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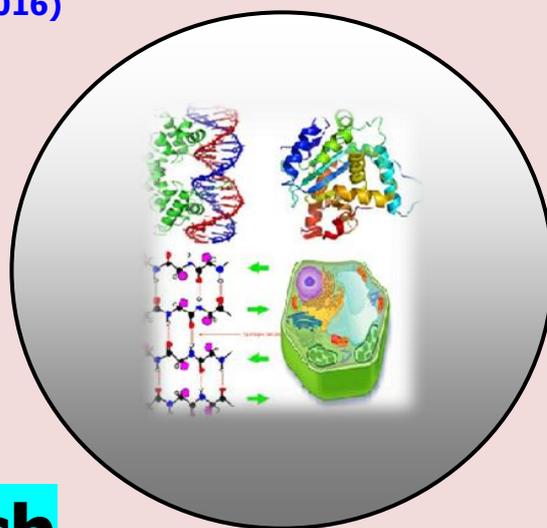
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Miraculous Worth of Pretty *Averrhoacar carambola* (Kamrakh /Star Fruit) for overall Well-being

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ABSTRACT

Star fruit is one of the very low-calorie exotic fruits. Nonetheless, it has an impressive list of essential nutrients, antioxidants, and vitamins required for well-being. The fruit along with its waxy peel provides a good amount of dietary fiber. Star fruit contains good quantities of vitamin-C. Vitamin-C is a powerful natural antioxidant. 100 g of fresh fruit provides 34.7 mg or 57% of daily required levels of vitamin-C. Some of the important flavonoids present are quercetin, epicatechin, and gallic acid. Total polyphenol contents (Folin assay) in this fruit is 143 mg/100 g. Altogether, these compounds help protect from deleterious effects of oxygen-derived free radicals by warding them off the body. Besides, it is a good source of B-complex vitamins such as folates, riboflavin, and pyridoxine (vitamin B-6). Together, these vitamins help as co-factors for enzymes in metabolism as well as in various synthetic functions inside the body. It also carries a small amount of minerals and electrolytes like K, P, Zn and Fe.

Keywords: Antioxidant, Vitamin C, Quercetin, Epicatechin, Gallic acid, Antimutagenic, Antiangiogenic, Anti-inflammatory and Anticarcinogenic.

INTRODUCTION

Star fruit, also known as *carambola*, is a star-shaped tropical fruit with sweet and sour flavor. *Carambola* is native to the Malayan peninsula and cultivated in many parts of Southeast Asia, Pacific Islands and China for its fruits. Although abundant and plentiful, carambola is yet to gain popularity, especially in the western world. Scientific name: *Averrhoa carambola*. The genus *Averrhoa* includes two well-known sorrels (Oxalidaceae) family of fruiting trees, *carambola*, and bilimbi (tree cucumber). The fruit is recognized as belimbingmanis in many South East Asian regions and kamrakh

in India. The star fruit is that green garnish the sweet potato vendor often displays on his stand. Referred to as 'Kamrakh' in Hindi and Gujarati, 'Ambanamkaya' in Telugu, 'Thambaratham' in Tamil, 'Kaparakshi Hannu' in Kannada, 'Chaturappuli' in Malayalam, Karambal in Marathi, 'Kamranga' in Bengali and 'carambola' in some parts of the world. This star-shaped tropical fruit appears in both sweet and sour tastes. The sweet fruit is found from summer to autumn and the sour fruit from the end of summer to the middle of winter (Shui G, Leong LP., 2004). It's a rare commodity, but with high nutritional value, and used widely in the kitchen. It makes a great juice, smoothie, or shake, or you can just eat it raw. Best when fresh, it should be consumed within 3-4 days, or else the nutritional value dips. Store the fruit in a cool, dark place and cut it just before you eat. The star fruit is a literal one-stop medicine shop. It's used the world over as a home remedy for hangovers and sunburns. It works well on coughs, fever, ulcers and sore throats. It also effectively combats diabetes. The leaves of star fruit can be used to treat stomach ulcers, pus-filled skin inflammations and boils. It improves digestion. Flowers of the sweet star fruit are good for treating coughs in children. Star fruit contains an antimicrobial agent which fights the microbial bacillus cereus, E. coli, salmonella typhus, etc. It also cures eczema. With only 30 calories per fruit plus lots of fibre, star fruit, like kokum and passion fruit, is a great choice for anyone trying to lose weight. It contains 9.5g of carbohydrate per serving, including 2.5g of dietary fibre. This provides 3% of the daily requirement for carbohydrates and 10% of the daily requirement for dietary fibre. They're also full of antioxidants and flavonoids. In addition to vitamins A, B and C, that help keep the metabolism of the body steady and strong, star fruit also has thiamine, riboflavin, and niacin in very small concentrations. It's a good source of vitamin B9 (folic acid), which helps reduce the risk of heart disease and stroke, and it also contains vitamin C and vitamin B5. It has low amounts of all essential minerals but is especially rich in copper (14% of Recommended Dietary Allowance (RDA) in one medium sized fruit). Star fruit lowers cholesterol levels and adds bulk and moisture to faeces. The fruit has also been used to treat sore eyes. If you are looking to up the magnesium content in your diet, then eat food rich in vitamin B6 along with star fruit. This 'magic' fruit is given to lactating mothers as it is commonly believed to stimulate the flow of milk. A decoction of its leaves and roots (prepared separately or in combination) can help cure headaches, ringworm, and chicken pox (Sripanidkulchai et. al., 2002). To cure nausea and indigestion, eat half a piece of the fruit and repeat the dose after three hours. 8. But if you have a renal complaint, then the star fruit is not for you, because it has a very high concentration of oxalic acid. Scientists consider it an anti-nutrient compound as it interferes with absorption and metabolism of several natural minerals such as calcium, magnesium, etc. Like grapefruit, the star fruit may interfere with the medications you take for other illnesses. If on prescription, make sure to consult your doctor first. Star fruit allows other nutrients that are good for the body and hair to circulate more freely. It's an excellent natural cure for hair loss since it is a good source of antioxidants and vitamin C which can help delay the natural ageing process. B-complex vitamin, which is essential for hair growth and help in keeping hair strong and healthy, is abundantly available in start fruit. Eat a star fruit or use it directly on acne-prone skin or oily skin as a face mask, it benefits the skin both ways.13. It purifies the blood, making the skin glow. Star fruit contains zinc which reduces a tendency towards acne breakouts. It's wholly recommended for people of all ages as it has antimicrobial effects.

