



## Minor Fruits in Supplementing Health

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### Introduction

Human life (physical, mental and spiritual) is immensely influenced by the quantity and quality of food consumed. As the saying goes, “a man is what he eats.” From the past, minor fruits have played a very vital part in supplementing the diet of the people. The dependence on these fruits has gradually declined as more exotic fruits have been introduced. But many people in tribal areas still use them as a supplement to their basic need of food. Some of them are preserved for use in dry periods or sold in rural markets. But the popularity of these wild forms has recently decreased. Apart from their traditional use of food, potentially they have many advantages. They are edible and have nutritional food value, which provides the minerals like sodium, potassium, magnesium, iron, calcium, phosphorus, etc. These fruits have tremendous health benefits and these were in use in Ayurvedic medicine. The minor fruits, particularly for their antioxidant activity, are considered functional foods, foods that provide healthful substances in addition to calories and minerals. Their uses in the past included the treatment of many diseases such as gout, cystitis, arthritic pains (Deshmukh and Waghmode, 2011). Minor (Underutilized) species are defined in different ways such as minor, traditional, neglected, new, alternative, lost, orphan, promising, underdeveloped, etc. (Roy, 2014). Minor fruits are not so extensively cultivated, and their consumption and trade remain to be more limited. The rapid urbanization process has alienated man from nature. Many wild and minor edible fruit plants are on the verge of extinction; these were supplementary fruit in addition to our elite table fruits like mango (*Mangifera indica* L), grapes (*Vitis vinifera* L) litchi (*Litchi chinensis*), apple (*Malus x domestica*), etc. It emphasizes exploiting the potential usefulness of such valuable minor fruits, in combating the challenges of food and nutritional security to the ever-increasing population.

### Minor fruits



## 1. Ber

Ber is referred to as a 'King of arid fruit'. Botanically it is known as *Zizyphus jujube* is a tropical fruit species belonging to the family Rhamnaceae. It is believed to have been originated from Indo- China (India). It is a plant of very common occurrence. It grows wild in forests and also on wastelands through the mid-hills up to elevations of 1,400 meters. *Zizyphus* is a small thorny evergreen tree, with vine-like branches and dark green leaves. It has egg-shaped fruit of orange or brown, with edible acid pulp and hard central stone. The fruit has two varieties the wild one, called jharberi, is small and round, while the cultivated fruit is oval, fleshy, and bigger. It is sweeter compared to the smaller kind. *Zizyphus* consist of moisture 81.6 percent, protein 0.8 percent, fat 0.3 percent, minerals 0.3 Percent, and carbohydrates 17.0 percent per 100 grams. It's mineral and vitamin contents are calcium, iron, phosphorus, carotene, thiamine, riboflavin, niacin, and vitamin C. Its calorific value is 74. Both the varieties of the fruit contain *zizyphus* acid and tannins.

### Health benefits

The fruits have emollient and expectorant properties. They are also considered to be cooling and an anodyne and tonic. They are employed as an antidote to aconite poisoning and are recommended in nausea and vomiting. They are usually externally in poultices and are applied to wounds. The leaves are useful in treating conjunctivitis. An infusion of the leaves should be used as an eye lotion. *Zizyphus* is useful in the treatment of mental retardation.

## 2. Aonla

Aonla (*Emblica officinalis* Gaertn), known as Indian gooseberry, is an important fruit crop of the tropical and subtropical region of India. Native to India (originated to South Eastasia / Indo China) and belongs to family Euphorbiaceae. Aonla is one of the oldest Indian fruits. It reaches the source of vitamin C and its content of ascorbic acid is next to only that of Barbados cherry (*Malpighia glabra* L.) and also contains tannin, polyphenol, pectin, gallic acid, and fiber. About 600–900 mg of vitamin C is found in 100 g of aonla pulp (Pokharkar, 2005).

### Health benefit

Aonla fruits are used in the traditional Indian system of medicines, like ayurvedic and Unani, due to their therapeutic values (Agarwal & Chopra, 2004). The only fruits are used in medicines to treat the common cold, gastric troubles, headache, constipation, enlarged liver, etc (Chadha, 2003). Aonla is one of the three ingredients of the famous ayurvedic preparation, **triphala**, which is given to treat

chronic dysentery, biliousness, and other disorders. The plant is considered to be an effective antiseptic for cleaning wounds and it is also one of the many plant palliatives for snakebite and scorpion-stinging.

### **3. Beal**

Beal (*Aegle marmelos* Correa) also known as ‘Symbol of Lord Shiva’, Bengal quince, Indian quince, golden apple, holy fruit, stone apple, bel, bell, sirphal, maredoo, and other dialectal names in India. It is a handsome tree, native to northern India, and belongs to the family Rutaceae. Dimorphic twigs are a special feature of beal. It is a sacred tree, dedicated to Lord Shiva. The offering of beal leaves is a compulsory ritual of the worship of Lord Shiva in the hills. This importance seems large due to its medicinal properties. All parts of these trees, viz., root, leaf, trunk, fruit, and seed, are used for curing one human ailment or another. This fruit consists of carbohydrates, fats, proteins, Vitamin C, and minerals like Iron, Phosphorus, Carotene, and thiamin. The presence of such nutrients including fibers makes it useful in the treatment of digestive and gastrointestinal disorders.

