ACEROLA

FRULIX

LIQUID FRUITS • EXCLUSIVE TECHNOLOGY

NATURAL ORIGIN 99.55%

FRULIX ACEROLA

FRULIX ACEROLA is obtained through an exclusive biotechnological process that mimics the natural ripening of the fruit. Using the fruits' native enzymes ASSESSA transforms its pulp into a crystalline liquid with all the active ingredients of the fruit, in concentrations equivalent to those found in nature.

PRODUCED WITHOUT THE ADITION OF SOLVENTS

ASSESSA

INNOVATION FOR A GREENER WORLD

COSMOS APPROVED

ACEROLA

100 TIMES MORE VITAMIN C THAN ORANGE OR LEMON

Acerola, also known as "Barbados Cherry", is a tropical fruit native to the Antilles Islands and to the north of South America and is currently cultivated in various areas around the world, including Brazil. Its cultivation was introduced to Brazil in the middle of the 1950s, with fruits brought from Puerto Rico.

The plant belongs to the Malpighiaceae family and is a bush or shrub of 2.5 m in height with a dense crown formed of small (2-8 cm) shiny dark green leaves. Its flowers range in color from pink to violet. The fruit is a drupe with a smooth surface and is divided into three segments. Its size varies from 3 to 6 cm in diameter. The external coloration varies from orange to dark red, when ripe.

The pulp is fleshy, succulent and orange-colored. Acerola achieved its current status through the discovery of its high levels of vitamin C – 100 times greater than those of oranges and lemons, 20 times greater than guavas and 10 times greater than cashew fruits or mulberries.

As well as the high levels of vitamin C, which established acerola's fame, it also contains vitamins A, B1 and B2 in appreciable quantities, and is rich in calcium, iron and phosphorous.

Acerola is recommended to treat colds, flu, liver dysfunctions, pulmonary tuberculosis, diabetes and cicatrizing problems.

COMPOSITION

PROTEINS (mg/L)

AVG.	MINIMUM
1126.00	**900.00**

MINERAIS

ELEMENT	CONE (mg/L)
Na	**206.68**
K	**1136.75**
Ca	**73.28**
Mg	**140.92**
Mn	**0.94**
Cu	**2.82**
Zn	**1.88**
Fe	**10.33**

VITAMINS*

VITAMIN	CONC. (mg/L)
Thiamine (B1)	**2.95**
Pyridoxine(B6)	**0.74**
Folic Acid	**2.51**

*Tested after 4 months from manufacturing

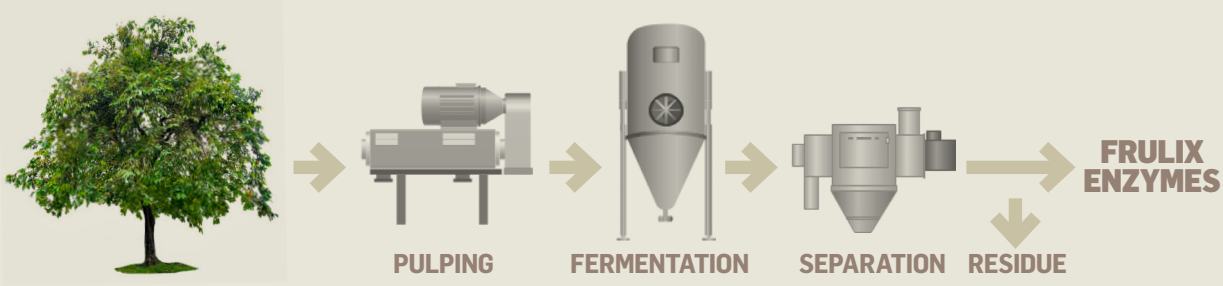
FRULIX **EXCLUSIVE** PROCESS

1 THE TECHNOLOGY

FRULIX is obtained through an exclusive biotechnological process that mimics the natural ripening of the fruit. Using the native enzymes that change the texture of the fruit during its ripening, it is possible to transform its pulp into a crystalline liquid.

