

Biological UV-Protection by Stimulation of Natural Defense Mechanisms

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Introduction

Excessive UV-exposure can become a serious issue that goes far beyond the discomfort of a sunburn. Repeated high UV-dosage can result in sun damage and far surpasses the unattractive visual impression of leather-like skin. The sun might effect the skin's health dramatically and might even result in the development of diseases. Self-confident consumers do not consider changing their way of life to actively prevent skin damages; they demand modern solutions on the basis of new scientific developments.

The use of topically applied physical and organic filter systems against UV-rays was and still is the common way of protection. However, latest research has shown that it is possible to activate the natural protecting cell mechanism, which gives extra benefits. Suitable biological actives strongly support the protective function from the inside of the cell.

PHYTOSAN™ (a Soy Seed preparation) was proven to stimulate natural skin defending functions. Its major functions are maintaining a high energy level of skin cells even under stress and the prevention of DNA damage. These functions can be defined as biological UV-protection.

In vivo tests confirmed that PHYTOSAN™ pretreatment results in a higher UV-tolerance of the skin, expressable in SPF units. Furthermore, the active prevents the UV-induced release of proteases counteracting in this way the accelerated skin aging by prevention of destruction of extracellular matrix compounds. Beside the protective functions the anti-aging properties of PHYTOSAN™ were proven by an increase of skin firmness, decrease of skin roughness and wrinkle reduction on human volunteers.

Consequences of UV-Exposure

The skin, the biggest organ of the body protects the body from external and environmental influences. Protective repair mechanisms are forming a primary defense line against e.g.

prolonged exposure to UV-rays, extreme cold and heat, loss of moisture etc. To keep the natural repair processes of the skin active energy is needed. A decrease of the energy level weakens the natural repair mechanisms. The aim is to keep the energy level high [1] even under external stress.

PHYTOSAN™ is a cosmetic active that contains proteins, glycoproteins and polysaccharides.

A number of in vitro and in vivo tests were initiated to underpin the influence of PHYTOSAN™ on photo-aging processes.

Parts of human skin are exposed to UV-light every day. Even under a cloudy sky UVA and UVB rays contribute to the aging process of skin. Sunlight induces several damaging pathways [2] (Figure1). The skin is prepared to induce natural repair mechanisms, however, when the exposure to sunlight exaggerates, additional support of effective materials helps to keep the skin healthy and the natural repair mechanisms intact (Figure 2).

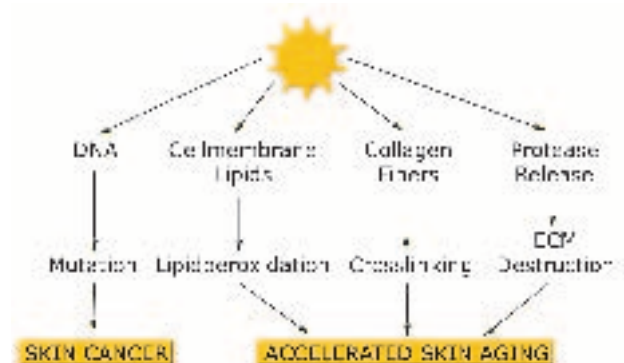


Figure 1. Overview of possible damages on human skin caused by UV-rays

A high energy level is decisive for maintaining the protective functions of skin cells. After UV-exposure of cells their energy level, expressed by the amount of adenosine tri-phosphate (ATP), is depleted. Pretreatment with PHYTOSAN™ leads to a much higher ATP level in human keratinocytes after UV-irradiation, compared with the control.