### **Health benefits**

Beal fruits are prescribed to cure diarrhoea and dysentery. The ripe fruit is good and simple to cure dyspepsia. The roots and the bark of the tree are used in the treatment of fever by making a decoction of them. The leaves are made into a poultice and used in the treatments of ophthalmia.

### **4. Custard-apple**

Custard apple (*Annona squamosa*) popularly known as “Sitaphal, sugar apple, sweetsop, Sharifa, and noi-na”, is one of the most important underutilized fruits of India. *Annona squamosa* is one of the finest fruits gifted to India by Tropical America. Custard apple belongs to the family Annonaceae. A calorific value of 100-gram edible matter is 105 I.U. The ripe fruits are rich in sugars. The edible portion of the fruit varies from 28 to 55 percent. The 100g pulp contains 70.5 g moisture, 23.5 g carbohydrate, 1.6 g protein, 0.9 g minerals, 1.5 mg iron, 17 mg calcium, 47 mg phosphorus, and 37 mg Vit. C (Dashora *et al.*, 2004). Custard apple contains anti-oxidants like Vitamin C, which helps to fight free radicals in our body.

### **Health benefits**

An *Annona* fruit contains several polyphenolic antioxidants. Among them, the most prominent in *Annona* family fruits are Annonaceous acetogenins. Acetogenin compounds such as antimycin, bullatacinare, etc are powerful cytotoxins and have been found to have anticancer, antimalarial, and antihelminthic properties. It characteristically contains a good amount of dietary fiber (3 g per100 g)

that helps prevent the absorption of cholesterol in the gut. The fiber also helps protect the mucous membrane of the colon from exposure to toxic substances by binding cancer-causing chemicals in the colon.

## **5. Passion fruits**

Passion fruits (*Passiflora edulis*) or granadilla, are brimming with numerous plants derived health benefiting nourishment essentials for optimum growth. Passions are native to subtropical wild regions of South America, probably originated in Paraguay. The plant is an avid climber (vine) which grows on anything that it can grab through its tendrils. Botanically, this exotic fruit belongs to the family of Passifloraceae. Delicious, passion fruit is a rich source of antioxidants, minerals, vitamins, and fiber. 100 g fruit contains about 97 calories. It is also a very good source of minerals. Iron, copper, magnesium, and phosphorus are present in adequate amounts in the fruit. Dried passion flowers contain an alkaloid 'passiflorin' which is used for relieving pain and inducing sleepiness.

### **Health benefits**

The fruit is a very good source of dietary fiber. 100 g fruit pulp contains 10.4 g or 27% of fibre. Good fiber in the diet helps remove cholesterol from the body. In addition, dietary insoluble fiber by acting as a bulk laxative helps protect the colon mucous membrane by decreasing exposure time to toxic substances in the colon as well as binding to cancer-causing chemicals in the colon. Passion fruit is good in vitamin C, providing about 30 mg per 100 g. Vitamin C (ascorbic acid) is a powerful water-soluble antioxidant. Consumption of fruits rich in vitamin C helps the body develop resistance against flulike infectious agents and scavenge harmful, pro-inflammatory free radicals. The fruit contains very good levels of vitamin (which provides about 1274 IU per 100 g), and flavonoid antioxidants such as  $\beta$ carotene and cryptoxanthin $\beta$ .

## **6. Star fruit**

Star fruit (*Averrhoa Carambola*), also known as carambola, is a star-shaped tropical fruit with a sweet and sour flavor. It belongs to the family Oxalidaceae. This evergreen tree is native to Southeast Asia and the Indian Subcontinent. *A. carambola* is a small tree or shrub that grows 5–12 meters tall, with rose to red-purple flowers. The flowers are small and bell-shaped, with five petals that have whitish edges. The flowers are often produced year-round under tropical conditions. Carambola is yet to gain popularity, especially in the western world. Star fruit is one of the very low-calorie exotic fruits. 100 g fruit just provides 31 calories, which is much lower than for any other popular tropical fruit.

Nonetheless, it has an impressive list of essential nutrients, antioxidants, and vitamins required for wellbeing.

### Health benefits

Star fruit is rich in antioxidant phytonutrients polyphenolic *flavonoids*. Some of the important flavonoids are quercetin, epicatechin, and gallic acid. Total polyphenol contents (Folin assay) in this fruit are 143 mg/100 g. These compounds help protect from the deleterious effects of oxygen-derived free radicals by warding them off the body. Its root extract is used as an antidote for poisoning and its crushed leaves are used for curing chickenpox, ringworm, and scabies.

### 7. Dates

Botanically, they are the fruits grown on the palm tree belonging to the family of Arecaceae, and scientifically named *Phoenix dactylifera*. The tree is believed to originate in the Mediterranean region or the Persian Gulf. Date palm is now grown extensively for its edible fruits under warmer climates across all the continents. An Arab says that “foot in running water and its head in the fire of the sky”. It is a moderate-sized dioecious tree, 7.5-15 m tall, without root suckers, stem clothed with remains of petiole bases (Gandhimathi and Sreedevi, 2012). It is a highly nutritious fruit. 1 kg fully ripe fresh dates provide approximately 3150 calories.

