Java Plum Tree

Exotic Tree from the Myrtle Family
Java Plum (Syzygium cumini)

What Exotic tree from the Myrtle family have seeds that are not only Hypoglycaemic but they also possess anti-inflammatory, anti-arthritic and anti-pyretic properties? Also, the flesh of the fruit can be used as a ingredient of a preparation used against Asthma.

Java Plum (Syzygium cumini) or Jambolan is a large, evergreen and exotic tree from the Myrtle family, originating in the region between eastern India and Myanmar (Burma). This supposedly insignificant and very very common tree with no commercial value for its fruit crop, dot the countryside from India, all the way to Myanmar, up to an altitude of 5,900ft.
Java Plum had been repeatedly mentioned in the Sanskrit writings of ancient India. The famous Arab Historian Ibn Batuta who visited India in 1332 A.D., wrote about Java Plum trees being abundant around Delhi (present day New Delhi, India's capital).

In 1880's, one Dr. C. Graeser, of Bonn, Germany had published in the CENTRAL BLATT FUR KLINISCHE MEDIZIN, an interesting account of a series of experiments on dogs with phloridzin-induced Diabetes, with the extract of the fruit and the seed of Java Plum. He concluded that the Diabetes is considerably lessened by the seed extract, which is non-poisonous, and does not cause any ill effect.
He found Java Plum to contain Malic Acid, a small quantity of Oxalic Acid, Gallic Acid and Tannins. The Java Plum seeds are not only Hypoglycaemic but they also possess anti-inflammatory, anti-arthritic and anti-pyretic properties. The flesh of Java Plum can be used as an ingredient of a preparation used against Asthma. The flowers are greenish white, fragrant while the fruits are ellipsoid or oblong, black with pinkish/purplish juicy pulp with single seed.

Family: Myrtaceae
Genus: Syzygium (siz-ZY-gee-um) (Info)
Species: cumini (KOO-min-ee) (Info)
Synonym -.Eugenia cumini Synonym: Eugenia jambolana Synonym :Syzygium Jamun
Category:
Edible Fruits and Nuts
Trees
Tropicals/Tender Perennials
Height:
over 40 ft. (12m)
Spacing:
over 40 ft. (12 m)
Hardiness: Drought and Heat Tolerant.

This plant is attractive to bees, butterflies and/or birds
Drought-tolerant; suitable for xeriscaping

Average Water Needs; Water regularly; do not overwater
Soil pH requirements:
Can handle a wide range of soil types.
Propagation Methods:
From seed; direct sow after last frost
From seed; germinate in a damp paper towel
Profile:
3 positives 1 neutral 1 negative

This plant has been said to grow in the following regions:
Boca Raton, Florida Merritt Island, Florida Port Saint Lucie, Florida Rockledge, Florida Venice, Florida Brownsville, Texas

Occurs in: natural forests

Habitat description
The tree occurs in the tropical and sub-tropical climates under a wide range of environmental conditions. Jambolan can thrive on a variety of soils in low, wet areas and on higher, well-drained land (loam, marl, sandy soils, calcareous soils).(Coronel 2001). It grows well in areas receiving heavy rainfall between 1,500-10,000 mm per anum. It develops most luxuriantly in regions of heavy rainfall, as much as 400 in. (1,000 cm) annually. In India it is usually found in areas receiving 900-5000 mm. The mean relative humidity in July varies from 70 to 100% and in January from 40 to 90 %. It can tolerate prolonged flooding. It also grows well on well-drained soils and once established, can tolerate drought. The jambolan tree grows well from sea-level to 6,000 ft (1,800 m) but, above 2,000 ft (600 m) it does not fruit but can be grown for its timber. It prospers on river banks and has been known to withstand prolonged flooding. Yet it is tolerant of drought after it has made some growth. Dry weather is desirable during the flowering and fruiting periods. It is sensitive to frost when young but mature trees have been undamaged by brief below-freezing temperatures in southern Florida. Despite its ability to thrive in low, wet areas, the tree does well on higher, well-drained land whether it be in loam, marl, sand or oolitic limestone." (Morton, J. 1987) In its area of distribution, the absolute maximum shade temperateur varies from 2.5o to 17.5oC. The mean daily maximum temperature in May which is the hottest month of the year, varies from 30o to 43.5oC, and the mean daily minimum temperature in the coldest month i.e. January varies from 5o to 23.9oC (Luna, 1996).

