

Cellulosomes®: New Technology for Skin Sublimation

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Abstract

Scientific progress leads us to a paradox: we know an increasing number of living species but at the same time, this number is decreasing. For thousands of years, human activity has caused the disappearance of 5% of the number of species every ten years, corresponding to an extinction rate 1000 times greater than the natural rate. The conservation of biodiversity, guaranteeing future evolution, could be attained by turning to new technologies.

Our company has started the “Noah’s Ark operation” via the development of plant cell cultures of sea plants. These so-called “undifferentiated” cells only require a reduced amount of basic plant matter. However, they retain all the cell potentials as stem cells and are called “Cellulosomes”.

The first of these sea plants to be cultured was sea fennel. The molecular integrity of the components of these “Cellulosomes CIC₂”, real active cells, demonstrated their performance due to their specific structure in the restructuring of the Stratum Corneum, the biochemical re-balance of the epidermal barrier, the restoration of optimal hydration and the protection against environmental attacks.

Introduction

Since time immemorial, men have harvested and used marine plants in order to extract their molecules for use in different areas of application. However, the increase in demand, quantity and plant diversity poses a real problem: more and more species are now protected, with the risk that we may become deprived of the benefits of this coastal flora.

In order to preserve this resource, we launched our “Noah’s Ark” operation, by cultivating plant cells from marine plants. Thanks to this technology, we are working on two fronts:

- to ensure sustainable development
- to offer in a single active ingredient the molecular integrity of the plant’s components, without solvents or preservatives in an original and bioavailable form: Cellulosomes®.

This technology also gives us the possibility of directing the metabolism of these cells. Under a given stress or environment we have a potentiation of the defence molecules’ expression.

These “future active ingredients” will widen the pallet of formulators and that, in the most perfect respect of the vegetable marine resource. Moreover, this technology gives us the possibility of reconstituting, in a given medium, the whole plant.

With no more eradicated species, we become responsible for marine plant diversity.

The Criste Marine Cellulosomes®: CIC₂

Cellulosomes® are plant cells from dedifferentiated marine plants. This cellular dedifferentiation leads globally to the expression of juvenile characteristics.

These Cellulosomes® are obtained by carrying out *in vitro* tests, based on an explant from an area of the plant with intense division (stem, foliage, roots, etc.) a callus of undifferentiated, totipotent cells. These cells are cultivated in suspension in a calibrated, aseptic environment under white light conditions.

After harvesting, filtering, freezing and lyophilisation, microcondensates of active molecules are obtained: Cellulosomes®, the latter presenting in the form of fine powder which can be directly incorporated into a cosmetic formulation. The first plant to have been cultivated in this way is Criste Marine, which has been studied and analysed for several years in our laboratories.

The membrane of the cell is pectocellulosic and its different components are presented overleaf.

In the form of Cellulosomes®, this original composition revealed unsuspected activities on global epidermal protection.