

Antioxidants



&

Oral Therapies

**SUPPORTING HEALTHY AGING AND
ENHANCING THE EFFECTS OF
MEDICAL AESTHETIC TREATMENTS**

By Paula Simpson, B.A.Sc. (Nutrition), R.N.C.P.

The aging process is one of the best examples of the effects of deteriorating homeostasis. Aging is accompanied by an impairment of the physiological systems including the homeostatic systems such as the immune system. The free radical theory of aging (one of the most widely accepted theories) proposes to explain aging according to which oxygen-derived free radicals cause age-related impairment through oxidative damage to

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biomolecules, with mitochondria being the main target of free radical attack. Since oxygen radicals are needed for many metabolic and physiological processes, a balance between radical production and their antioxidant-linked inactivation is

required to preserve health.

The skin, being the largest organ in the body and barrier from the external environment, is very susceptible to damage produced by free radicals due to its constant contact with oxygen and other environmental stressors, such as UV exposure. This damage caused by free radicals impairs the ability of the cells to transport nutrients, eliminate wastes, and reproduce healthy skin cells, in turn causing an accumulation of chemical events and by products that deteriorate and interfere with the normal functions of the skin. Over time, inflammation and the degradation of collagen and elastin reveal the signs of physical aging of the skin.

Chronic sun exposure, smoking, poor dietary intake, and lifestyle have been well documented as key accelerators in skin aging due to an imbalanced homeostasis. Clinical studies show that age-dependent changes of the immune system are linked to oxidative stress and that an adequate intake of dietary antioxidants may protect those systems (including skin) against chronic degenerative syndromes in the physiopathology of which reactive oxygen species (ROS) play a key role.

NUTRICOSMETICS TO SUPPORT HEALTHY AGING

In an attempt to defeat the signs of aging, the medical aesthetic industry offers a plethora of topical anti-aging products with sophisticated ingredients based upon the biochemical requirements for healthy skin. However, consumers have recently demanded a more holistic approach to total beauty as we see an increasing number of ingestible-based beauty foods and nutraceuticals in the market. Unlike topical products, nutraceuticals are taken orally, metabolized, and then presented to the entire tissue.

Additionally, the bloodstream continuously replenishes the skin with these bioactive compounds, which can then be distributed to all skin compartments (i.e. epidermis, dermis, subcutaneous fat, and also to sebum). Nutritional Cosmetics

(or more widely known as Nutricosmetics) can offer additional modalities to topical treatments to further protect the skin from endogenous and exogenous stressors, while preserving the healthy biochemical functioning of the skin to promote younger looking skin for a longer period of time.

Surgical procedures and modern technologies of skin rejuvenation include many physical and chemical intervention tools where, by affecting different mechanisms, these treatments offset the sensitive physiological free radical/antioxidant balance of the skin. All forms of treatment will induce initial mild to severe tissue damage (tissue damage, inflammation, oxidative stress) that will eventually provide beneficial biochemical stimulation for skin re-epithelization and rejuvenation.

However, through the

administration of pre- and post-treatment nutraceutical formulations, key nutrients, amino acids, and potent antioxidants have been shown in clinical studies to be beneficial in reducing oxidative stress and inflammation while accelerating re-epithelization and healing.

PATIENT COMPLICATIONS

Depending on the patient's health status, pre-treatment skin condition, and type of treatment involved, the following complications can occur:

- Immediate erythema (redness), oedema (swelling, fluid retention), pain, exudation, purpura (bruising, bleeding capillaries)
- Secondary infection
- Textural changes, atrophy
- Scarring (keloid)
- Post hyper or hypopigmentation
- Increased photosensitivity

Nutraceuticals can support cosmetic dermatology and surgical protocols by:

- lowering the risk of permanent adverse effects



- prolonging the duration of the beneficial effects of dermocosmetologic procedures
- reducing the incidence of post-operative infections/complications
- reducing recovery time

Laser Skin Resurfacing Treatments

Laser resurfacing, chemical peels, and dermabrasion are the most commonly used techniques for improving the

enhance overall treatment results.

Cosmetic Surgical Procedures

Wound healing is a complex anabolic process, and good nutritional status is essential to promote effective growth and repair of body tissue. The phases of normal wound healing include hemostasis, inflammation, proliferation, and remodeling. Each phase of wound healing is distinct.

Although each phase overlaps the next, they all put increased metabolic and cellular demands on the body to

- **Prebiotics (*short chain fructooligosaccharides*)** Probiotics (*Lactobacillus* or *Bifidobacterium*) - function to activate the mucosal immune system and prevent pathogen colonization and translocation by strengthening the mucosal barrier, interfering with pathogen colonization. There is convincing preliminary data to suggest that their consumption can favourably support the immune response pre- and post-operatively.
- **Vitamin C** - an important water-soluble free radical scavenger and an essential cofactor for collagen synthesis by dermal fibroblasts and, consequently, may contribute to the maintenance of healthy skin (including wound healing).