General impacts
This large evergreen tree forms a dense cover, excluding all other species. Although it is not an aggressive invader of undisturbed forest like the closely related roseapple (Syzygiumjambos), it prevents the re-establishment of native lowland forest. (PIER, 2002)

Uses
"Jambolan fruit can be eaten raw and can be made into tarts, sauces and jams. Good quality jambolan juice is excellent for sherbet, sirup and "squash", an Indian drink. In Goa and the Philippines, jambolans are an important source of wine, somewhat like Port, and the distilled liquors, brandy and "jambava" have also been made from the fermented fruit. Can also be made into Vinegar. The jambolan tree is of real value in apiculture. The flowers have abundant nectar, and the honey is of fine quality.

The leaves have served as fodder for livestock and as food for tassar silkworms in India. In Zanzibar and Pemba, the natives use young jambolan shoots for cleaning their teeth. The essential oil distilled from the leaves is used to scent soap and is blended with other materials in making inexpensive perfume. Its chemical composition has been reported by Craveiro etal. in Brazil. It consists mainly of mono- or sesqui-terpene hydrocarbons which are "very common in essential oils."

Jambolan bark yields durable brown dyes of various shades depending on the mordant and the strength of the extract. The bark contains 8 to 19% tannin and is much used in tanning leather and preserving fishing nets. When kiln dried, the heartwood is hard, difficult to work but polishes well. It is durable in water and resistant to borers and termites. In India, it is commonly used for beams and rafters, posts, bridges, boats, oars, masts, troughs, well-lining, agricultural implements, carts, solid cart wheels, railway sleepers and the bottoms of railroad cars. It is sometimes made into furniture.

Medicinally, the fruit is stated to be astringent, stomachic, carminative, antiscorbutic and diuretic. Cooked to a thick jam, it is eaten to allay acute diarrhea. The juice of the ripe fruit, or a decoction of the fruit, or jambolan vinegar, may be administered in India in cases of enlargement of the spleen, chronic diarrhea and urine retention. Water-diluted juice is used as a gargle for sore throat and as a lotion for ringworm of the scalp. Seeds, in liquid or powdered form, are freely given orally, 2 to 3 times a day, to patients with diabetes mellitus or glycosuiria. In many cases, the blood sugar level reportedly is quickly reduced and there are no ill effects. The leaves, steeped in alcohol, are prescribed in diabetes. The leaf juice is effective in the treatment of dysentery, either alone or in combination with the juice of mango or emblic leaves.

Jambolan leaves may be helpful as poultices on skin diseases. The leaves, stems, flowerbuds, opened blossoms, and bark have some antibiotic activity. A decoction of the bark is taken internally for dyspepsia, dysentery, and diarrhea and also serves as an enema. The root bark is similarly employed. Bark decoctions are taken in cases of asthma and bronchitis and are gargled or used as mouthwash for the astringent effect on mouth ulcerations, spongy gums, and stomatitis. Ashes of the bark, mixed with water, are spread over local inflammations, or, blended with oil, applied to bums. In modern therapy, tannin is no longer approved on burned tissue because it is absorbed and can cause cancer. Excessive oral intake of tannin-rich plant products can also be dangerous to health. The tree is grown as shade for coffee in India. It is wind-resistant and sometimes is closely planted in rows as a windbreak."(Morton, J. 1987)

Notes
In southern Asia, the tree is venerated by Buddhists, and it is commonly planted near Hindu temples because it is considered sacred to Krishna. The leaves and fruits are employed in worship, (Morton, J. 1987). It is not really fire resistant, but fires are rarely intense enough in the stands to produce other than peripheral damage, (Smith, 1998).

