Efficacy of Eugenia Jambolana (Jamun): A Review

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Abstract

Considerable literature on medicinal uses of Eugenia jambolana (Jamun) is available in the traditional as well conventional system of medicine. Jamun has been used in many traditional particularly Unani system of medicine since long. In this review paper, the study of Eugenia jambolana (Jamun), its medicinal uses along with pharmacological actions is being presented. The plant description, its chemical constituents and properties have also been included. The paper also demonstrates the geographical distribution of Eugenia jambolana (Jamun) across the world. Various pharmacological studies have been conducted on Eugenia jambolana (Jamun) regarding its efficacy for therapeutic purpose. These studies are also coded in the present review. The analysis shows that Eugenia jambolana (Jamun) could be used as an effective medicine for various ailments in both as single as well in compound formulations.

Keywords: Eugenia jambolana (Jamun), Unani Medicine, therapeutic uses.

Introduction

Jamun (Eugenia jambolana) is one of the most commonly used anti-hyperglycemic drugs. It is large evergreen tree home-grown to the Indian subcontinent and belongs to the family Myrtaceae.¹ It has several synonymous like Syzygium cumini Skeels or Syzygium jambolana or Eugenia cuminii or Myrtus cumini or Eugenia caryophyllifolia and so on.¹ ² Trees of Jamun are found growing throughout the Asian subcontinent, Eastern Africa, South America, Madagascar and also in the United States of America. The trees grow up to a height of 50 ft and have large canopy. The young bark is pale brown in colour, while it became darkish brown and scaly when get matured. The leaves are elliptic to broadly oblong, smooth, glossy,
leathery and fibrous in nature. It flowers once in a year and in the Indian subcontinent it is mostly during the month of June–July. The fruits are found in clusters of four to twenty and do not ripen simultaneously.\(^1\) The ripe fruits are used for health drinks, making preserves, squashes, jellies and wine. Despite of its domestic use Jamun is also well known for its medicinal properties. Various pharmacological actions are documented in traditional system of medicine especially in Unani literature. These actions are now has been proved by several animal as well clinical studies like anti-bacterial, anti-viral, anti-fungal, anti-diabetic, anti-oxidant, gastro protective, anti-ulcerogenic, free radical scavenging, anti-diarrheal and so many more.\(^3\)

**Scientific classification**

The botanical classification of plant according to USD database is described in table below.\(^4\)

<table>
<thead>
<tr>
<th>Kingdom</th>
<th>Plantae</th>
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<td>Sub-kingdom</td>
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</table>

**Vernacular names and Etymology**

Scientific name: *Syzygium jambolanum, Eugenia cumini, Syzygium cumini, Eugenia jambolana*

Assamese : Jamu, kala jamu
Bengal : Kala-jam
English : Jaman, black plum, damson plum, duhat plum, Indian blackberry, jambolan, jambolan plum, Java plum, Malabar plum, Portuguese plum, black plum, black plum tree, Indian blackberry, jambolan, jambolan-plum, Java plum, malabar plum, Portuguese plum
Gujarati : Jambudo
Kannad : Ama-Phala, Jambunerale, Nayinerale
Konkani : Jambul
Hindi : Jaman, Jam, Phalinda, Jemni-phalani, Paiman, Jamoom
Malayalam : Naval
Manipuri : Gulamchat, jam
Marathi : Jambool
Mizo : Hmuipui
Punjabi : Babla, Babul, Babur, Kikar
Sanskrit : Nilaprala, Rajaphala, Jambu, Jambula, Megha-varna
Tamil : Nagun, Navel, Nairuri, Nawar, Narvel, Naga, Naval
Telugu : Naeraedu, Pedda-neredu, Nairuri, Racha-neredu, Nareyr, Nasodu
Urdu : Jaman

Habitat and distribution
Eugenia jambolana (Jamun) belonging to the family Myrtaceae is a large evergreen tree indigenous to the Indian subcontinent. The genus comprises around 1100 species and has a native range that extends from Africa and Madagascar through southern Asia. *S. cumini/Eugenia jambolana* is a large tree from Indian subcontinent, but widely cultivated in many countries in Asia, Africa, and South America. Tree of Jamun are found growing all the way through the Asian subcontinent, Burma, Nepal, India, Pakistan, Sri Lanka and Indonesia Madagascar. Also these have naturalized to Florida and Hawaii in the United States of America. It is widely distributed all over India, Ceylon-Malaya and Australia.

