Timiline® - A New Generation of Slimming Products

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Abstract

Today the biological mechanism most commonly used by slimming products (caffein and methylxanthins) is the inhibition of the degradation of cAMP by inhibiting the phosphodiesterase enzyme. Indeed, maintaining the level of cAMP enables the activation of the protein kinase depending on the cAMP which in turn phosphorylates and activates the hormone-sensitive lipase inducing the hydrolysis of triglycerides into fatty acids and glycerol. However, the activation and preservation of this biological pathway remains dependent on a strict hormonal control and so dependent on nutritional factors. Moreover, these slimming actives enable, in appropriate hormonal conditions, only a preservation of lipolysis, but they do not enable in any way the management or the use and so the elimination of fatty acids released into the adipocyte.

To be really slimming, a topical active must enable the reduction of lipogenesis, the increase in lipolysis and the promotion of the management and the use of fatty acids released. This should be done without being dependent on a strict hormonal control. For this reason, we have chosen to explore a new biological pathway involving FIAF adipokine. This adipokine has the ability to regulate different key-enzymes, that are non hormone-sensitive, involved in the storage and the use of lipids. Indeed, this adipokine, produced by adipocytes, can inhibit the LPL (Lipoprotein Lipase) activity and so inhibit lipogenesis by inhibiting the arrival of fatty acids at the level of the adipocytes. At the same time, the adipokine FIAF stimulates the non hormone-sensitive lipolytic enzyme ATGL (Adipose Triglyceride Lipase) and also activates the management and use of fatty acids released by lipolysis.

Transcriptomic technology has been used in order to look for the molecules stimulating the expression of the FIAF adipokine gene at the level of adipocyte. This technology has enabled the isolation of Timiline®, a polyglucuronic acid obtained after modification by a biotechnological process. The transcriptomic study has not only enabled the revelation of the stimulating activity of the expression of the FIAF gene by Timiline® but it has also shown that this molecule did not activate any oncogene and did not repress any gene essential to life. To reinforce these preliminary results, various experiments (two *in vitro* studies and a clinical study) have shown the slimming activity (reduction of the adipocytic hyperplasia and hypertrophy) of Timiline®.

Introduction

Today, 80-90% of women have or will have cellulite. This terminology describes a visible physical alteration in women's bodies and, rarely, in men's bodies. The typical appearance on the skin is a wavy surface associated with an increase in fatty deposits. Cellulite manifests in the skin of women of all ages, all ethnic origins and all body shapes and weight. It is accurate to state that weight gain can reinforce the appearance of cellulite, but even slim women can have in it their bodies.

In order to minimise this aesthetic problem, research of innovative and efficient cosmetic ingredients is on-going. Knowledge concerning adipocyte physiology increases and leads to new active ingredient proposals, acting directly on fat release inside the adipocytes.

Therefore, our company has developed a new slimming active, Timiline®, obtained by biotechnology. The company has chosen a physiological route not yet explored, the adipokine FIAF (Fasting Induced Adipose Factor) one, a protein synthesised by the adipocyte, and capable of acting on lipolysis and lipogenesis. In fact, Timiline® stimulates the synthesis of adipokine FIAF and apolipoproteins and therefore can reduce the hypertrophy and hyperplasia of adipose tissue.

This approach is really innovative and opens new perspectives for developing a new generation of competent slimming cosmetics against cellulite.

Etio-Physiology of Cellulite

Lipid Metabolism

Lipid metabolism consists of the absorption, the transport, the storage, the release and finally the use of lipids into the body.

At the organism level the lipid input, and in particular that of fatty acids, comes from food.