Geographical range
Native range: Indo-Malaysian.
Known introduced range: Cook Islands, Fiji, French Polynesia, Guam, Hawaii, Florida, New Caledonia, Niue, Palau, Tonga, China, Indonesia, Malaysia, Christmas Island, Australia, Africa, India, Caribbean, South America.
Invasion pathways to new locations
For ornamental purposes: Was frequently grown in gardens in Malaya. (Morton, 1987)

Local dispersal methods
Consumption/excretion: The large black fruit are dispersed by frugivorous birds and perhaps occasionally by feral pigs. (Smith, 1998)
For ornamental purposes (local): Valued as an ornamental in Israel. (Morton, 1987)

Forestry (local): In Israel the tree is valued for forestry in humid zones. (Morton, 1987)

Horticulture (local): Grown as shade for coffee in India. It is wind-resistant and sometimes is closely planted in rows as a windbreak. (Morton, 1987)

Management information
This tree has not been evaluated for biological control (Smith, 1998), but vigorous efforts to

exterminate it with herbicides are taking place in Hawaii (Morton, J. 1987).

Reproduction
The panicles of small, greenish-white, sweet-scented flowers appear from march to may, the fruits are green first; as they develop, turn pink and then finally purple -black at the time of ripening in June to August (In India). Fruit formation takes place about 32 days after flowering. The fruits are devoured by frugivorous birds, monkeys, squirrels and human beings, perhaps occasionally by feral pigs (Sus scrofa) therefore widely dispersed. Natural regeneration is profuse around the mother trees as the seeds fall in large quantities. Germination takes place on moist ground, each fruit may produce from one to four or even five seedlings clustered together in dense masses. Sometimes, seedlings of different years may be found under the same seed bearer, showing their degree of tolerance to shade. The seedlings are somewhat frost-tender, particularly on grassy ground, where they are frequently killed back. The natural reproduction of the species is helped by fire protection. Weeding has a marked effect on the growth and vigour of seedlings.(Luna 1996). Seeds loose viability quickly (Coronel 2001).

Lifecycle stages
"The fruit is in season in the Marquesas in April; in the Philippines, from mid-May to mid-June. In Hawai'i, the crop ripens in late summer and fall. Flowering occurs in Java in July and August and the fruits ripen in September and October. In Ceylon, the tree blooms from May to August and the fruit is harvested in November and December. The main fruiting season in southern Florida (where the tree blooms principally in February and March) extends through late May, June and July. Small second crops from late blooms have been observed in October. Individual trees may habitually bear later than others." (Morton, J. 1987). In India "Jamun is never leafless in the moist localities, the new coppery leaves start before the old leaves fall, however, in dry localities, it becomes leafless for a short period of time in the hot season. Usually leaves start falling about January and continue doing so during February and March." (Luna 1996)
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Jambolan
Syzygium cumini Skeels
Syzygium jambolanum DC. Eugenia cumini Druce

Other Uses
This member of the Myrtaceae is of wider interest for its medicinal applications than for its edible fruit. Botanically it is Syzygium cumini Skeels (syns. S. jambolanum DC., Eugenia cumini Druce, E.jambolana Lam., E. djouat Perr., Myrtus cumini L., Calyptranthes jambolana Willd.). Among its many colloquial names are Java plum, Portuguese plum, Malabar plum, black plum, purple plum, and, in Jamaica, damson plum; also Indian blackberry. In India and Malaya it is variously known asjaman,jambu, jambul, jambool, jambhool, jamelong, jamelongue, jamblang, jiwat, salam, or koriang. In Thailand, it is wa, or ma-ha; in Laos, va; Cambodia, pring bai or pring das krebey; in Vietnam, voi rung; in the Philippines, duhat, lomboy, lunaboy or other dialectal appelations; in Java, djoowet, or doowet. In Venezuela, local names arepesjua extranjera or guayabo pesjua; in Surinam, koeli, jamoen, or druif (Dutch for "grape"); in Brazil, jambuldo, jaldo, jameldo orjambol. Description

