

Distinctive® Phytostem Gardenia

INCI: Glycerin, Gardenia jasminoides Meristem Cell Culture, Xanthan Gum

October 19, 2010 rev.

Plant Tissue Culturing

In recent years, researchers have successfully developed active ingredients through *plant tissue culturing*. Many medicinal, nutritional and cosmetic active ingredients have been enhanced through this technology.

Resources of Nature, in partnership with global leaders in this field, can now selectively harvest cells from a plant, allowing the utilization of even the most rare plant species without harm. These cells are specially cultivated to generate cultures rich in plant stem cells and complex compounds. These specifically designed plant cell cultures act as nature-made liposomes and are fully compliant with the skin, perfect for delivering their contents of powerful antioxidants and cell regenerating molecules.

Up until recently, harvesting these highly active cells had been extremely difficult and expensive. Through advances in the most specialized processing technologies, they are now available in quantities feasible for commercialization for cosmetic applications as “**Distinctive® Phytostem Cell Ingredients**”.

Compared to standard botanical extraction methods, this highly sustainable, eco-friendly technology provides higher purity products with up to 1000 times the active molecule concentrations, and because of their highly controlled production techniques, Distinctive® Phytostem Cell Ingredients meet and exceed Certified Organic and Bio-Eco Cosmesi guidelines.



Distinctive® Phytostem Gardenia is derived from a tropical evergreen shrub native of southern Asia, *Gardenia jasminoides*, also known more simply as Gardenia or Cape Jasmine. Prized for its fragrant white blooms, the gardenia has been cultivated in gardens for over a thousand years for its ornamental value and use in traditional medicine. In recent years, the gardenia has been found to be helpful in the treatment of numerous ailments and has been used to treat pain, heal wounds and reduce swelling.

Distinctive® Phytostem Gardenia provides the skin with replenishing skin nutrients, the healing and regenerative properties of stem cells, moisturizing phytosterols and polysaccharides, along with protective substances called phenylpropanoids, such as feruloyl-6-glucoside, a highly effective anti-oxidant. It is effective in protecting the skin's extracellular matrix from degradation by metalloproteinases and helps stimulate collagen production to improve skin tone, elasticity and minimize wrinkles.

- ◆ ECM Protection
- ◆ Collagen Production

- ◆ Firming
- ◆ Restructuring

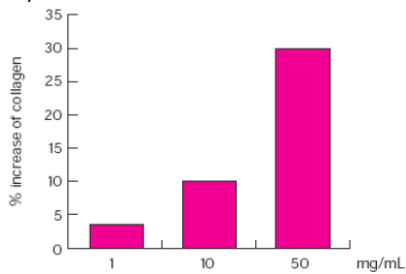
- ◆ Anti-Aging
- ◆ Wrinkle Reduction

Distinctive® Phytostem Gardenia

INCI: Glycerin, Gardenia jasminoides Meristem Cell Culture, Xanthan Gum

STIMULATION OF NEW COLLAGEN SYNTHESIS

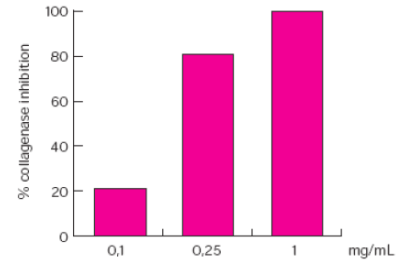
Monolayer culture of Human Foreskin Fibroblasts (HFF1) and test sample* incubated for 72 hours. Quantification of collagen assessed via colorimetric method (Sirius red dye). Results expressed as percentage of produced collagen normalized to the total cell viability assessed by MTT test.



Efficiently stimulates the physiological synthesis of new collagen, restoring its unavoidable loss associated with aging.

ANTI-COLLAGENASIS ACTIVITY

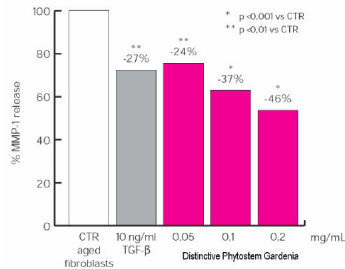
3D gel of type I collagen incubated for 15 hours with collagenase and test sample*. Amount of non-degraded collagen was estimated by a spectrophotometric method (hydroxyproline content).



Strongly inhibits collagenase by limiting collagen degradation and preventing skin damage and firmness loss.

MMP-1 INHIBITION IN ACCELERATED AGED FIBROBLASTS

Ability to limit the synthesis of MMP-1 (collagenase) was assessed in a model of intrinsic aging with Normal Human Dermal Fibroblasts (NHDF) treated with H₂O₂ to induce the aging process. The test sample* or TGF-β, as positive control, were incubated for 72 hours. Levels of MMP-1 released in the medium were measured by ELISA assay.



Decreases the synthesis of MMP-1, an important aging marker involved in extracellular matrix degradation. This activity is dose dependent and comparable or even superior to that of TGF-β, showing a potent anti-aging effect

*This test has been performed on the powder form of Gardenia jasminoides cell cultures in order to avoid experimental interferences.

TYPICAL PROPERTIES

Composition
Appearance
Aflatoxins
GMO
Pesticides
Microbiology
Packaging
Storage
Shelf Life

DISTINCTIVE® PHYTOSTEM GARDENIA

Gardenia jasminoides cell cultures 20%, glycerin 80%, xanthan gum 0.3%
Yellow amber-colored liquid
Absent
Absent
Absent
Total microbial count: bacteria < 1000 UFC/g fungi < 100 UFC/g
1 kg
Store the product in the original, well closed container, in a cool, dry area and protected from light
12 months

FORMULATION GUIDELINES

Use Level: 1.0 – 3.0 %
Compatible with O/W emulsions, serums, etc. Introduce during the cooling phase. pH ≤ 6

The information contained in this technical bulletin is presented in good faith, and to the best of our knowledge believed to be true and accurate. No representations or warranties, expressed or implied is made or intended. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. No recommendation should be construed as an inducement to use a material in infringement of patents or applicable government regulations. In no event will Resources of Nature be responsible or liable for any loss of profits, lost goodwill, direct, special, indirect, incidental, or consequential damages of any nature whatsoever.