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Burmese grape (*Baccaurea ramiflora* Lour.): A promising fruit crop for future generations

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Abstract

Baccaurea ramiflora (Burmese grape) has multiple uses in different countries of the world. Fruit pulp with a blend of sweet and sour, rich in vitamin C and hence can be commercialized by the food processing and brewing industry. The fruit has antioxidant properties and rich in minerals, which can help eradicating many of the non-communicable diseases at a very cost-effective way. Seed oil has omega-9 fatty acids and other fatty acids of commercial importance. Thus it is required to promote and highlight the economic potential of this underutilized fruit. It can contribute in the generation of wealth through research and development and alleviation of poverty in the biodiversity rich regions.

Keywords: Burmese grape, (*Baccaurea ramiflora* Lour.), fruit crop, future generations

Introduction

Burmese grape (*Baccaurea ramiflora* Lour.) is an under utilised fruit crop grown mainly in the backyard plantation and as forest plant belonging to family Euphorbiaceae. The generic name is derived from Latin 'baccaurea' referring to the golden-yellow colour of the fruits (Chakrabarty and Gangopadhyay, 1997) [2]. It is slow growing, evergreen, short to medium height plant. It is native to the South East Asian region. It is distributed along the sub-Himalayan tract, mostly from Nepal to Sikkim, Darjeeling hills, Arunachal Pradesh, Tripura, Assam, Orissa, Bhutan, Burma, Penninsular Malaysia, Tibet ascending to an altitude of 900 m and Andaman and Nicobar Islands, chiefly in the moist tropical forests (Sundriyal and Sundriyal, 2003) [8]. The fruits are grown mainly in homestead condition. Locally the fruit is known as 'Latka', or 'Latkan' or 'Lotko' or 'Notko'. It is a mild acidic fruit and mainly used as fresh fruit consumption. The tree is dioecious, evergreen, shade loving plant.

Botany

Stem grey-brown in colour, branchlets hispid while young and become glabrescent in maturity. Leaf blade is obovate-oblong, oblanceolate or oblong in shape, papery, green in colour adaxially and yellowish green abaxially, glabrous on both surfaces, cuneate at base, margin is entire or shallowly repand, apex shortly acuminate to acute.

Bearing habit of Burmese grape is adventitious or cauliflory in nature. The fruit is oval to round in shape and turns yellow or yellowish brown in ripen condition. The type of fruit is berry and edible portion is aril which is covered by leathery rind. Burmese grape is propagated by seeds and as it is dioecious in nature so variation is present among the present plant population. It flower during summer month, and fruits mature during rainy season. Flowers are small, dioecious, apetalous, many flowered, compound into raceme panicles. Fruit is yellowish and velvety with leathery pericarp. Seed embedded in pinkish white pulp. The whole plant has medicinal value, and different parts like leaves, roots, seeds, fruits have health benefits. The fruit has nutritional benefits because of its high content of vitamin C, protein and iron (Peter, 2007) [7].

Medicinal Properties

The plant is mentioned in different traditional system of medicine and reported in many ethno botanical uses. *Baccaurea ramiflora* has been mentioned in the Chinese Dai medicine. It is used as an anti-inflammatory and painkiller in treatment of injuries, rheumatoid arthritis, cellulitis, abscesses etc. (Lin et al, 2003) [5]. The fruit of the plant has religious importance also.

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Young leaves of the plants are used as vegetable or flavoring agent for curries and minced meat in many places. The fresh bark of the plant chewed or juice taken orally for complaints of constipation in India (Khan, 2008) [4]. Vitamin C is an electron donor and this property makes it a potent water soluble antioxidant for human (Padayatty *et al.*, 2003) [6]. While low potassium intake related to hypertension, cardiovascular diseases, chronic kidney stone formation and low mineral density, high sodium intake has also been associated with hypertension, and cardiovascular diseases. *Baccaurea ramiflora* fruit has the proper ratio of sodium and potassium, which can help in prevention of the non-communicable diseases significantly. The fruit is also rich in iron, which can help in alleviating the anaemic condition, which has high significance in India. The seeds of the plant produce a valuable dye called “annatto” which is used for colouring silk, cotton and other textile materials in orange.