The jambolan is fast-growing, reaching full size in 40 years. It ranges up to 100 ft r (30 m) in India and Oceania; up to 40 or 50 ft (12-15 m) in Florida; and it may attain a spread of 36 ft (11 m)

and a trunk diameter of 2 or 3 ft (0.6-0.9 m). It usually forks into multiple trunks a short distance from the ground. The bark on the lower part of the tree is rough, cracked, flaking and discolored; further up it is smooth and light-gray. The turpentine-scented evergreen leaves are opposite, 2 to 10 in (5-25 cm) long, 1 to 4 in (2.5-10 cm) wide; oblong-oval or
elliptic, blunt or tapering to a point at the
JAMBOLAN, Syzygium cumini apex; pinkish when young; when mature, leathery, glossy, dark-green above, lighter beneath, with conspicuous, yellowish midrib. The fragrant flowers, in 1-to 4-in (2.5-10 cm) clusters, are 1/2 in (1.25 cm) wide, 1 in (2.5 cm) or more in length; have a funnel-shaped calyx and 4 to 5 united petals, white at first, then rose-pink, quickly shed leaving only the numerous stamens.
The fruit, in clusters of just a few or 10 to 40, is round or oblong, often curved; 1/2 to 2 in (1.25-5 m) long, and usually rums from green to light-magenta, then dark-purple or nearly black as it ripens. A white-fruited form has been reported in Indonesia. The skin is thin, smooth, glossy, and adherent. The pulp is purple or white, very juicy, and normally encloses a single, oblong, green or brown seed, up to 1 1/2 in (4 cm) in length, though some fruits have 2 to 5 seeds tightly compressed within a leathery coat, and some are seedless. The fruit is usually astringent, sometimes unpalatably so, and the flavor varies from acid to fairly sweet.

Origin and Distribution
The jambolan is native in India, Burma, Ceylon and the Andaman Islands. It was long ago introduced into and became naturalized in Malaya. In southern Asia, the tree is venerated by Buddhists, and it is commonly planted near Hindu temples because it is considered sacred to Krishna. The leaves and fruits are employed in worshipping the elephant-headed god, Ganesha or Vinaijaka, the personification of "Pravana" or "Om", the apex of Hindu religion and philosophy.
The tree is thought to be of prehistoric introduction into the Philippines where it is widely planted and naturalized, as it is in Java and elsewhere in the East Indies, and in Queensland and New South Wales, also on the islands of Zanzibar and Pemba and Mombasa and adjacent coast of Kenya. In Ghana, it is found only in gardens. Introduced into Israel perhaps about 1940, it grows vigorously there but bears scantily, the fruit is considered valueless but the tree is valued as an ornamental and for forestry in humid zones. It is grown to some extent in Algiers.
By 1870, it had become established in Hawaii and, because of seed dispersal by mynah birds, it occurs in a semiwild state on all the Hawaiian islands in moist areas below 2,000 ft (600 in). There are vigorous efforts to exterminate it with herbicides because it shades out desirable forage plants. It is planted in most of the inhabited valleys in the Marquesas. It was in cultivation in Bermuda, Cuba, Haiti, Jamaica, the French Islands of the Lesser Antilles and Trinidad in the early 20th Century; was introduced into Puerto Rico in 1920; but still has remained little-known in the Caribbean region. At the Lancetilla Experimental Garden at Tela, Honduras, it grows and fruits well. It is seldom planted elsewhere in tropical America but is occasionally seen in Guatemala, Belize, Surinam, Venezuela and Brazil.

The Bureau of Plant Industry of the United States Department of Agriculture received jambolan seeds from the Philippines in 1911, from Java in 1912, from Zanzibar and again from the Philippines in 1920. The tree flourishes in California, especially in the vicinity of Santa Barbara, though the climate is not congenial for production or ripening of fruit. In southern Florida, the tree was rather commonly planted in the past. Here, as in Hawaii, fruiting is heavy, only a small amount of the crop has been utilized in home preserving. The jambolan has lost popularity, as it has in Malaya where it used to be frequently grown in gardens. Heavy crops litter streets, sidewalks and lawns, attracting insects, rapidly fermenting and creating a foul atmosphere. People are eager to have the trees cut down. Where conditions favor spontaneous growth, the seedlings become a nuisance, as well.
Varieties