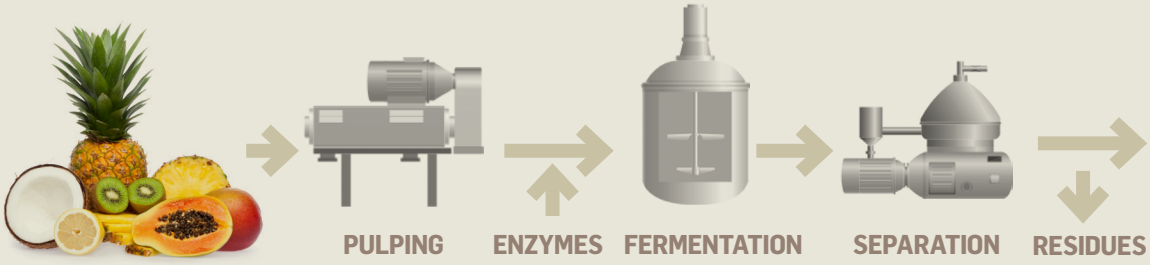
2 PRODUCTION OF ENZYMES

The fruits are harvested, washed and processed into a paste. The slurry is inoculated with microorganisms and the semi-solid mass is placed to ferment. The mixture is separated and the enzymes are removed from the wort.



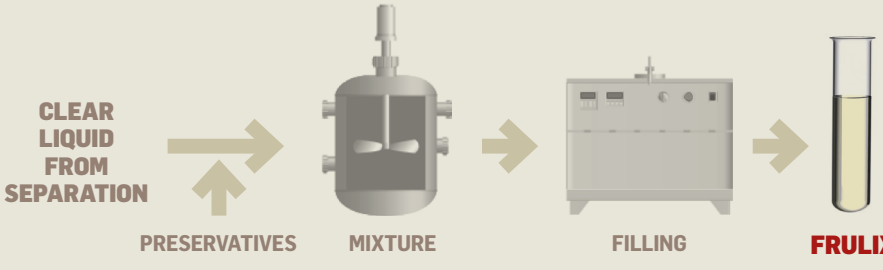
3 PROCESSING THE FRUITS

The fruits are harvested, washed and processed into the pulp. Seeds and bark are discarded. The pulp is inoculated with the Frulix Enzymes. The residues (fibers, solids) are removed and FRULIX is obtained. The product is stabilized and preserved.



4 FRULIX

The clear liquid from the separation step receives preservatives, mixture and filling.



AS A MORE CONCENTRATED PRODUCT, **FRULIX ACEROLA** SHOULD BE USED IN SMALLER CONCENTRATIONS THAN THOSE NORMALLY USED WHEN MAKING FORMULAS WITH CONVENTIONAL EXTRACTS.

APPLICATIONS

SKIN CARE PRODUCTS
EMULSIONS, MASKS, SERUMS, MATURE SKIN PRODUCTS, LIQUID AND BAR SOAPS.

HAIR CARE PRODUCTS
SHAMPOOS, CONDITIONERS, HAIR MASKS, LEAVE ON AND SERUMS.

FRULIX IS A SOLVENT FREE PRODUCT

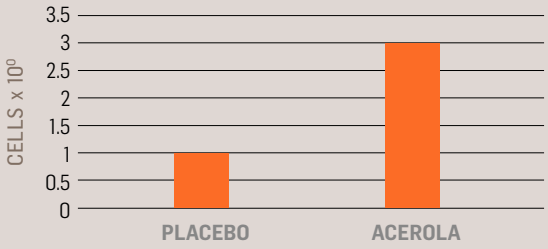
INCI NAME
Malpighia Glabra (Acerola) Fruit Extract, Sodium Benzoate and Potassium Sorbate

TESTS

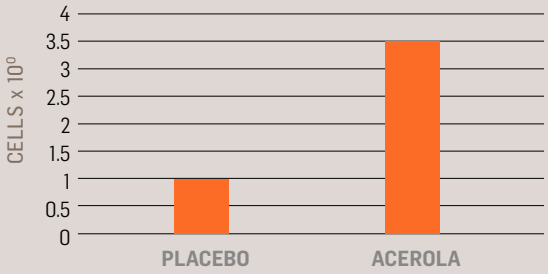
SKIN CELLS STIMULATION

Cultures of human Keratinocytes and Fibroblasts were incubated in an appropriate medium for 48 hours, in the presence of FRULIX ACEROLA. The results shown in the figures below demonstrate that FRULIX ACEROLA stimulates the metabolism of skin cells.

