

HIBISCUS

YOUTH AND VITALITY FOR SENESCENT CELLS

ASSESSA

INNOVATION FOR A GREENER WORLD

FLOWER POWER

FLOWER POWER HIBISCUS

FLOWER POWER HIBISCUS is made of selected petals and buds of **HIBISCUS SABDARIFFA** encapsulated with polymers from **ACACIA SENEGAL**. FLOWER POWER HIBISCUS is a stable, dry, preservative-free ingredient with high biological activity for the care of aged skin.

HIBISCUS SABDARIFFA

Hibiscus sabdariffa is a plant of the Malvaceae family native to Africa that has been cultivated for thousands of years. It was introduced to Asia and the Americas in the 17th century and currently occurs in all warm regions of the world. Its wide use is due to the multiplicity of applications: the leaves and flowers are consumed as food, and the fibers are an important textile product. In China, the seeds are a source of oil, and other parts of the plant are used for their medicinal properties.

ACACIA SENEGAL

Acacia senegal is a species of tree native to semi-desert regions of Sub-Saharan Africa that, in stressful situations such as heat, dryness, malnutrition, wounds and microbial infections, produces an exudate rich in heteropolysaccharides that protects the plant. Acacia gum is produced mainly in Sudan, Chad and Nigeria. In food industry, it is used in confectionery and in pharmaceutical, as emulsifier, coating film and others.





INCREASES COLLAGEN SYNTHESIS IN SENESCENT FIBROBLASTS

HIBISCUS FLOWER

BIOACTIVE COMPONENTS

Hibiscus flowers contain a high percentage of organic acids including citric, hydroxycitric, malic and tartaric acid. The most relevant anthocyanins are delphinidin and cyanidin-based anthocyanins, including delphinidin-3-sambubioside (hibiscin), cyanidin-3-sambubioside (gossypianin), cyanidin-3,5-diglucoside and delphinidin (anthocyanidin). The petals contain flavonol-type polyphenols such as hibiscitrin, sabdarythrin, gossypitrin, gossytrin and other glycosides of gossypitrin, quercetin and luteolin, chlorogenic acid, protocatechuic acid, pelargonidic acid in addition to eugenol, quercetin, luteolin, and the sterols b-sitosterol and ergosterol. Hibiscus flowers and calyx are rich in mucilages, pectin, and carbohydrates from the arabinan group.

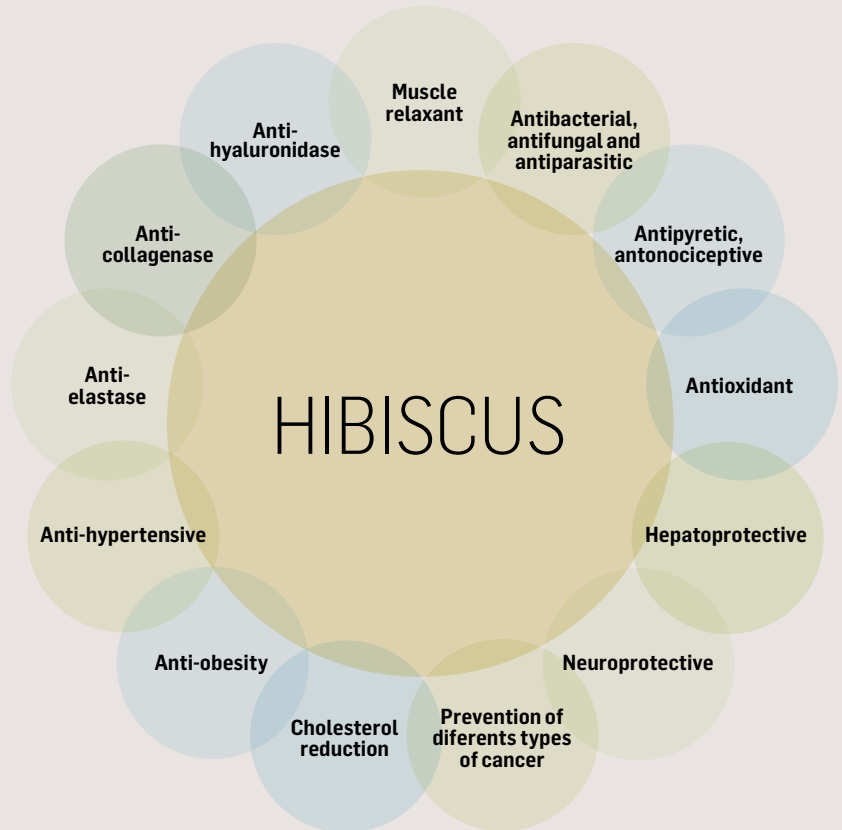
ACACIA GUM

BIOACTIVE ACTIVITY

Although acacia gum is widely used in the food and pharmaceutical industries, mainly because of its low toxicity, co-emulsifying and film-forming properties and its low viscosity, there are studies attesting the biological properties of this gum, as shown in the diagram at right.

A PLANT WITH MULTIPLE HEALTH BENEFITS

A comprehensive review of the scientific literature reported a wide range of important biological activities of Hibiscus sabdariffa, which can be summarized in the following scheme.



FAR BEYOND CANDY AND COATINGS



INCREASES CELL PROLIFERATION OF SENESENT FIBROBLASTS

FLOWER POWER HIBISCUS

FLOWER POWER HIBISCUS uses an exclusive ASSESSA active encapsulation technology through which fractions of Hibiscus sabdariffa hydrolyzed petals and buds are encapsulated with bioactive polymers from Acacia senegal, in a ingredient with high biological activity for the care of aged and tired skin.

