



## ACEROLA: TINY FRUIT WITH IMMENSE NUTRITIONAL POWER

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### Abstract

Barbados cherry (*Malpighia emarginata*), commonly known as acerola, is a tropical fruit highly valued for its exceptional Vitamin C content (2000–4600 mg/100 g), far exceeding that of citrus fruits. In addition, it is rich in vitamins (A, B-complex), minerals, flavonoids, anthocyanins, and carotenoids, making it a potent functional food. Regular consumption supports immunity, reduces oxidative stress, promotes skin and hair health, and may offer cardioprotective and anticancer benefits. Owing to its tart flavor and high nutraceutical value, acerola is widely used in juices, jams, supplements, pharmaceuticals, and cosmetics. Adaptable to tropical and subtropical regions, it is a hardy, drought-tolerant crop with multiple harvests per year, holding great promise for nutrition security and sustainable health systems.

**Keywords:** Barbados cherry, Vitamins. Acerola, Immunity, Functional food

### Introduction

Barbados cherry (*Malpighia emarginata*), commonly known as Acerola, is a tropical fruit shrub native to the Caribbean, South America, and Central America. Although, the crop is quite old for Indian subcontinent, it received considerable attention only after 1950's owing to its extremely high vitamin C content (2000 – 4600 mg/ 100 g edible matter) (Kirker *et al.*, 2021). It is widely acclaimed as 'Nature's Vitamin Pill'.

Apart from Vitamin C, it contains a rich blend of antioxidants, flavonoids, and essential minerals, making it a functional food with immense nutraceutical potential.

### 1. Botanical description

**Tree:** Barbados cherry is an evergreen, bushy shrub or a small tree that can grow up to 5–6 meters tall. It has an upright to spreading habit with drooping, finely hairy branches.

**Leaf:** The leaves are elliptic, oblong, obovate, or narrowly oblanceolate with slightly wavy margins. They typically measure 2–7 cm in length and 9.5–40 mm in width. The apex is usually obtuse or rounded, while the base is acute to cuneate. Young leaves are covered with fine, white, silky hairs that can be irritating, whereas mature leaves are hairless, glossy, and dark green.

**Flower:** Flowers from April–November

**Fruit:** The fruits develop in the leaf axils, occurring singly or sometimes in clusters of two to three. They are generally oblate to round in shape with three distinct lobes, measuring 1–3cm in diameter and weighing about 3–5g. Although they resemble true cherries, they are actually three-carpellate drupes with a thin, glossy peel that turns bright red to orange at maturity. The fruits are very juicy, with soft pulp and a pleasant tart to sub-acid flavor (Orwa, 2009). Approximately it takes 3 weeks from floral anthesis to maturity of the fruits.

**Seed:** Each fruit generally contains three small, rounded seeds. Every seed possesses two large and one small fluted wing, giving them the appearance of three triangular, yellowish, leathery-coated, corrugated, and inedible ‘stones’.



Figure 1. Barbadoberry plant morphology

**2. Nutritional Richness**

The fruit is best known for its **Vitamin C content**, which is 30–50 times higher than that of an orange. A single Barbadoberry can meet or even exceed the recommended daily intake of this vital nutrient. In addition, it contains:

- **Vitamins:** A, B1 (thiamine), B2 (riboflavin), and B3 (niacin)
- **Minerals:** Iron, calcium, and phosphorus
- **Bioactive compounds:** Flavonoids, anthocyanins, and carotenoids
- **Dietary fiber:** Supports digestion and gut health

**Table 1. Comparison of Vitamin C content in selected fruits**

Fruit	Vitamin C (mg/100g)
Barbadoberry	1600–4500
Aonla	600
Guava	200–300

Orange	50–70
Lemon	30–50

**3. Health Benefits**

**Immunity Booster**

The exceptionally high Vitamin C concentration enhances immune defense, reduces susceptibility to infections, and supports wound healing.

**Antioxidant Powerhouse**

Rich in polyphenols and flavonoids, acerola protects the body against oxidative stress, delaying cellular aging and reducing the risk of chronic diseases.

**Skin and Hair Health**

Vitamin C aids collagen synthesis, keeping skin youthful, elastic, and radiant. It also promotes stronger hair growth.

**Anti-inflammatory Properties**

Regular consumption reduces inflammation, arthritis and metabolic disorders.

**Supports Heart Health**

Antioxidants and potassium content contribute to maintaining blood pressure, reducing cholesterol, and improving cardiovascular function.