The common types of jambolan in India are: 1) Ra Jaman, with large, oblong fruits, dark-purple or bluish, with pink, sweet pulp and small seeds; 2) Kaatha, with small, acid fruits. Among named cultivars are, mainly, 'Early Wild', 'Late Wild', 'Pharenda'; and, secondarily, 'Small Jaman' and 'Dabka' ('Dubaka'). In Java, the small form is called Djoowet kreekil; a seedless form is

Djoowet booten. In southern Malaya, the trees are small-leaved with small flower clusters. Farther north, the variety called 'Krian Duat'
has larger, thicker leaves and red inner bark. Fruits with purple flesh are more astringent than the white-fleshed types.

Climate
The jambolan tree grows well from sea-level to 6,000 ft (1,800 m) but, above 2,000 ft (600 m) it does not fruit but can be grown for its timber. It develops most luxuriantly in regions of heavy rainfall, as much as 400 in (1,000 cm) annually. It prospers on river banks and has been known to withstand prolonged flooding. Yet it is tolerant of drought after it has made some growth. Dry weather is desirable during the flowering and fruiting periods. It is sensitive to frost when young but mature trees have been undamaged by brief below-freezing temperatures in southern Florida.

Soil
Despite its ability to thrive in low, wet areas, the tree does well on higher, well-drained land whether it be in loam, marl, sand or oolitic limestone.

Propagation
Jambolan seeds lose viability quickly. They are the most common means of dissemination, are sown during the rainy season in India, and germinate in approximately 2 weeks. Semi-hardwood cuttings, treated with growth-promoting hormones have given 20% success and have grown well. Budding onto seedlings of the same species has also been successful. Veneer-grafting of scions from the spring flush has yielded 31% survivors. The modified Forkert method of budding may be more feasible. When a small-fruited, seedless variety in the Philippines was budded onto a seeded stock, the scion produced large fruits, some with seeds and some without. Approach-grafting and inarching are also practiced in India. Air-layers treated with 500 ppm indolebutyric acid have rooted well in the spring (60% of them) but have died in containers in the summer.

Culture
Seedlings grow slowly the first year, rapidly thereafter, and may reach 12 ft (3.65 m) in 2 years, and begin bearing in 8 to 10 years. Grafted trees bear in 4 to 7 years. No particular cultural attention seems to be required, apart from frost protection when young and control measures for insect infestations. In India, organic fertilizer is applied after harvest but withheld in advance of flowering and fruiting to assure a good crop. If a tree does not bear heavily, it may be girdled or root-pruned to slow down vegetative growth.

The tree is grown as shade for coffee in India. It is wind-resistant and sometimes is closely planted in rows as a windbreak. If topped regularly, such plantings form a dense, massive hedge. Trees are set 20 ft (6 m) apart in a windbreak; 40 ft (12 m) apart along roadsides and avenues.
Fruiting Season
The fruit is in season in the Marquesas in April; in the Philippines, from mid-May to mid-June. In Hawaii, the crop ripens in late summer and fall. Flowering occurs in Java in July and August and the fruits ripen in September and October. In Ceylon, the tree blooms from May to August and the fruit is harvested in November and December. The main fruiting season in India and southern Florida (where the tree blooms principally in February and March) extends through late May, June and July. Small second crops from late blooms have been observed in October. Individual trees may habitually bear later than others.

Harvesting and Yield
In India, the fruits are harvested by hand as they ripen and this requires several pickings over the season. Indian horticulturists have reported a crop of 700 fruits from a 5-year-old tree. The production of a large tree may be overwhelming to the average homeowner.