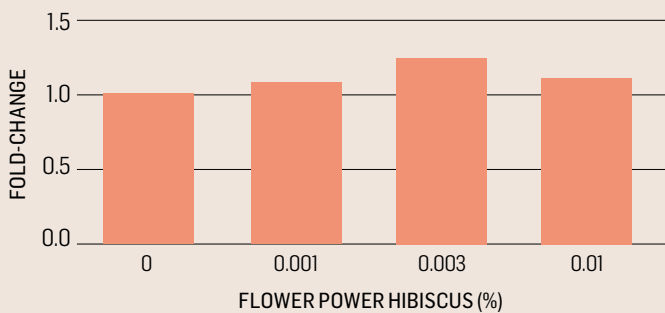
SENESCENCE

Senescence is a set of phenomena that happen to cells as we age. Enzymes called sirtuins (SIRT) are related to aging and transcriptional, apoptosis and stress resistance.

EXPRESSION OF ANTI-SENESCENCE AGENTS SIRT 1 AND SIRT 3

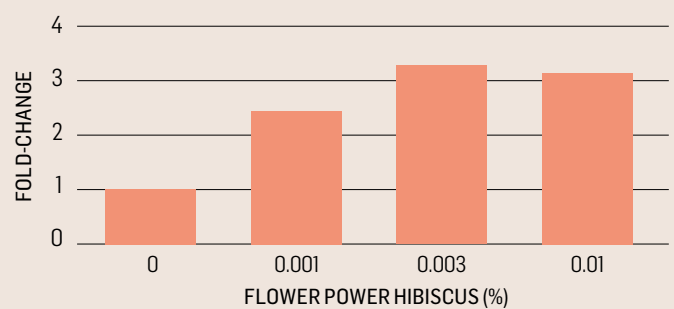
The assay aimed to evaluate the expression of SIRT1 (cell nucleus) and SIRT3 (mitochondria) markers linked to longevity in senescent human primary fibroblasts. Activation of SIRT 1 suppresses the aging of several important cells, including dermal fibroblasts, responsible for the synthesis of Collagen, Elastin and Hyaluronic Acid. SIRT3 is mainly detected in mitochondria and are positively correlated with longevity.

SIRT 1 EXPRESSION (%)



SIRT1 EXPRESSION: Senescent fibroblasts exposed to 0.003% FLOWER POWER HIBISCUS showed a 26% increase.

SIRT 3 EXPRESSION (%)

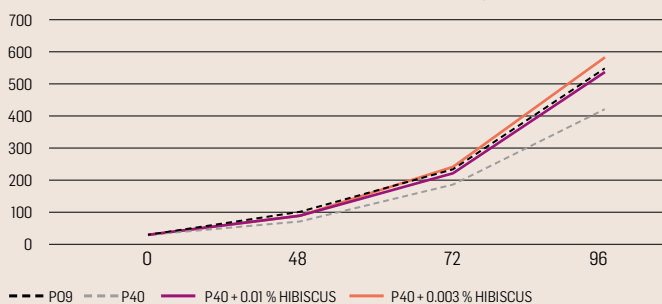


SIRT3 EXPRESSION: Senescent fibroblasts exposed to 0.001% HIBISCUS showed a 2.4-fold increase; a 3.24-fold increase in the presence of 0.003% and of 3-fold in the presence of 0.01%.

CELL VITALITY

Growth rate of young fibroblasts (P9) compared with aged (senescent) fibroblasts (P40) and senescent fibroblasts in contact with different concentrations of FLOWER POWER HIBISCUS.

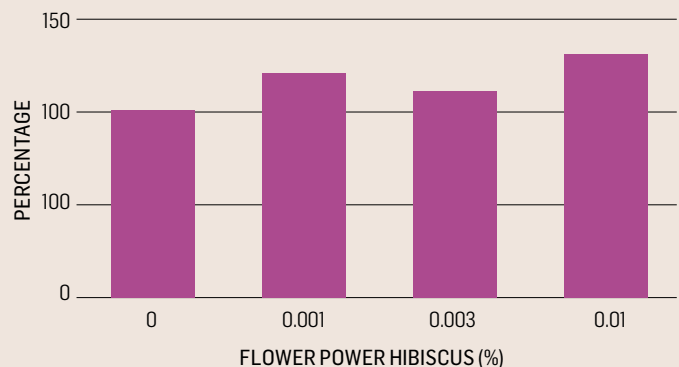
CELLULAR DENSITY (10^3)



Senescent fibroblasts (P40) treated with 0.01% HIBISCUS have more activity and replicate faster than young fibroblasts. Aged fibroblasts treated with 0.003% HIBISCUS show as much vigor as young ones.

COLLAGEN SYNTHESIS

It is important to assess the functionality or metabolic vitality of aged fibroblasts. As consequence of senescence fibroblasts produce less collagen, elastin, and hyaluronic acid.



All concentrations showed a significant increase in collagen synthesis by senescent fibroblasts: 30% increase in treated cells with 0.001%, 16% increase with 0.003% and 22% increase with 0.01%.

HIBISCUS

YOUTH AND VITALITY FOR SENESCENT CELLS



BENEFITS OF FLOWER POWER HIBISCUS



**FLOWER
POWER
HIBISCUS**
POWERFUL
ANTI-
SENESCENCE
ACTIVE

USAGE LEVELS
0.1 to 0.2%

INCI NAME
Hibiscus Sabdariffa
Flower Extract
and Acacia
Senegal Gum

- Rejuvenates senescent cells, restoring their vitality and functionality
- Increases collagen synthesis in senescent fibroblasts at active concentrations below 0.01%.
- Increases the expression of anti-senescence agents SIRT1 and SIRT3 in aged cells.



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