Description
Jamun is a large evergreen tree of around 30 m height. Bark are pale brown in colour and rough in texture mostly found on old stems. The leaves are leathery, obovate-elliptic with 6 to 12 centimeters long with broad tip and less acuminate (may vary in shape, smooth and glowing with numerous nerves which unite in the margin), the tip being broad and less acuminate. Panicles measured 4 to 6 cm arise mostly from branchlets which are below the leaves. Flowers are scented, greenish- white 7.5-13 mm across in branched clusters at stem tips, calyx cuplike; 4 petals, fused into a cap; many stamens. The calyx is funnel-shaped, about 4 mm long, and toothed. The fruits are found in clusters of four to twenty and do not ripen simultaneously. Fruits are of variable up to 1.5 to 3.5 cm long, ellipsoid or oblong, black with pink juicy pulp. These fruits are of dark-purple or nearly black, luscious, fleshy, and edible; it contains a single large seed.

Parts used
Fruit
Leaves

www.wjpps.com Vol 6, Issue 6, 2017. 738
Dried seeds\textsuperscript{[9][8]}

Bark\textsuperscript{[5]}

**Chemical constituents**

- **Seeds**  
  Jambosine, Gallic acid, Ellagic acid, Corilagin, 3,6-hexahydroxy diphenoylglucose, 1-galloylglucose, 3-galloylglucose, Quercetin, β-sitosterol, 4,6 hexa hydroxy diphenoyl glucose\textsuperscript{[3][10][11]}

- **Flowers**  
  Oleanolic acid, Ellagic acids, Isoquercetin, Quercetin, Kampferol and Myricetin\textsuperscript{[3][10]}

- **Leaves**  
  β-sitosterol, Betulinic acid, Mycamino, Crategolic (maslinic) acid, n-heptacosane, n-nonacosane, n-hentriacontane, Noctacosanol, n-triacontanol, n-dotriaccontanol, Quercetin, Myricetin, Myricitrin and the flavonol glycosides myricetin 3-O-(4''-acetyl)-α-Lrhamnopyranosides \textsuperscript{[3][10][12]}

- **Stem bark**  
  Friedelin, Friedelan-3-α-ol, Betulinic acid, β-sitosterol, Kaempferol, β-sitosterol-Dglucoside, Gallic acid, Ellagic acid, Gallotannin, Ellagitannin and Myricetin\textsuperscript{[3][10]}

- **Fruit pulp**  
  Anthocyanins, Delphinidin, Petunidin, Malvidin-diglucosides \textsuperscript{[3][10][11]}

- **Essential oils**  
  α-terpeneol, Myrtenol, Eucarvone, Muurolol, α-myrtental, 1, 8-cineole, Geranyl acetone, α-cadinol and Pinocarvone\textsuperscript{[3][13]}

**Temperament (Mizaj)**

Cold\textsuperscript{2}\textsuperscript{[9][14]} and Dry\textsuperscript{2}\textsuperscript{[9][14]}

Cold and Dry\textsuperscript{15}

Cold\textsuperscript{2} and Moist\textsuperscript{10}[9][14]

Cold\textsuperscript{2} and Dry\textsuperscript{3} [14]

**Pharmacological actions (afaal-o-khawas)**

*Eugenia jambolana* (Jamun) exhibits following properties:

Astringent (*Qabiz*)\textsuperscript{5}[7][8][9][14][16]

Anti-bilious (*Qaat-e-Safra*)\textsuperscript{7}[8][9][14]

Anti-diabetic (*Naaf-e-Ziyabetus*)\textsuperscript{5}[9][14]

Appetizer (*Moharrik-e-Ishtaha*)\textsuperscript{9}[15][16]

Nutritive/ General Tonic (*Muqawi Aam*)\textsuperscript{9}

Liver tonic/ Hepatoprotective (*Muqawwi Jigar*)\textsuperscript{9}[14][15][16]
Stomachic (Muqawwi Maid)\textsuperscript{[7][8][14][15][16]}

Anti-pyretic (Musakkin-e-Hararat)\textsuperscript{[15][16]}

**Therapeutic uses (Mawaq-e-istemaal)**

As per the classical Unani literature *Eugenia jambolana* (Jamun) is indicated in the following diseases.