Pests and Diseases
In Florida, some jambolan trees are very susceptible to scale insects. The whitefly, Dialeurodes eugeniae, is common on jambolans throughout India. Of several insect enemies in South India, the most troublesome are leaf-eating caterpillars: Carea subtilis, Chrysocraspeda olearia, Phlegetonia delatrbc, Oenospila flavifuscata, Metanastria hyrtaca, and Euproctis fraterna. These pests may cause total defoliation. The leafminer, Acrocercops phaeospora, may be a major problem at times. Idiocerus atkinsoni sucks the sap of flowering shoots, buds and flower clusters, causing them to fall.

The fruits are attacked by fruit flies (Dacus diversus in India), and are avidly eaten by birds and four-footed animals (jackals and civets). In Australia, they are a favorite food of the large bat called "flying fox."
Diseases recorded as found on the jambolan by inspectors of the Florida Department of Agriculture are: black leaf spot (Asterinellapuiggarii); green scurf or algal leaf spot (Cephaleuros virescens); mushroom root rot (Clitocybe tabescens); anthracnose (Colletotrichum gloeosporioides); and leaf spot caused by Phyllosticta eugeniae.

Food Uses
Jambolans of good size and quality, having a sweet or subacid flavor and a minimum of astringency, are eaten raw and may be made into tarts, sauces and jam. Astringent fruits are improved in palatability by soaking them in salt water or pricking them, rubbing them with a little salt, and letting them stand for an hour. All but decidedly inferior fruits have been utilized for juice which is much like grape juice. When extracting juice from cooked jambolans, it is recommended that it be allowed to drain out without squeezing the fruit and it will thus be less astringent. The white-fleshed jambolan has adequate pectin and makes a very stiff jelly unless cooking is brief. The more common purple-fleshed yields richly colored jelly but is deficient in pectin and requires the addition of a commercial jelling agent or must be combined with pectinrich fruits such as unripe or sour guavas, or ketembillas.
Good quality jambolan juice is excellent for sherbet, sirup and "squash". In India, the latter is a bottled drink prepared by cooking the crushed fruits, pressing out the juice, combining it with sugar and water and adding citric acid and sodium benzoate as a preservative.

In Goa and the Philippines, jambolans are an important source of wine, somewhat like Port, and the distilled liquors, brandy and "jambava" have also been made from the fermented fruit. Jambolan vinegar, extensively made throughout India, is an attractive, clear purple, with a pleasant aroma and mild flavor.

Virrnani gives the following vinegar analysis: specific gravity, 1.0184; total acidity (as acetic

acid), 5.33 per 100 cc; volatile acid (as ascetic acid), 5.072 per 100 cc; fixed acidity, as citric, .275%; total solids, 4.12 per 100 cc; ash, .42; alkalinity of ash, 32.5 (N/10 alkali); nitrogen, .6613 1; total sugars, .995; reducing sugars, .995; non-volatile reducing sugars, .995; alcohol, .159% by weight; oxidation value, (KMnOi), 186.4; iodine value, 183.7; ester value, 40.42.
Other Uses

Nectar: The jambolan tree is of real value in apiculture. The flowers have abundant nectar and are visited by bees (Apis dorsata) throughout the day, furnishing most of the honey in the Western Ghats at an elevation of 4,500 ft (1,370 m) where the annual rainfall is 300 to 400 in (750-1,000 cm). The honey is of fine quality but ferments in a few months unless treated.

Leaves: The leaves have served as fodder for livestock and as food for tassar silkworms in India. In Zanzibar and Pemba, the natives use young jambolan shoots for cleaning their teeth. Analyses of the leaves show: crude protein, 9.1%; fat, 4.3%; crude fiber, 17.0%; ash, 6.0%; calcium, 1.3%; phosphorus, 0.19%. They are rich in tannin and contain the enzymes esterase and galloyl carboxylase which are presumed to be active in the biosynthesis of the tannins.
The essential oil distilled from the leaves is used to scent soap and is blended with other materials in making inexpensive perfume. Its chemical composition has been reported by Craveiro et al. in Brazil. It consists mainly of mono- or sesqui-terpene hydrocarbons which are "very common in essential oils."

Bark: Jambolan bark yields durable brown dyes of various shades depending on the mordant and

the strength of the extract. The bark contains 8 to 19% tannin and is much used in tanning leather and preserving fishing nets.

