Nutritional value and medicinal uses of Monkey Jack fruit (Artocarpus lakoocha)

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Abstract

This review paper discusses the nutritional values and medicinal benefits with other uses of Monkey Jack fruit (Artocarpus lakoocha). The sweet sour pulp of ripen fruits is generally eaten fresh. Different portions of this fruits and spike of male flower are used to prepare curries, pickles and delicious sauce. The leaves of the plant are used as animal feed and stem as timber and firewood. Studies showed that it has valuable pharmacological properties and used as many medicinal products. Artocarpus lakoocha is containing strong antioxidants and these are flavonoids and phenolic acids. The bark of the tree exhibit methanolic extracts that have strong antioxidant activity. Moreover, heartwood extract also have potential skin-whitening properties. In conclusion, this perennial fruit plant has multipurpose uses. Fruit can be consumed as alternative nutritional food and plant used as raw materials of pharmaceuticals due to its pharmacological properties.

Keywords: Monkey Jack, Artocarpus lakoocha, food value, medicinal value, uses.

Introduction

Monkey Jack fruit (Artocarpus lakoocha Roxb., Moraceae) is a tropical fruit and originated from India. This fruit is available in some Asian countries like Bangladesh, Bhutan, Nepal, Myanmar, Sri Lanka, Thailand, Malaysia, Singapore, Vietnam, Cambodia and Laos. Fruits are highly nutritious and an important food item in the human diet. This fruits contain vitamins and most of the vitamins excellent source of antioxidant which are vitamin C and beta-carotene. Moreover, minerals those act as antioxidant such as zinc, copper, manganese and iron. This antioxidant from the plant source has important activities to maintenance normal health and protects the coronary heart disease and combat with cancer. For that reason these fruits become more curious among scientists, food manufacturers and consumers. World Health Organization estimated that about 80% of the world population depends on traditional herbal medicine for their primary health care. The different components and chemical extract of this plant has been used to possible sources for new drugs. It has been established by lot of scientist that consumption of tropical fruits can reduces the risk of no-communicable diseases like diabetes, cancer, coronary heart disease, neurodegenerative ailment. It was also proved that antioxidant; anti-inflammation, antibacterial and cytotoxic activities have been found in medicinal plants and used as potentially therapeutic compounds. Free radicals is one atom or molecule the have a properties to oxidative damage and excessive production as well as less antioxidant protection, that leads to onset of some diseases and enhanced aging. The plant of A. lakoocha have contained flavonoids and phenolic acids, these are strong antioxidants. With more knowledge and scientific evaluation people are now adopting and habituated to use natural ingredients contain cosmetics instead of synthetic ingredients. Natural ingredients are effective, low cost and less adverse effects compared to synthetic agents that also have antioxidant properties and inhibiting tyrosinase activities. The demand of skin-whitening properties natural cosmetics are increasing day by day and a great of number of cosmetic companies have been developing natural ingredients contain cosmetics. Tropical and local delicious fruits play a significant role by providing supplementary nutrient diet and income generation to the people of rural areas. On the other ways it can be considered as vast sources of vitamins, minerals, dietic fibers and polyphenols which have lot of health benefits. It is time to say that the nutrient values of Monkey Jack fruit would be explore more and more to increases awareness among the people to consume for healthy life and to grow more plants for production of cosmetics and receive other useful benefits. It is essential to conduct more scientific research regarding the wild edible fruits to assess the potentiality which would be cultivated and utilized as a source of food material for an ever increasing population. There are lots of tropical and local plants species which have a great potential to be commercially utilized. A few research works has been done regarding potentiality of the monkey fruit plant. The paper is an overview of different aspects of Artocarpus lakoocha uses. The information outlined in this article have been collected from different journals in agricultural, food and medical sciences and visited of useful websites.
Food and other uses of Artocarpus lakoocha

The fruits are generally sweet sour pulp eaten fresh but mostly made into curries. Different parts of this fruits and spike of male flower are used to prepare pickles and delicious sauce. Moreover, the tree is also used as food and timber. Timber and wood from this tree used to made furniture, boats and cabinets. It also used for heavy construction, poles, furniture and plywood for its hard and termite resistant capacities. The A. lakoocha fodder tree is highly preferred for its deliciousness and healthful values. Despite the slow growth rate, farmers preferred to cultivate more A. lakoocha for its high nutritious value. It is one of the valuable fodder trees in Nepal, for the lower foothills of the Himalayas. It is also prepared food for lactating animals, which have effect to produce more milk. The leaves of A. lakoocha contain about 16% crude protein and one mature tree produces 60-200 kg fresh feedstuff in a year. Different parts of this tree like fruits and male flowers are eaten raw, boiled, steamed or roasted. Moreover, a tree also has an important source of firewood and its sticky latex is present everywhere of the tree and has many uses. The canopy shaped tree provides huge shade and create the environment cooler for humans, plants and animals. The tree can be used for protection and occasionally it grown as an ornamental bonsai plant. A. lakoocha trees are cultivated with mixed cropping systems with other crop.