HEALTH BENEFITS OF STARFRUIT

Free radicals and carcinogenic agents in the body may cause damage to cells that lead to cancer. Star fruit has a high content of antioxidants that may help clean the body by neutralizing free radicals before they cause too much damage. The high fiber content in star fruit also cleanses toxins that are stored in the colon and lowers the risk of developing colon cancer. Star fruit has high amounts of antioxidants and flavonoids which are beneficial to protecting from inflammation caused by free radicals that can cause tissue repair delays. Vitamin C pushes out toxins and helps in collagen synthesis which is an important component to repair and form bones, arteries and blood vessels.



Plate 1. Habit and Fruits of *Averrhoa carambola*.

This is very important to healing the body and calming the damages that are caused at a cellular and tissue level (Block et.al., 1992). Some women have trouble producing enough milk to breastfeed their newborn baby. Instead of taking hormonal pills, starfruit has properties that may help to increase milk production naturally. The potassium and sodium in starfruit are important contents of electrolyte and are useful for maintaining blood pressure. Levels of sodium are kept in check by magnesium which is a mineral that regulates the muscle function of the body including the heart muscles (Plate 1).

Heart muscles create heartbeat and regular heartbeat that keeps a healthy blood flow. High sodium levels are dangerous and can increase blood pressure. The low fat content makes it a health food supplement and lowers the bad cholesterol which causes plaque buildup (Bors et. al. 1990). Starfruit contains high amounts of vitamin C, which is a water soluble vitamin that is considered to be the best antioxidant available to the body. Vitamin C boosts the immune system to help ward off colds, the flu and other infections. Vitamin C is not stored in our body and is used pretty fast when we sweat. Antioxidants increase immune functions by riding the toxins and free radicals that take over our body due to the environment, internal metabolism and food sources. Free radicals and toxins are cleaned out of the body by antioxidants like vitamin C, the flushing of toxins created better skin and controls acne. Starfruit juice can hydrate and smooth skin, as well as reduce the appearance of wrinkles. Starfruit is low in fat, high water content, contains high amounts of minerals and fiber. It makes a great snack for weight management dietary routine. The high content of fiber makes you feel fuller for longer and naturally curbs your appetite. Water-rich fruits keep you well hydrated when exercising and the healthy mixture of minerals keep your electrolytes in balance. Electrolytes manage the neuro transmission and control muscles function in the body (Nguyen G1, Torres A., 2012).

CONCLUSION

Starfruit (a.k.a. carambola) has unique ridges down its sides, usually five but it can vary. In cross-sections, it looks like a star, which is where it gets its name. The fruit is about 2-6 inches in length, and is yellow when fully ripe. There are two main varieties of starfruit: the small sour kind and the larger sweet type. Health benefits of star fruit. 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 fruits. Nonetheless, it has an impressive list of essential nutrients, antioxidants, and vitamins required for well-being. Quercetin found in star fruit, is flavonoid possess anti-cancer property. Epicatechin boosts heart health and protects from diabetes and cancer. Gallic acid has multiple properties like antimutagenic, antiangiogenic, anti-inflammatory and anticarcinogenic. It is used in treating diseases like cancer, depression, microbial infection, etc. Polyphenols provides protection from diabetes, cancer, osteoporosis, cardiovascular disease and neurodegenerative disease.

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