Wood: The wood is red, reddish-gray or brownish-gray, with close, straight grain. The very small, oval pores are often connected by waxy belts of loose tissue. The medullary rays are so fine as to be clearly visible only when greatly magnified. When fresh, the sapwood is attacked by powerpost beetles, pinhole borers and ambrosia beetles. Both sapwood and heartwood are perforated by the borer, Aeolesthes holosericea, if the bark is left on for as long as 10 months. Air-dried wood is apt to crack and split. When kiln dried, the heartwood is hard, difficult to work but polishes well. It is durable in water and resistant to borers and termites; tends to warp slightly. In India, it is commonly used for beams and rafters, posts, bridges, boats, oars, masts, troughs, well-lining, agricultural implements, carts, solid cart wheels, railway sleepers and the bottoms of railroad cars. It is sometimes made into furniture but has no special virtues to recommend it for cabinetwork. It is a fairly satisfactory fuel.

Medicinal Uses: The jambolan has received far more recognition in folk medicine and in the pharmaceutical trade than in any other field. Medicinally, the fruit is stated to be astringent, stomachic, carminative, antiscorbutic and diuretic. Cooked to a thick jam, it is eaten to allay acute diarrhea. The juice of the ripe fruit, or a decoction of the fruit, or jambolan vinegar, may be administered in India in cases of enlargement of the spleen, chronic diarrhea and urine retention. Water-diluted juice is used as a gargle for sore throat and as a lotion for ringworm of the scalp. The seeds, marketed in 1/4 inch (7 mm) lengths, and the bark are much used in tropical medicine and are shipped from India, Malaya and Polynesia, and, to a small extent, from the West Indies, to pharmaceutical supply houses in Europe and England. Extracts of both, but especially the seeds, in liquid or powdered form, are freely given orally, 2 to 3 times a day, to patients with diabetes mellitus or glycosuiria. In many cases, the blood sugar level reportedly is quickly reduced and there are no ill effects. However, in some quarters, the hypoglycemic value of jambolan extracts is disclaimed. Mercier, in 1940, found that the aqueous extract of the seeds, injected into dogs, lowered the blood sugar for long periods, but did not do so when given orally. Reduction of blood sugar was obtained in alloxan diabetes in rabbits. In experiments at the Central Drug Research Institute, Lucknow, the dried alcoholic extract of jambolan seeds, given orally, reduced blood sugar and glycosuria in patients.

The seeds are claimed by some to contain an alkaloid, jambosine, and a glycoside, jambolin or antimellin, which halts the diastatic conversion of starch into sugar. The seed extract has lowered blood pressure by 34.6% and this action is attributed to the ellagic acid content. This and 34 other polyphenols in the seeds and bark have been isolated and identified by Bhatia and Bajaj.
Other reported constituents of the seeds are: protein, 6.3-8.5%; fat, 1.18%; crude fiber, 16.9%; ash, 21.72%; calcium, 0.41%; phosphorus, 0.17%; fatty acids (palmitic, stearic, oleic and linoleic); starch, 41%; dextrin, 6.1%; a trace of phytosterol; and 6 to 19% tannin.

The leaves, steeped in alcohol, are prescribed in diabetes. The leaf juice is effective in the treatment of dysentery, either alone or in combination with the juice of mango or emblic leaves. Jambolan leaves may be helpful as poultices on skin diseases. They yield 12 to 13% tannin (by dry weight).
The leaves, stems, flowerbuds, opened blossoms, and bark have some antibiotic activity. A decoction of the bark is taken internally for dyspepsia, dysentery, and diarrhea and also serves as an enema. The root bark is similarly employed. Bark decoctions are taken in cases of asthma and bronchitis and are gargled or used as mouthwash for the astringent effect on mouth ulcerations, spongy gums, and stomatitis. Ashes of the bark, mixed with water, are spread over local inflammations, or, blended with oil, applied to bums. In modern therapy, tannin is no longer approved on burned tissue because it is absorbed and can cause cancer. Excessive oral intake of tannin-rich plant products can also be dangerous to health.