[7]

B vitamins: Cellular energy and repair

B vitamins, particularly B3 (niacinamide) and B5 (pantothenic acid) are essential for maintaining healthy skin. Niacinamide strengthens the skin barrier, reduces inflammation and improves skin tone, while pantothenic acid supports wound healing.[6] These vitamins are beneficial after regenerative treatments such as PRP and microneedling, promoting faster recovery and improving skin texture.[1]

Liposomal delivery has been shown to increase the bioavailability of most compounds, including B vitamins, ensuring that the skin receives the full benefits of these essential nutrients.[7]

By nourishing the skin from within, supplements help reinforce the benefits of aesthetic interventions

Omega-3 fatty acids: Inflammation control

Omega-3 fatty acids, known for their potent anti-inflammatory properties, are invaluable in controlling post-treatment inflammation.[8] After procedures like microneedling or PRP, Omega-3 supplements help modulate the body's inflammatory response, reducing redness and promoting faster healing.[3,8]

Liposomal Omega-3 formulations allow for better absorption, ensuring adequate anti-inflammatory support.[7,13]

Zinc: Wound healing and collagen formation

Zinc plays a vital role in wound healing and collagen formation. Its anti-inflammatory and antioxidant properties support skin repair and regeneration. Zinc supplementation after aesthetic treatments like microneedling or PRP can speed recovery, reduce inflammation and prevent post-procedure complications such as acne or scarring.[14]

Liposomal delivery ensures better absorption, which is critical for optimal wound healing and skin repair, although it must be noted that specific data on zinc is limited in this aspect.[7]

NAD+ and NMN: Cellular energy and antiageing

Nicotinamide adenine dinucleotide (NAD+) and its precursor nicotinamide mononucleotide (NMN) have emerged as powerful antiageing and regenerative medicine tools. NAD+ is a coenzyme essential for cellular energy production, DNA repair and mitochondrial health. As we age, NAD+ levels decline, leading to reduced cellular function and slower tissue repair.[15]

NMN is a direct precursor to NAD+ and can help replenish declining NAD+ levels. By increasing NAD+ levels, NMN improves cellular energy production, supports DNA repair and enhances the body's natural ability to regenerate tissue. This makes NMN and NAD+ supplementation highly beneficial for patients undergoing regenerative aesthetic treatments such as PRP, stem cell therapy or microneedling.[16,17]

In medical aesthetics, NMN and NAD+ have been shown to boost the skin's natural repair processes, improve elasticity and reduce the visible signs of ageing. These supplements may enhance the longevity of regenerative treatments by maintaining cellular vitality and promoting skin rejuvenation over time.[5,16]

Liposomal NMN and NAD+ formulations ensure these compounds are absorbed more effectively, potentially leading to better results in skin rejuvenation and overall antiageing effects.[5,18]

Senolytics: Clearing senescent cells for healthier skin

Senolytics are a new class of compounds that selectively target and remove senescent cells – damaged cells that have stopped dividing but remain metabolically active.[6] These cells accumulate with age and contribute to various age-related conditions by secreting pro-inflammatory cytokines and other factors that disrupt tissue homeostasis, a phenomenon known as the senescence-associated secretory phenotype (SASP).[19]

Senescent cells play a significant role in ageing and degenerative diseases by promoting inflammation, impairing tissue regeneration and influencing the behaviour of surrounding healthy cells.[17] By targeting and removing these cells, senolytics aim to mitigate inflammation, promote tissue repair and potentially enhance overall skin health, thus contributing to improved longevity and quality of life.[6]

The combination of senolytics with NAD+ has received growing interest in the field of ageing and regenerative medicine. While senolytics actively clear senescent cells to reduce chronic inflammation, NAD+ (and precursors such as NMN) enhance mitochondrial function and energy production, working synergistically to improve cellular repair.[20,21]

Senolytic supplements have the ability to enhance aesthetic treatments and combat ageing by targeting and removing senescent cells that accumulate with age.[6] These cells disrupt cellular communication and repair processes, leading to inflammation and impaired skin function.[19] By clearing out senescent cells, senolytics can improve the skin's regenerative capabilities, allowing for better responses to treatments such as PRP, microneedling and stem cell therapies. This has the potential to result in faster healing, reduced downtime and more noticeable improvements in skin elasticity, texture and overall appearance, contributing to a youthful and vibrant look.[6]

Enhancing regenerative aesthetic results

Regenerative medicine in aesthetics has made significant strides by integrating cutting-edge therapies like PRP, stem cell therapy, microneedling and biostimulators.[3] Combining these treatments with essential vitamins and supplements such as NMN, NAD+ and senolytics offer a holistic approach to skin rejuvenation and antiageing.[4] Liposomal formulations of these nutrients and compounds have been shown to ensure superior absorption, maximising their effectiveness in promoting tissue repair, collagen production and overall skin health.[7]

This comprehensive approach to treating aesthetic patients helps maintain youthful, healthy skin, but also contributes to the overall health and wellbeing of the individual, extending the benefits of aesthetic treatments and ultimately contributing to better, longer-lasting results. The science behind regenerative medicine continues to evolve as new research and techniques come to light, and more research is needed in this area.[3]

Dr Eugenia Bonelli combines her expertise in surgery and aesthetics to deliver exceptional results at her Wimpole Street practice. As a member of the Royal College of Surgeons and the JCCP, she seamlessly integrates surgical precision with aesthetic artistry, ensuring safe and personalised treatments that enhance natural beauty.
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