**Anti-cancer Potential**

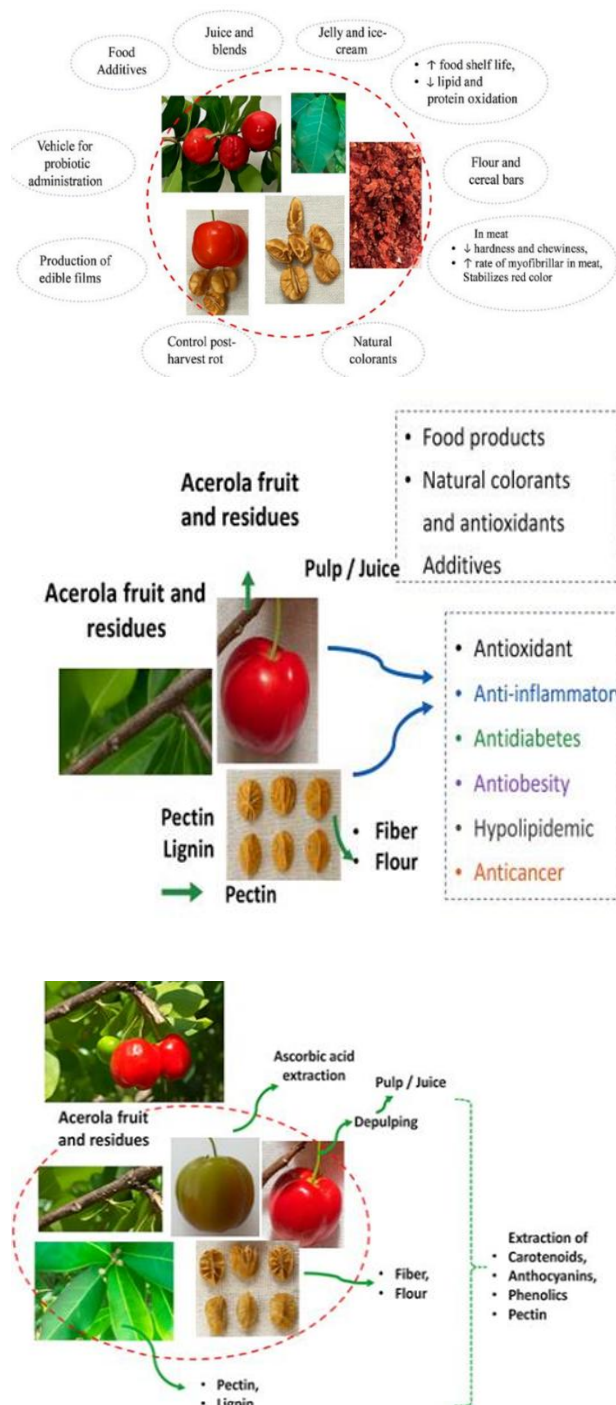
Preliminary research suggests acerola extracts may inhibit cancer cell proliferation due to its rich antioxidant profile.

**4. Uses and Applications**

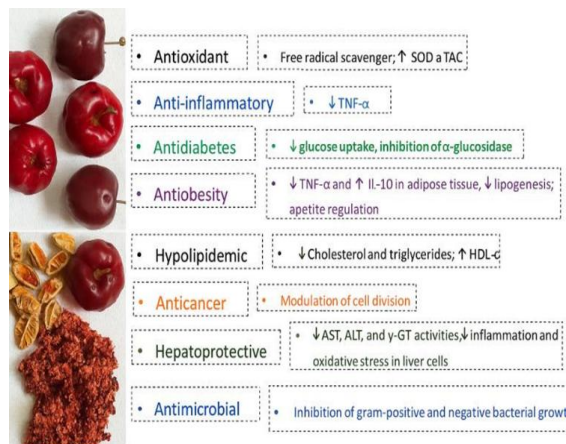
- Consumed fresh, though often tart in taste.
- Processed into juices, jams, syrups, and health supplements.
- Used in nutraceutical and pharmaceutical industries as a natural source of Vitamin C.

Product Type	Examples	Uses/Applications
<b>Fresh Consumption</b>	Fresh fruit	Direct consumption (limited due to tart taste and short shelf life)
<b>Processed Beverages</b>	Juice, nectar, squash, syrup, wine	Beverages, health drinks, blended juices
<b>Preserved Products</b>	Jam, jelly, marmalade, candy, fruit bars, pickles	Confectionery, spreads, snacks, preserved fruit items
<b>Nutraceutical Products</b>	Spray-dried acerola powder, Vitamin C tablets, capsules, extracts	Supplements, functional foods, health formulations
<b>Cosmetic Products</b>	Creams, serums, lotions, hair care items	Skin brightening, anti-aging, antioxidant and hair health applications
<b>Industrial Uses</b>	Natural colorant, preservative (ascorbic acid)	Food processing, shelf-life extension, natural additives

**Table 2. Different applications of Barbados cherry (Acerola)**



**Fig. 2: Potential application and benefits of Acerola**



**Fig. 3: Health benefits of Acerola**

### 5. Cultivation Aspects

The Barbados cherry thrives in tropical and subtropical climates with well-drained soils. It is drought-tolerant, hardy, and can be cultivated in both commercial orchards and home gardens. The plant requires moderate irrigation and produces fruit multiple times a year, making it economically viable.

### 6. Conclusion

Barbados cherry is rightfully termed as 'Nature's Vitamin Pill' due to its exceptional Vitamin C content and diverse health benefits. Promoting its cultivation and utilization can contribute to better human nutrition, preventive healthcare, and sustainable food systems.

### 7. References

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