STIMULATION OF FIBROBLASTS



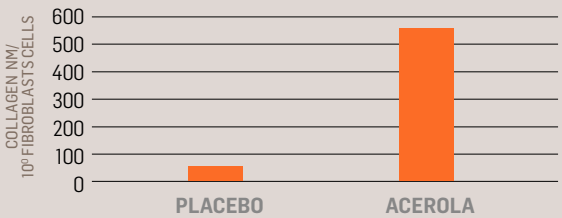
STIMULATION OF KERATINOCYTES



STIMULATION OF COLLAGEN PRODUCTION

Fibroblast human cells were incubated in supplemented RPMI medium and the viability of the cells was evaluated using the MTT method. The cultivated cells were then incubated in multiwell microplates containing IgG, in a serum albumin medium for 24 hours. The collagen produced was measured through an ELISA reader adjusted to 405 nm. The results shown below demonstrate that FRULIX ACEROLA stimulates the production of type I Collagen.

STIMULATION OF COLLAGEN I PRODUCTION



ANTIOXIDANT

The antioxidant activity of FRULIX ACEROLA was also evaluated using the DPPH (2,2-difenilpicryl-hidrazyl) method. The "efficient concentration" or EC50 value is defined as the concentration of substrate that causes 50% loss of the DPPH activity. The EC50 value of FRULIX ACEROLA was found to be 33.8 µg/ml.

FUNCTIONS

The vitamins, proteins and bioflavonoids present in FRULIX ACEROLA contribute to the improvement of the elasticity of the skin, and have antioxidant and dermoprotecting activity. FRULIX ACEROLA is also recommended for formulations of hair-care products such as shampoos and conditioners for its protective and nutritive qualities.

USAGE LEVELS

FRULIX ACEROLA is compatible with the majority of ingredients used in cosmetic formulations for the treatment of skin and hair and may be incorporated cold, directly into the aqueous phase of the formulas, in accordance with the suggestions of the table below. It is stable at temperatures up to 90 ºC, in pH conditions from 4.00 to 11.00.

PRODUCT	(%)
Moisturizing cream	**0.3 to 0.8**
Nutritive lotion	**0.2 to 0.6**
Calming lotion	**0.2 to 0.6**
Nutritive cream	**0.5 to 1.0**
Face mask	**0.8 to 1.5**
Shampoo	**0.2 to 0.4**
Conditioner	**0.2 to 0.4**
Mousse	**0.3 to 1.0**

ACEROLA

NATURAL ORIGIN 99.55%

FRULIX LINE

FRULIX

LIQUID FRUITS • EXCLUSIVE TECHNOLOGY

AÇAÍ
[Euterpe Oleracea Fruit Extract]

ACEROLA
[Malpighia Glabra Fruit Extract]

APPLE (MAÇÃ)
[Malus Domestica Fruit Extract]

BANANA
[Musa Sapientum Fruit Extract]

BLUEBERRY
(MIRTILO)
[Vaccinium Myrtillus Fruit Extract]

CAJÁ
[Spondias Mombin Fruit Extract]

COCOA (CACAU)
[Theobroma Cacao Fruit Extract]

CUPUAÇU
[Theobroma Grandiflorum]

GRAPE
[Vitis Vinifera Fruit Extract]

GUAVA (GOIABA)
[Psidium Guajava Fruit Extract]

JABUTICABA
[Plinia Cauliflora Fruit Extract]

KIWI
[Actinidia Deliciosa Fruit Extract]

LEMON (LIMÃO)
[Citrus Limon Fruit Extract]

LYCHEE (LICHIA)
[Litchi Chinensis Fruit Extract]

MANGO (MANGA)
[Mangifera Indica Fruit Extract]

MELON (MELÃO)
[Cucumis Melo Fruit Extract]

MULBERRY (AMORA)
[Morus Nigra Fruit Extract]

ORANGE
(LARANJA)
[Citrus Aurantium Dulcis Juice]

PAPAYA
(MAMÃO)
[Carica Papaya Fruit Extract]

PASSION FRUIT
(MARACUJÁ)
[Passiflora Edulis Fruit Extract]

PEACH
(PÊSSEGO)
[Prunus Persica Fruit Extract]

PEAR
(PERA)
[Pyrus Communis Fruit Extract]

PINEAPPLE
(ABACAXI)
[Ananas Sativus Fruit Extract]

PITANGA
[Eugenia Uniflora Fruit Extract]

RASPBERRY
(FRAMBOESA)
[Rubus Idaeus Fruit Extract]

SOURSOP
(GRAVIOLA)
[Annona Muricata Fruit Extract]

STRAWBERRY
(MORANGO)
[Fragaria Vesca Fruit Extract]

WATERMELON
(MELANCIA)
[Citrullus Lanatus Fruit Extract]

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