A number of human clinical studies have explored the intricate dynamics of healing and have identified several nutritional nutraceuticals involved in effectively reducing oxidative stress, stimulating tissue regeneration, and improving healing outcomes.

texture and appearance of the skin. Laser, like other electromagnetic radiation, can produce *photothermal, photomechanical, and photochemical reactions in skin.*

In summary, the principle of laser therapy is to emit a specific wavelength of photon energy to the target tissue, aiming to have optimal absorption of energy by the target tissue, while minimizing the destruction of the surrounding normal tissue.

Although these techniques use different methods, they have basically the same effect on the skin: they destroy and remove the upper layers of skin to allow for skin re-growth. Endogenous nutrients and antioxidants can

effectively heal the wound. Although under most circumstances the systemic inflammatory response is beneficial, improving the eventual outcome of injury, infection, or excessive proinflammation or excessive counterinflammation can worsen outcome and delay healing.

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Some of these ingredients include:



- **Gotu Kola Seed** (*Centella asiatica*) - used traditionally in the successful treatment of wound healing and burn injury. Involved in several mechanisms including antioxidant activity and increasing wound collagen matrix.



GLiSODin®

(*Cucumis melo*)

(cantaloupe/wheat gliadin source of Super Oxide Dismutase) - a naturally occurring source of the endogenous antioxidant enzyme Super Oxide Dismutase (SOD) has been shown in over 20 clinical studies to offer therapeutic means for the prevention and treatment of many conditions associated with increased oxidative stress and inflammation (including skin protective benefits).


- **L Glutamine** - a non-essential amino acid; however, recent studies have provided evidence that glutamine may become "conditionally essential" during inflammatory conditions such as infection and injury. It is now well documented that under appropriate conditions, glutamine is essential for wound healing. The gastrointestinal tract has a large number of immune cells along its length - fibroblasts, lymphocytes, and macrophages. The ability for glutamine to nourish these immune cells may account for its positive impact on the gastrointestinal tract and immunity. Healing of surgical wounds, trauma, and burns is accomplished in part by these immune cells. A depletion of glutamine can slow down the growth of these cells.
- **Trace element supplementation (Selenium, Zinc, Copper)** - is associated with an increased skin tissue

content of selenium and zinc and with a reduction in skin protein catabolism.

- **Glucosamine Sulphate** - an amino-monosaccharide naturally produced in humans. It is one of the principal substrates used in the biosynthesis of macromolecules that comprise articular cartilage, such as glycosaminoglycans, proteoglycans, and hyaluronic acid. It is believed to play a role in cartilage formation and repair.
- **Maritime Pine Bark** (*Pinus pinaster* Aiton) - rich in bioflavonoids, with antioxidant, anti-inflammatory, and wound healing properties. When combined with topical and oral treatment, significant outcome in healing and reduced diameter in scar tissue was found.
- **Rutin Bean** (*Dimorphandra gardneriana*) - the rutosides are naturally occurring flavonoids that have documented effects on capillary permeability and edema and have been used for the treatment of disorders of the venous and microcirculatory systems.
- **Proteolytic enzymes** - have been reported to moderate the inflammatory cycle and may up-regulate the healing process.



Chronic oxidative stress that appears with age affects all cells and especially those of the regulatory systems, such as the nervous, endocrine, and immune systems and the communication between them. In medical aesthetic procedures the patient is initially exposed to increasing stressors in order to achieve the desired effect and outcome.

Nutritional intervention and supplements can have a beneficial effect on patients who are undergoing surgery or skin resurfacing treatments. By choosing a high quality line, professionals can offer their patients the nutritional support to mitigate complications and optimize treatment outcome. 



About the Author

Paula Simpson, B.A.Sc. (Nutrition), R.N.C.P. is the Executive Director of Isocell North America and holds a degree in Nutrition. She has over 15 years of experience in consulting, public relations, product formulation, and program development for the Nutraceutical and Medical Aesthetic Industry. Her role as a

Scientific Evaluator and Regulatory Consultant for some of the top nutraceutical companies worldwide has solidified her reputation as a leader in research and development for innovative natural health products. As a Project Leader, Paula developed and guided an international weight loss program towards a successful launch in North America and Europe. As the Nutrition Director for a medical spa, she developed a weight management and longevity program that was the impetus for the company's overall commercial success. Ms. Simpson can be contacted directly at paula.simpson@glisodinskin.com. Visit their website on the worldwide web: www.glisodinskin.com.



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