

ACEROLA  
SKINCARE

FRULIX

LIQUID FRUITS • EXCLUSIVE TECHNOLOGY



## 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 ADDITION  
OF SOLVENTS**

# ASSESSA

INNOVATION FOR A GREENER WORLD



## 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 phosphorus.

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

### MINERALS

ELEMENT	CONC. (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



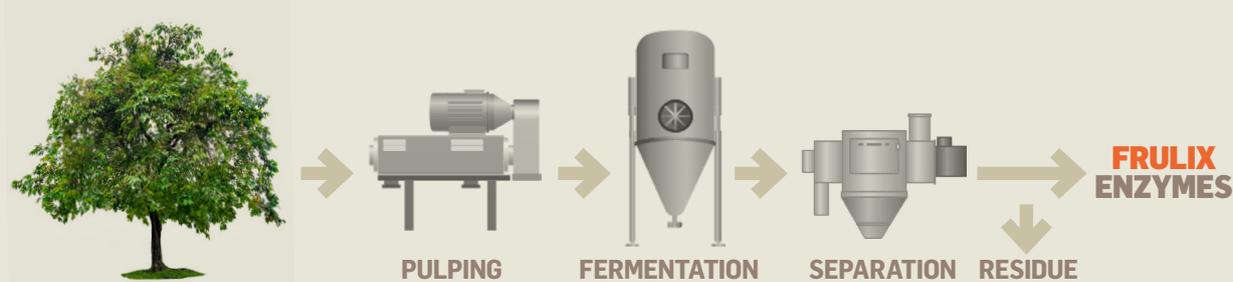
## 1 THE TECHNOLOGY

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.



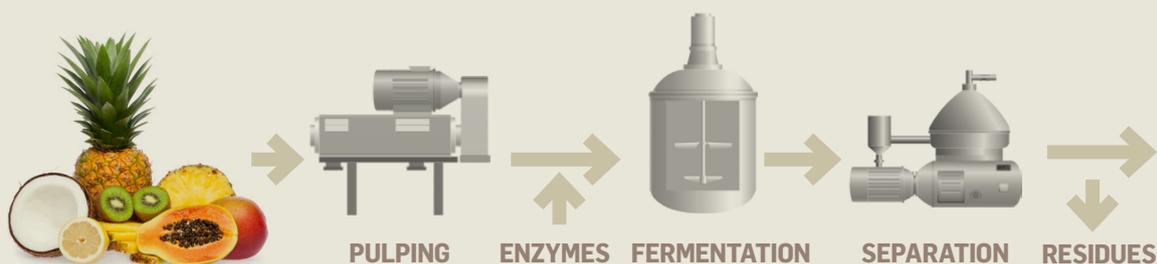
## 2 PRODUCTION OF ENZYMES

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.



## ANTIOXIDANT ACTIVITY

The antioxidant activity of **FRULIX ACEROLA** was 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.



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

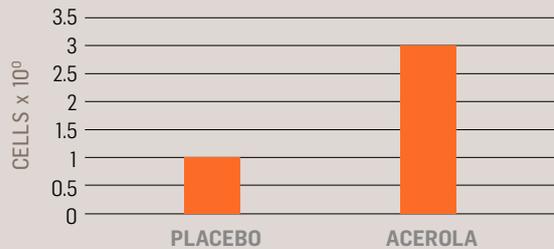
### INCI NAME

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

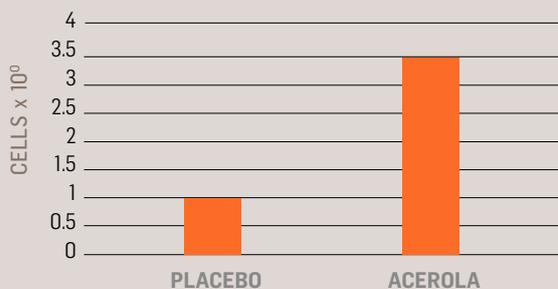
## SKIN CELLS STIMULATION

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



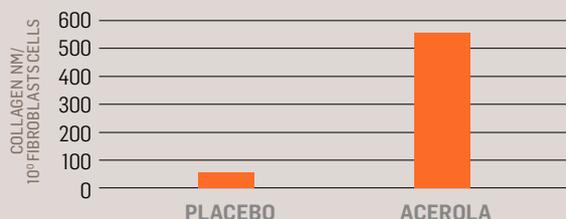
### STIMULATION OF KERATINOCYTES



## 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



## FUNCTIONS

The vitamins, proteins and bio-flavonoids 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 °C, 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



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SKINCARE

FRULIX

LIQUID FRUITS • EXCLUSIVE TECHNOLOGY

NATURAL  
ORIGIN  
99.55%

FRULIX LINE



**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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