



Pelagia Research Library

Asian Journal of Plant Science and Research, 2023, 13(5)



## A Review on Bioactive Compounds Found in Various Part of (*Syzygium cumini*) to Curb Different Health Issues

Pinky Katara<sup>1\*</sup>, JR Rot<sup>1</sup>, SV Vala<sup>1</sup>, MK Sujnan<sup>1</sup> and SK Jha<sup>2</sup>

<sup>1</sup>Department of Biological Science, Sage University, Indore, Madhya Pradesh, India

<sup>2</sup>Department of Forestry, Navsari Agricultural University, Navsari, Gujarat, India

\*Corresponding author: Pinky Katara, Department of Biological Science, Sage University, Indore, Madhya Pradesh, India, Tel: 9340206201; E-mail: katarabittu1013@gmail.com

**Received date:** February 07, 2023, Manuscript No. AJPSKY-23-15855; **Editor assigned date:** February 09, 2023, PreQC No. AJPSKY-23-15855 (PQ); **Reviewed date:** February 23, 2023, QC No. AJPSKY-23-15855;

**Revised date:** April 17, 2023, Manuscript No. AJPSKY-23-15855 (R); **Published date:** April 24, 2023, DOI: 10.36648/2249-7412.13.5.56

**Citation:** Katara P, Rot JR, Vala SV, Sujnan MK, Jha SK (2023) A Review on Bioactive Compounds Found in Various Part of (*Syzygium cumini*) to Curb Different Health Issues. Asian J Plant Sci Vol:13 No:5:56

### ABSTRACT

*Syzygium cumini* is a commonly known as “jamun” that widely used in different health issues. The bioactive compounds found in various parts of plant have been scientifically proved to cure vast range of diseases and particularly in diabetes. The bio compounds like Flavonoids, essential oils, tannins, oxalic acid and gallic acid have been identified as effective antianaemic, antidiarrheal, antipyretic, antibacterial, anti-inflammation and gastro protective. The seeds are alleged to contain alkaloids, jambosine and glycoside jamoline or antimellin that halts the diastical conversion of starch to sugar. In this review we trying to described the existing information on traditional and medicinal uses of various parts of plant.

**Keywords:** *Syzygium cumini*; Bioactive compounds; Bark; Leaves; Fruit; Seeds and medicinal uses

### Introduction

*Syzygium cumini* is evergreen plant which belongs to family Myrtaceae that native to tropics, particularly tropical America and Australia. It has a globally, although highly uneven distributed in tropical and subtropical regions [1]. It comprises around 1100 species, and has native range that extends from Africa and Madagascar through southern Asia east through the pacific [2]. It highest level of diversity occurs from Malaysia to Northeastern Australia, although many species has poorly known and so many not mentioned taxonomically. The plants of this family are very rich in volatile oils that reported to use in different medicine [3]. Apart from this other species in this family have long back history both as edible fruits and as traditional medicine in vast ethno botanical practices through the world [4]. The medicinal importance is due to presence of malic acid, oxalic, galic acid and tannins. A wide range of works on tannin, flavonoids, essential oil and betulic acid was reported to have diverse pharmacological activities like gastroprotective, antiulcerogenic, antibacterial and antimalarial [5].

### Literature Review

#### Morphological description

A moderately fast emergent tropical evergreen tree, *S. cumini* grows up to 15-30 m tall, with a straight to crooked, short, stout trunk (40-100 cm dia) [6-9]. Crown irregular/globular with branches; bark 1.0-2.5 cm thick; brown or dark grey in color; fairly smooth; astringent/bitter taste. Twigs-light green (young), grey (matured), slightly flattened, without hairs. Leaves margin entire, narrow, transparent; size 5-15 cm long, 2-8 cm broad; arrangement opposite; appearance thick, coriaceous, glabrous, upper surface dark green, lower surface yellowish and dull; shape broadly obovate, elliptic or elliptic oblong, base cuneate or rounded; apex short, rounded or obtuse; edges not toothed; stalk slender and light yellow, 1.5-2 cm long; midrib-prominent, light yellow; veins fine, close together, parallel, gland dotted [10].

