NEW PRODUCTS FOR 2002

SkinRenu Intensive Serum P

New Strategies for the management of "old looking" eyes due to under-eye Puffiness

Background

Puffiness under the eyes of older people is usually the result of fat accumulating on the lower lids causing patients to have a tired and aged appearance. SkinRenu Intensive Serum P offers a non-surgical alternative for improving "old-looking" eyes by reducing the prominence of the bulging fat pads.

Hypertrophy of the adipose tissue is due to both an overload of triglycerides in the adipocytes and an alteration in the connective tissue due to proteolytic enzymes that enable lipid hypertrophy within the tissues. The increase in the collagenase activity, a major proteolytic enzyme, occurs from normal aging phenomena and UV stimulation resulting in:

1. **The epidermis becoming thinner from reduced cell proliferation**

2. **The dermis-epidermis junction is altered with disappearance of the microvilli resulting in a defective adhesion of the epidermis to the dermis**

3. **Collagen and elastin degeneration is found in the dermis.**

Glycation (see discussion below) disturbs the normal remodeling of the extracelluar matrix that occurs between collagenases and inhibitors of collagenase. The effect of glycation on cell-matrix interactions is now being studied and is being shown to be an equally important aspect of ageing of collagen. An understanding of these mechanisms is now leading to the development of inhibitors of glycation and compounds capable of cleaving the cross-links, thus alleviating these devastating effects of ageing.

Acute puffiness of the eye is usually caused by **edema** but it may also be accentuated by **allergies** (chemical or environmental), poor **blood circulation** that may involve **increased capillary pressure** and **permeability** or **mild irritation** that can lead to **the release of inflammatory mediators**. Similarly, allergy resulting in edema contributes to a darkening of the eyelids, often times producing dark circles. The lack of inhibitors of matrix metalloproteinases associated with the formation of inflammatory mediators is one of the reasons dark circles form. The latter have also been attributed to **lack of sleep**, **fat** deposits, which can impart a yellow coloration to the eyelid and proliferation of blood vessels in the eye area.

The Causes: Free Radicals, Glycosylation, Senescent Fibroblasts, and Inflammatory Pigmentation

✦ **Glycation**

Skin aging involves major changes in the conjunctive tissue elements of the skin. Non-enzymatic modification of tissue proteins by reducing sugars, the so-called Maillard reaction, is a prominent feature of aging. The outward manifestations of tissue ageing, occurring in the elderly, primarily involve the two major structural proteins of the body, collagen and elastin. The changes in these proteins are associated with intermolecular cross-linking and side-chain modifications. Cross-linking involves two different mechanisms. A precise enzymatic process during development and maturation, and a subsequent non-enzymatic adventitious reaction with glucose during ageing. The latter glycation reactions are the major cause of tissue dysfunction in the elderly (and accelerated in diabetes) due to cross-linking, which stiffens the tissues, and to side-chain modification, which alters normal cell-matrix interactions. In addition, the presence of advanced glycation end products (AGE) also appears to initiate inflammatory reactions. Such chronic inflammatory process creates many of the conditions that contribute to the development of dark circles and puffy eyes such as increased melanin deposition and increased collagenase activity respectively.

✦ **Free Radical Formation –**

Photoageing by UV involves the competing reactions, chain cleavage and cross-linking, the former predominating on long-term exposure. Many molecules forming the extracellular matrix are produced by the keratinocytes of the epidermis and the fibroblasts of the dermis. Those molecules include collagen, elastin, proteoglycans, fibronectin and other glycoproteins. Deterioration of this matrix plays an important role in the aging phenomenon and implies a progressive diminution in dermal thickness, collagen content and protein organization. These qualities of the skin are essential to a young-looking skin and destructive enzymes such as the collagenases negatively impact the firmness, elasticity and maintenance of the extracellular matrix. UV exposure stimulates the activity of collagenase activity as well as free radical formation. Free radicals adversely affect skin lipids, proteins and DNA that are critical for normal skin function.

✦ **Senescent Firboblasts –**

Furthermore, the increased collagenolytic activity of senescent fibroblasts suggests that aging fibroblasts may become increasingly fibroclastic, causing many of the aging associated alterations in dermal collagen, which are observed during aging in vivo.

✦ **Inflammatory Pigmentation –**

There is ample evidence of the anti-inflammatory properties of alpha-melanocyte stimulating hormone (MSH). It can modulate nitric oxide synthesis as well as other inflammatory cytokines such as TNF-alpha and several inflammatory interleukin substances. Alpha-MSH and adrenocorticotropic hormone (ACTH) are both synthesized in the epidermis and their synthesis is up regulated by exposure to ultraviolet radiation. Therefore, inflammatory stimuli will, inadvertently, increase the synthesis of alpha-MSH with the possibility of increased deposition of the dark pigments such as melanin.

Goals for the Formulations:

✦ Moisturization

✦ Trophic Action on Supporting Tissue and Fibroblasts

✦ Reduce Inflammation

✦ Reduced Glycation

✦ Stimulate Collagen Synthesis

✦ Inhibition of Collagenases

✦ Reduced Skin Irritation

SkinRenu Intensive Serum P

For Puffy Eyes

Pre treatment

After 20 days of treatment with
Intensive Serum P for Puffy Eyes

KEY INGREDIENTS for Lipolysis And Inhibition of Lipogensis

Lipolysis triggers a whole series of biochemical reactions, e.g. the stimulation of adenylate cyclase, the conversion of ATP into cAMP and the activation of kinases, leading to the activation of lipases. The following ingredients have actions that are designed to minimize the formation of lipid material (inhibit lipogenesis) and/or cause a depletion of the existing lipid material (lipolysis).

- **Pycnogenol**
- **Genistein**
- **Silymarin**
- **Algisium C**

For Restoration of the Extracellular Matrix

- **Glycosaminoglycan**
- **Inhibitor of Melanocyte Stimulating Hormone**