

## PRODUCT SHEET - OKAN POWDER

# Miraculin – A unique sensory molecule in the world

**Synsepalum dulcificum**, from the Sapotaceae family, is a plant native to tropical West Africa, cultivated through agroforestry and harvested by hand-picking, following traditional know-how passed down from generation to generation.

### FRUIT DESCRIPTION

Oval or ellipsoid berry, 2–4 cm long.  
Color: bright red at maturity.  
Flesh: fine, pulpy, slightly sweet.  
Seed: contains a large central stone.  
Harvested at full maturity for optimal miraculin content.

### CURRENT PRODUCTION AREA

Crops in humid equatorial zones, particularly in the wooded savannas of Ghana (especially the Ashanti region).

### A MOLECULE WITHOUT KNOWN EQUIVALENT

Miraculin is unique in the world. Natural, calorie-free, and tasteless on its own, it profoundly transforms taste perception.

No known industrial or synthetic equivalent. Unlike traditional sweeteners, it does not provide sweetness by itself but modifies how taste is perceived.

### PLANT DESCRIPTION

Tropical shrub reaching 1.5 to 5 meters in height.  
Dense foliage, evergreen, glossy dark green leaves.

### WHAT IS MIRACULIN?

Miraculin is a glycoprotein naturally present in the pulp of the miracle berry (*Synsepalum dulcificum*). This molecule gives the fruit its remarkable properties: it temporarily alters taste perception, turning acidic foods (such as lemon or vinegar) into sweet-tasting experiences. It was first isolated in 1968 by Japanese researchers Kurihara and Beidler.

### POTENTIAL APPLICATIONS

- Sugar reduction
- Chemotherapy support
- Culinary innovation
- Functional nutrition

### COMMERCIAL FORMS

Traditionally consumed fresh in the countries of origin.

Currently available as:

- Whole dried or freeze-dried berries
- Raw powder, low-temperature dried
- Lozenges or tablets in nutraceutical formulations

### HOW DOES MIRACULIN WORK?

Miraculin does not directly trigger a sweet taste: it acts as a taste modulator. Under neutral conditions (pH  $\approx$  7), it remains inactive. In an acidic environment (pH  $<$  6), it binds to sweet taste receptors (T1R2/T1R3) on the tongue.

- It blocks the perception of acidity and activates a sweet response in the brain, without any sugar or calorie intake.
- Duration of the effect: on average 20 to 45 minutes, depending on concentration, form consumed, and individual sensitivity.