Dysentery (Zaheer)\textsuperscript{[5][9][15][16]}

Haemorrhagic diarrhoea (Is’ haal-e- Damwi)\textsuperscript{[5][9][15][16]}

Bilious diarrhoea (Is’haal-e-Safravi)\textsuperscript{[7][8][9]}

Gastric upset (Zof-e-Meda)\textsuperscript{[15]}

Spleenomegaly (Warm-e-tihaal)\textsuperscript{[5][9]}

Glycosuria in Diabetes Mellitus (Dafe Bol-e-Shakri)\textsuperscript{[5][7][9]}

Diabetes (Ziyabetes)\textsuperscript{[5][7][8][9][14][15][16]}

Ascites (Istisqa)\textsuperscript{[9][14]}

Oral ulcer / Stomatitis (Qula-e-Dahan)\textsuperscript{[9][14]}

Fever (Bukhaar)\textsuperscript{[9]}

Diphtheria (Khannaq)\textsuperscript{[9][14]}

Dribbling of urine (Tagterul-baul)\textsuperscript{[14][9]}

Palpitation (Khafqaan)\textsuperscript{[9]}

Alopecia Areata (Daus-saalab)\textsuperscript{[14][9]}

Epistaxis (Roaj)\textsuperscript{[9][14]}

Typhoid (Moti-jhara)\textsuperscript{[9]}

Bleeding piles (Bawaseer-e-Damvi)\textsuperscript{[14][9][a]}

Leucorrhoea (Selan-ur-Reham)\textsuperscript{[14][9]}

**Pharmacological studies**

- Anti-bacterial action\textsuperscript{[17][18][19]}
- Anti-fungal activity\textsuperscript{[20][18]}
- Anti-viral activity\textsuperscript{[21]}
- Free radical scavenging\textsuperscript{[22][23]}
- Hepato-protective effects\textsuperscript{[24]}
- Gastro-protective effects\textsuperscript{[25]}
- Anti-diabetic activities\textsuperscript{[26][27][28][29][30][31][32]}
- Hypo-lipidemic effect\textsuperscript{[26][33]}
Cardio-protective effects.\[^{34}\]
Anti-diarrheal effects\[^{35}\]
Anti-allergic effects\[^{36}\]
Anti-neoplastic effects\[^{37},^{38},^{39}\]

**Therapeutic dose (Miqdar-e-khurak)**
Seeds 3g\[^{16}\]
3-5 g\[^{15}\]
Pulp 2-3 taula\[^{16}\]

**Adverse effects (Muzirat)**
May cause intestinal irritation\[^{9},^{14}\]
Harmful to lungs when use in excess, may cause sil\[^{9},^{14}\]

**Corrective (Musleh)**
Zanjabeel (Zingiber officinalis)\[^{9},^{14}\]
Amla (Emblica officinalis)\[^{9},^{14}\]
Ajwain (Trachyspermium ammi)\[^{9},^{14}\]
Filfil Siyah (Piper nigrum)\[^{16}\]
Roghan-e-Badaam (Oil of Prunus amygdalus)\[^{14}\]
Salt\[^{14}\]

**Formulations (Murakkabat)**
Jamun (*Eugenia jambolana*) is an ingredient of the following compound Unani formulations.
*Safoof Ziyabetus*\[^{15}\]
*Qurs Ziyabetus*\[^{15}\]
*Safoof Khasta*\[^{15}\]
*Sharbat-e-Jamun*\[^{40}\]

**SUMMARY**
Jamun exhibits various pharmacological action under the light provided by classical literature as well has been proved by many studies on scientific parameters. Jamun is wonderful drug for various ailments and is also known for its safety and efficacy. Along with its domestic uses it is best drug for gastric upset, hepato- protection, controlling blood sugar, checking
diorrhoea etc. Further studies are need to be conducted on Jamun (*Eugenia jambolana*) to explore its efficacy, safety and mechanism of action.

**REFERENCES**


40. Anonymous; The Unani Pharmacopoeia of India, part-1, 2006; 3: 56.