### Bioactive compound

The plant is rich in myrecetin, kaemferol, isoquercetin, anthocyanins, glucoside and ellagic acid [11,12]. The seeds are alleged to contain alkaloids, jambosine and glycoside jamoline or antimellin that halts the diastical conversion of starch to sugar and seed extract relive in blood pressure by 35% which is due to presence of ellagic acid. Apart from this it also have been reported as rich in flavonoids, a known antioxidant which account for the scavenging of free radicals serves as protective antioxidant enzymes [13,14]. And also high level of total phenolics with significant antioxidant activity, and are fairly rich in proteins and calcium.

### Discussion

The widespread use of *Syzygium cumin* in traditional medicine reflects its pharmacological importance. The edible pulp of plant forms 75% of the whole fruit. Various mineral and vitamins were reported like Mg, P, Fe, Na, K, Cu, S, vitamin C, vitamin A, riboflavin, nicotinic acid, choline and folic acid [15]. Glucose and fructose are the principle source of sweeteners in ripe fruit with no trace of sucrose. The astringency activity is due to efficiency to combine with tissues and proteins and precipitate them. Tannins are also efficient for gastroprotective and antiulcerogenic activity. The purple colour of the fruit is due presence of one or two cyanidin diglycosides (**Table 1**).

**Table 1:** Bioactive compound extracted from parts of plant with reference to different health issue.

Plant parts	Health issue	Bioactive compound
Seeds	Diabetes, anti-oxidant gastric ulcer	Jambosine, gallic acid, ellagic acid, corilagin, 3,6-hexahydroxy diphenylglucose, 1-galloylglucose, 3-galloylglucose, quercetin, $\beta$ -sitosterol, 4,6 hexahydroxydiphenylglucose,
Stem bark	Diabetes, sore throat, bronchitis, asthma, dysentery, ulcer	Friedelin, friedelan-3- $\alpha$ -ol, betulinic acid, $\beta$ -sitosterol, kaempferol, $\beta$ -sitosterol-Dglucoside, gallic acid, ellagic acid, gallotannin and ellagitannin and myricetine
Flowers	-	Oleanolic acid, ellagic acids, isoquercetin, quercetin, kampferol and myricetin
Fruit pulp	Diabetes, anti-oxidant, anti cancer, antihyperlipidemic	Anthocyanins, delphinidin, petunidin, malvidin-diglucosides
Leaves	Diabetes, anti-allergic, anti-oxidant, anti viral, anti-inflammation, DNA damage	$\beta$ -sitosterol, betulinic acid, mycaminose, crategolic (maslinic) acid, n-hepatcosane, n-nonacosane, n-hentriacontane, noctacosanol, n-triacontanol, n-dotricontanol, quercetin, myricetin, myricitrin and the flavonol glycosides myricetin 3-O-(4"-acetyl)- $\alpha$ Lrhamnopyranosides
Essential oils	-	$\alpha$ -terpeneol, myrtenol, eucarvone, muurolol, $\alpha$ -myrtenal, 1, 8-cineole, geranyl acetone, $\alpha$ -cadinol and pinocarvone
Roots	Anti-oxidant	Glycosides, Isorhmanetin, 3-O- Rutinosides