Biochemical properties

Baccaurea ramiflora is one of the rich wild edible fruit rich in nutritive value. Approximately it contains 35.6% water, carbohydrate 51.9%, protein, and fibre 5.58% and 20.4% respectively. The fruit is abundant of magnesium (504mg), potassium (730mg), phosphorous (132mg), and iron (100mg) per 100gm of fruit pulp. It has a significant amount of ascorbic acid, which adds to the property of antioxidant (Table 1).

Baccaurea ramiflora seed is rich in oil. The seed oil has a low moisture content which is a sign of good quality and its ability to resist contamination or rancidity. The oil is utilized in studies relating to optics. Most of the saturated fatty acids in seed oil has commercial value in soap, detergent, cosmetic industries. Omega-9 fatty acids can help reduce the risk of cardiovascular disease and stroke by increasing high-density lipids (HDL) cholesterol and decreasing low-density lipids (LDL) cholesterol which help eliminating building up of plaques in arteries, which cause heart attack or stroke.

Table 1: Proximate Fruit Composition of Burmese grape, *Baccaurea ramiflora* per 100 gm of pulp (Sundariyal and Sundariyal, 2004).

Proximate	%	Minerals	Mg	Vitamins	mg
Water	35.6	Calcium	75	Ascorbic acid	273
Protein	5.58	Magnesium	504		
Lipid	0.73	Phosphorus	132		
Carbohydrate	51.9	Potassium	730		
Fibre	20.4	Sodium	35		
Ash	3.85	Iron	100		

Non communicable diseases (NCDs) are the prime cause of mortality and morbidity globally, and prevention of NCDs is highly cost-effective, which was found by WHO. This fruit, which has a balance amount of minerals and vitamins, if commercially exploited following scientific principles can be a golden fruit for the economy and health of the people. Bioprospecting of this minor fruit makes it more awareness and gains economic potential. Total soluble solid and sugar content improved through application of molecular biology or breeding techniques will make it more attractive for the food processing and brewing industry. The oil content of the seed is also significant. The saturated fatty acid and omega-9 fatty acids can be utilized in health, cosmetics and other industries.



Fig 1 Harvested fruits

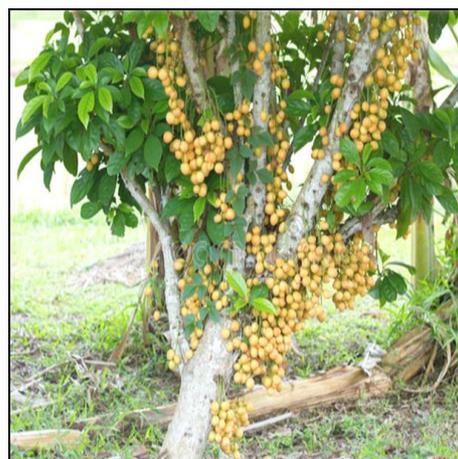


Fig 2 Bearing Burmese grape tree

Conclusion

Baccaurea ramiflora, mostly found in tropical forests with wild distribution, has multiple uses in different countries of the world. It can be a prized fruit because of its nutritive value and its scope for bioprospection (Gogoi, 2017) [3]. Fruit pulp has the blend of sweet and sour, which can be commercialize by the food processing and brewing industry. The fruit is a rich source of Vitamin C, which has established antioxidant property, rich in minerals, which can help eradicating many of the non-communicable diseases at a very cost-effective way. Seed oil can also be extracted and commercially exploited, as it has shown presence of omega-9 fatty acids and other fatty acids of commercial importance in it. Thus it is required to promote and highlight the economic potential of this underutilized fruit and to help in conservation of the bio resources. It can contribute in the generation of wealth through research and development and mitigation of poverty in the biodiversity rich regions.

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