Xymelys 45® Reduces Inflammaging: A New Way to Prevent Skin Ageing

Authors: Rachida Nachat-Kappes Ph.D, Magali Favre-Mercuret, Magalie Cabannes, Laurent Rios Ph.D., Edwige Ranouille Pharm.D., Virgile Duclos, Elodie Fessy, Véronique Jay-Debaut Ph.D., Dojeanny Leng Pharm.D, Jean-Yves Berthon Ph.D., Greentech SA, Saint Beauzire, France.

Abstract

The skin as an external organ has to face many aggressions, including mechanical stress, microbial attacks, UV radiation and exposure to allergens, chemicals, detergents or smoke. These countless assaults can induce acute inflammatory responses. This visible form of inflammation (pain, heat, redness, swelling) is required for skin repair and is characterised by rapid onset and is generally short lived. However, when the skin is subjected to excessive, prolonged or uncontrolled inflammation, this leads to a state of low-grade chronic inflammation. This kind of inflammation that remains silent is usually invisible and symptom-free. Additionally, it occurs over longer times and has been clearly linked to biological ageing process and in promoting premature skin ageing. This phenomenon named 'Inflammaging' is characterised by a significant increase of pro-inflammatory mediators and oxidative stress.

In fact, under normal conditions, the cellular redox balance is tightly regulated by several antioxidant defence systems (enzymes, vitamins etc.). However, in the case of chronic inflammation, the antioxidant defences are insufficient. Consequently, the accumulation of reactive oxygen species (ROS) results in oxidative stress that is deleterious to the cell and accelerates the ageing process.

Thus, the prevention and/or reversal of 'inflammaging' are based on the development of innovative strategies that simultaneously targets inflammatory mediators and oxidative stress.

Therefore, Xymelys 45®, a powerful anti-inflammatory and antioxidant active has been developed to target the major contributors of 'inflammaging'. Indeed, Xymelys 45®, strongly inhibited two key pro-inflammatory enzymes, the cyclooxygenase-2 (COX-2), involved in the production of prostaglandin E2 (PGE2) and the 5-lipooxygenase (5-LOX), responsible for the synthesis of leukotriene B4 (LTB4). Additionally, the antioxidant ability of Xymelys 45®, demonstrated with the FRAP assay, was four fold higher that an acai extract, well known for its antioxidant properties.

Thanks to its dual actions, Xymelys 45® fights against 'inflammaging' and is an innovative way to preserve the youth of the skin.

Introduction

Acute and Chronic Inflammation

The skin forms an effective barrier between the organism and the environment. Consequently, because of its peculiar location, our skin is chronically subjected to many forms of injuries, including exposure to microorganisms, allergens, toxins, solvents, ultraviolet light, detergents and a variety of physical insults. Uncontrolled aggressions can lead to an acute inflammation process, which is accompanied by characteristic symptoms such as heat, redness, swelling, pain and may also involve loss of function of the damaged tissues.

The inflammatory response following tissue injury is fundamental in the healing process. Indeed, it prevents the spread of damaging agents to nearby tissues, eliminates cell debris and pathogens and finally sets the stage for the repair process, known as the proliferation and the remodelling phases. Immediately after injury, the innate immune system is activated, resulting in recruitment of inflammatory cells, neutrophils, macrophages and mast cells, from the circulation at the site of injury. Many inflammatory mediators are released in the extracellular space, including cytokines, histamine or eicosanoids derived from arachidonic acid such as prostaglandins or leukotrienes.

The acute inflammation is characterised by rapid onset and is generally resolved between several days to several months.