### Health benefits

The fruit is cooling, oleaginous, cardiogenic, fattening, constipation, good in heart complaints, abdominal complaints fever, vomiting, and loss of consciousness. They contain health-benefiting flavonoid polyphenolic antioxidants known as tannins. Tannins are known to possess anti-infective, anti-inflammatory, and antihemorrhagic (prevent easy bleeding tendencies) properties. The roots are also used to stop toothache. The central tender part of the plant is used in gonorrhoea.

### 8. Phalsa

Phalsa or Dhamani is scientifically known as *Grewia subinequalis* (Syn. *G. Asiatica*), belonging to the family Tiliaceae. The tree is small in size about 15-20 feet in height. It is native to India and South Asia. The tree has a rough bark and drooping branches that are covered with hairs. The leaves are thick and big, ovate shaped with pointed tips. The fruits are purple and ripen on the tree. Leaf extract of phalsa has antibacterial activity against *Escherichia coli* and *Staphylococcus aureus*.

### Health benefits



The unripe fruit relieves inflammations and is used to treat respiratory, heart, and blood afflictions and to treat feverish conditions. The ripe fruit is cooling. It is used to allay heat conditions. It also benefits throat disorders. The fruits are a minefield of antioxidants and are useful in reducing cancer risk. They also relieve stomach ache. The juice is digestive, alleviates stomach ache, normalizes heart rate and blood pressure, and maintains it. It brings on urine in cases of stoppage of urine, removes thirst, protects against heat stroke, vomiting, nausea, and uneasy feelings due to heat. Phalsa removes headaches, pimples, and burning sensations in the body, acidity, leucorrhea, and aversion to food. It cures anemia and removes skin dryness.

## **9. Jackfruits**

The largest tree-borne fruit in the world, jackfruit (*Artocarpus heterophyllus*) is grown on a species of tree in the mulberry family is native to certain parts of Southeast and Southern Asia. The evergreen trees are large, often reaching a height of above 20 m. The jackfruits can sometimes weigh over 75 lbs. however, the average-sized fruits are 12 feet long, and 912" wide. The exterior of the fruit is green-yellow, with small spiky knobs, while the flesh is custard yellow, with a banana-like flavor. The leaves are oblong, oval, or elliptic, usually 4 to 6 inches in length and leathery, glossy, and deep green.

## **Health benefits**

Jackfruits are rich in dietary fiber, which makes them a good bulk laxative. It aids bowel movement and prevents constipation. Vitamin A helps in maintaining a healthy eye and good vision. Vitamin A in Jackfruit helps in the dose of requirements needed for your eyes. Jackfruit has anti-aging properties, which makes the skin appear young by slowing down the degeneration of the cells. The high iron content in this exotic fruit helps to prevent anemia and helps in proper blood circulation in your body. The root of the jackfruit tree forms the remedy for skin diseases, fever, and diarrhea. The latex of the fruit helps treat dysopia, ophthalmitis, and pharyngitis.

## **10. Mangosteen**

Mangosteen (*Garcinia mangostana* L.) is also known as the queen of tropical fruit or fruit of the gods or energy tablets or finest fruit of the world or mystery fruit. It is a tropical evergreen tree that belongs to the family Guttiferae and originated from Indonesia or South East Asia and is widely distributed throughout India, Myanmar, Malaysia, Philippines, Sri Lanka, and Thailand (Pedraza-Chaverri *et al.*, 2008). The mangosteen fruit is dark purple or reddish, with white, soft, and juicy edible pulp with a slightly acid and sweet flavor and a pleasant aroma (Jung *et al.*, 2006).





## Health benefits

The pericarp of mangosteen-fruit has been used as a medicinal agent by Southeast Asians for centuries in the treatment of skin infections and wounds, amoebic dysentery, etc. In Ayurvedic medicine, the pericarp of mangosteen-fruit has wide used against inflammation and diarrhea and cholera and dysentery. Mangosteen is good in vitamin C and provides about 12% of RDA per 100 g. Vitamin C is a powerful water-soluble antioxidant. Consumption of fruits rich in vitamin C helps the body develop resistance against flulike infectious agents and scavenge harmful, pro-inflammatory free radicals. It offers protection against stroke and coronary heart diseases.

## Conclusion

The high diversity of minor fruits plants plays a significant role in the food and nutrient security of the ever-increasing population of India or the world as a whole. Besides, due to the lacking medicinal value of these underutilized fruit crops and rapid deforestation, the germplasm of such important plants is threatened to be extinct. Thus, if this hidden wealth of novel fruit species and their medicinal compound is explored without further delay, then our country which is a rich source of genetic biodiversity will be in a position to occupy a sizeable share in the National and International Market for herbal medicine and without any confusion, we can say that growing population of our country will live their healthier and wealthier life ever.

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