

Syzygium Cumini (Myrtaceae) Jamun Tree: A Miracle Medicinal Plant

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Abstract- *Syzygium cumini* commonly known as “Jamun” belong to Myrtaceae family is an important medicinal plant in various traditional systems of medicine. It is a widely distributed medicinal tree in India and other tropical and sub tropical regions of the world. Every part of the tree like the bark, leaves, seed and fruits has a great economic importance and used as an alternative medicine to treat various diseases. The tree is rich in phytochemicals like glycoside jambolin, anthocyanins, tannins, terpenoids, gallic acid and various minerals. It is traditional used to control the blood sugar level in the patients suffering from diabetes. In the present paper the botanical characters, phytochemical constitutes, traditionally used and medicinal uses of this medicinal plant are discussed.

Keywords- Medicinal, Antidiabetic, traditionally, alkaloids.

I. INTRODUCTION

The family Myrtaceae has some of the taxonomically informative molecules like mallic acid, oxalic acid, gallic acid, ellagic acid, betulic acid, tannins, flavonoids and essential oils. These compounds are present at the different parts of the tree and can either act in combination or individually to cure some diseases and health problems. Plants of this family are known to be rich in volatile oils which are reported for their uses in medicine [1] and many fruits of the family have a rich history of uses both as edibles and as traditional medicines in divergent ethnobotanical practices throughout the tropical and subtropical world [2].

Syzygium cumini (belong to Myrtaceae family) is also known as *Syzygium jambolanum* and *Eugenia cumini*. Other common names are Jambul, Black Plum, Java Plum, Indian Blackberry, Jamblang, Jamun etc. Today these trees are found growing throughout the Asian subcontinent, Eastern Africa, South America, Madagascar and have also naturalized to Florida and Hawaii in the United States of America. The tree fruits once in a year and the berries are sweetish sour to taste. The ripe fruits are used for health drinks, making preserves, squashes, jellies and wine [3]. *S. cumini* is a healthy fruit with absolutely no trace of sucrose and is therefore, the only fruit with minimum calories. Glucose and fructose are the main

source of sweeteners in the ripe fruits. It is traditionally used for the treatment of various diseases especially diabetes and related complications.

II. BOTANICAL DESCRIPTION

Evergreen tree to 25 m (80 ft) tall, with young stems grayish white and lower bark coarse and discoloured. Leaves opposite, simple, entire, elliptic to broadly oblong, smooth, glossy, somewhat leathery, 5-10 cm long, short pointed at tips; petioles to 3 cm long; leaf midrib prominent, yellowish; blades with many lateral veins closely parallel. The flower appears during the month of March to April and the fruit formation takes place during the month of May to July. Flower white to pinkish, about 1 cm across, in branched clusters at stem tips; calyx cuplike; 4 petals, fused into a cup; many stamens. Fruit an ovoid, 1 seeded berry to 2 cm long, dark purplish red, shiny, with white to lavender flesh [4].



Fig 1: Plant of *Syzygium cumini* (Jamun)

III. PHYTOCHEMICAL CONSTITUTES

Jamun is rich in compounds containing anthocyanins, glucoside, ellagic acid, isoquercetin, kaemferol and myrecetin.

The seeds are claimed to contain alkaloid, jambosine, and glycoside jambolin or antimellin, which halts the diastatic conversion of starch into sugar and seed extract has lowered blood pressure by 34.6% and this action is attributed to the ellagic acid content [5]. The flowers are rich in kaempferol, quercetin, myricetin, isoquercetin (quercetin-3-glucoside), quercetin-3-D-galactoside, dihydromyricetin, oleanolic acid, acetyl oleanolic acid, eugenol-triterpenoid A and eugenoltriterpenoid B [6]. The fruits are rich in raffinose, glucose, fructose [7], citric acid, mallic acid [8], gallic acid, anthocyanins [9], delphinidin-3-gentiobioside, malvidin-3-lamaribioside, petunidin-3-gentiobioside [10].

IV. TRADITIONALLY USED

One of the very common traditional uses of *S. cumini* is the powdered seed for controlling the blood sugar level in diabetic patients. Older reports from Indian medical journals suggest jambul seed and bark can be beneficial in humans with diabetes [11]. Various traditional practitioners in India use the different parts of the plant in the treatment of diabetes, blisters in mouth, cancer, colic, diarrhea, digestive complaints, dysentery, piles, pimples and stomachache [12]. In Unani medicine various parts of jambolan act as liver tonic, enrich blood, strengthen teeth and gums and form good lotion for removing ringworm infection of the head [13]. The seed is used as an alternative natural healing system in the Ayurvedic, Unani and Chinese medicines. Ashes of the bark, mixed with water, are spread over local inflammations; or, blended with oil, applied to burns [14].

V. MEDICINAL USES

Different parts of *S. cumini* are used as an alternative medicine for the treatment of diabetes. Ayurvedic texts suggest that 1-3 g of seed powder per day is an average dose 44 additionally, Juice of ripe fruits in the amount of 0.5-2 tsp (2.5-10 ml) at least three times daily have been recommended for the treatment of diabetes. Administration of 100 and 200 mg/kg body weight of aqueous extract of *Syzygium cumini* pulp significantly decreased the blood glucose level in the experimental rats suggesting that it has hypoglycemic properties. The decreased body weight in diabetic rats is due to excessive breakdown of tissue proteins. Treatment with *Syzygium cumini* improved body weight significantly in a dose dependent manner, indicating prevention of muscle wasting due to hyperglycemic condition [15]. Various experimental studies have been done in the last few decades to confirm the activity of the fruits, seeds and stem bark against diabetes mellitus [16]. The seeds are rich in proteins and calcium. The glycoside Jamboline is the main compound found in the seed which helps in controlling the blood sugar level by switching

off the mechanism of starch converting to sugar when there is optimum amount of sugar already present in the blood. A glycoside in the seed, jamboline, is considered to have antidiabetic properties [17].

Jamun possess antineoplastic [18], Radioprotective [19], [20], [21], [22], and chemopreventive effects [23], all of which are useful in the prevention and treatment of cancer. The reasons for the myriad pharmacological effects are due to the presence of diverse phytochemicals like flavonoids, anthocyanins, terpenes Jamun reduced the tumor incidence, tumor burden and cumulative number of gastric carcinomas. Reports also suggest that gallic acid, ellagic acid, flavonoids and anthocyanins present in Jamun are reported to prevent experimental carcinogenesis in various organs and may have contributed to the anti-carcinogenesis. Additionally, recent observations also suggest that ellagitannin, a constituent of Jamun and its colonic metabolite, urolithin A inhibit want signaling crucial in the process of colon carcinogenesis [24]. Very recently have also observed that administration of the jamun extract (25 mg/kg body weight/day) was effective in preventing benzo-a-pyreneinduced forestomach carcinogenesis [25]. The leaves are used to make tea and are taken orally to treat diabetes in Brazil [26].

VI. CONCLUSION

Jamun is widely used by the traditional healers for the treatment of various diseases especially diabetes and related complications. The plant is rich in compounds containing anthocyanins, glucoside, ellagic acid, isoquercetin, kaempferol and myrecetin. The seeds also have alkaloid, jambosine, and glycoside jambolin or antimellin, which prevent the conversion of starch into sugar. There is a need to more scientific research investigation on this valuable medicinal plant.

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