Medicinal values of Artocarpus lakoocha

In several studies it revealed that A. lakoocha has many medicinal uses. There are some pharmacological activities has been found into plant and these are anti-inflammatory, antiviral, anticancer and anti-HIV properties. The consumed A. Lakoocha fruit pulp is act as refresher of liver as well as seeds and milky latex can used as purgative. Tree bark contains 8.5 percent tannin and is used to treat skin lesion. Powder formed bark is applied to cure any wound and also used to draw out purulent matter from any abscess. The seed and bark of the plant are useful for stomach and liver disease. The unripe fruit is hot, sour, sweet, causes tridosha im potency, loss of appetite, blood complaint. The ripe fruit is sour sweet, tonic to liver. The seed are good purgative for children. The fruit contains β-amyrin acetate and lupeol acetate having a potential antihyperglycemic and hypolipidemic effects that could used as a lead compound for production of effective in diabetes and atherosclerosis medicine. The juice and seeds from this plant are used as purgative and the bark is used as astringent. However, root is used as refresher and the leave are used in treating dropsy. Powered form heartwood extract has been used as an effective and economical skin-whitening agent. Free radicals products can directly influence cell growth and development. However, external radicals like ultra violet radiation-generating single oxygen that has effect to cellular aging. A. lakoocha plant is used in traditional Thai medicine for anti-inflammatory therapy and as well as an anti-skin aging agent. The hydroglycolic extract of A. lakoocha heartwood exhibited as important antioxidant and tyrosinase inhibitory activities which are commonly used as antioxidant and skin-whitening agents in cosmetic products. Extract of A. lakoocha also have contain liposomes having phospholipid bilayers and have an aqueous cavity that can entrap, protect and deliver the water soluble substances into deep skin which can effectively enhance the skin permeation. Studies revealed that the lotion containing plant heartwood extract-loaded liposomes had better skin whitening effect than the lotion containing non-encapsulated plant heartwood extract. Anti-glycation and anti-oxidation of phyto compounds can prevent cellular aging. In vitro, 25 µg/ml phytooxyresveratrol (POV) extracted from Artocarpus lakoocha have effective anti-aging activity and prevent cellular aging due to its antioxidant and anti-glycation activities. Studies revealed that 25 µg/ml of POV can prevent DNA damage and was nontoxic to cell. However, more and more studies are required to formulate suitable pharmaceutical formulations. Recently it is scientifically proved that A. lakoocha extract was effective for the treatment of taeniasis. In India, A. lakoocha is widely used as medicinal plant for the treatment of some specific diseases. The bark of A. lakoocha exhibited methanolic extracts which is a strong antioxidant activity as well as it have Flavonoids and Phenolic content. Moreover, the roots of A. lakoocha also found two new stilbene derivatives, lakoochins A and B. Both Lakoochins A (1) and B (2) exhibited anti-mycobacterial activity with the respective MIC values of 12.5 and 50 µg/mL. It was explored that Lakoochins A (1) was cytotoxic against the breast cancer (BC) cell line at IC50 6.1 µg/mL level but inactive at 20 µg/mL toward nasopharyngeal carcinoma (KB) cells; whereas compound 2 possessed cytotoxicity against the BC and KB cell lines with IC50 values of 3.1 and 6.1 µg/mL, respectively. Dried aqueous extract of A. lakoocha has been used for treatment of tape worms. Ethanolic extraction of A. lakoocha extract contained antioxidants and polyphenolic compounds, especially tannins and flavonoids. The root of A. lakoocha is an astringent and is used as a purgative; while saturated extract is used as a poultice for skin ailments and bark is used to treat headache.

Conclusion

The ripen fruits is generally eaten fresh. Unripe fruit and male flower spike of A. lakoocha are used to prepare curries, pickles and sauce. But on the other hand, the tree is also used as animal feed, timber and firewood. Moreover, the fruit can be used as food supplement to combat malnutrition and reduces the risk of several diseases. Mass campaign can be done among the people to enhance the awareness regarding the nutrient values of this tropical fruit for consumption as well as healthy life. More and more research works would require to find out the valuable properties of this fruits and to develop suitable pharmaceutical formulations for human being.
References