### Medicinal uses

*Syzygium cumini* has traditionally far more credited in folk medicine and in the pharmaceutical trade than in any other field [16]. The fruit is stated to be astringent, stomachic, carminative, antiscorbutic and diuretic. Additionally, a fruit extract showed antimicrobial and cytotoxic activities and may potentially be used on topical antimicrobial products. In comparison to other non-traditional fruits jambolao showed considerable high antioxidant activity, which can constitute such as anthocyanins, tannins and flavonols. The anthocyanin composition was characterised by the presence of 3,5-diglucosides of five out of six aglycones commonly found in foods. Fruits contain many different kinds of anti-oxidant compounds, including flavonoids, phenolics, carotenoids and vitamins, which are all considered beneficial to human health, for decreasing the risk of degenerative diseases by reduction of oxidative stress, and for the inhibition of macromolecular oxidation [17]. There is a very high anthocyanin content in *S. cumini* fruits which attributes to its antioxidant and free radical scavenging activity. These pigments can be a good source of natural food colourants for the food processing industries.

The juice of the ripe fruit, or a decoction of the fruit, or Fruit vinegar, may be administered 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. Jamun juice and mango juice, half and half, quench thirst in diabetics. Extracts of both, but especially the seeds, in liquid or powdered form, are freely given orally, two or three times a day to patients with diabetes mellitus or glycosuria [18]. In many cases, the blood sugar level reportedly is quickly reduced and there are no ill effects. Fresh seeds are considered superior to dried seeds.

### Conclusion

*Syzygium cumini* is widely used by traditional healers for the treatment of various diseases especially diabetes and other related complications. Apart from this plant have so many important bioactive compounds which confer the most of medicinal characteristics. The majority work has been done on seed and its chemical composition for diabetes but other parts of plant has potential to cure wide range of health issue.

Although the parts of *syzygium cumini* proves to be a great nutraceutical due to its healer properties, there is still need to have more scientific basis to use to cure diseases. Based on available information plant possess more exploration in the field of medicines.

### References

1. Adelia F, Marcella C, Mercadante Z (2011) Identification of bioactive compounds from Jambolao (*Syzygium cumini*) and antioxidant capacity evaluation in different pH conditions. Food Chem 126:1571-1578
2. Bajpai M, Pande, Tiwari SK, Prakas D (2005) Phenolic contents and antioxidant properties of some food and medicinal plants. Int J Food sci Nutr 56:287-291
3. Chaudhary B, Mukhopadhyay K (2012) *Syzygium cumini* (L) Skeels: A potential source of nutraceuticals. Int J Pharm Biol Sci 2:46-53
4. Farswana M, Mazumder P, Parcha V (2009) Modulatory effect of an isolated compound from *Syzygium cumini* seeds on biochemical parameters of diabetes in rats. Int J Green Pharm 3:128-133
5. Gordon A, Jungfer E (2011) Phenolic constituents and antioxidant capacity of four underutilized fruits from the amazon region. J Agric Food Chem 59:7688-7699
6. Kubola J, Siriamornpun S, Meeso N (2011) Phytochemicals, vitamin C and sugar content of Thai wild fruits. Food Chem 126:972-981
7. Leelavinothan P, Saravanan G (2006) Effects of *Syzygium Cumini* bark on blood glucose, plasma insulin and C-peptide in streptozotocin induced diabetic rats. Int J Endocrinol Metab 4:96-105
8. Li L, Adams LS, Chen S, Killian C, Ahmed A, et al., (2009) Eugenia jambolana Lam. berry extract inhibits growth and induces apoptosis of human breast cancer but not non-tumorigenic breast cells. J Agric Food Chem 57:826-831
9. Mahmoud II, Marzouk MS, Moharrm FA, El-Gindi MR, Hassan AM (2001) Acylated flavonol glycosides from Eugenia jambolana leaves. Phytochemistry 58:1239-1244
10. Mukerji B (1951) Indigenous Indian drugs used in the treatment of diabetes. J Sci Ind Res 10:1-18
11. Ranjan A, Jaiswal A, Raja B (2011) Enhancement of *Syzygium cumini* (Indian Jamun) active constituents by Ultra-Violet (UV) irradiation method. Sci Res Essays 6:2457-2464
12. Ravi K, Ramchandran B, Subramanian S (2004) Effect of Eugenia jambolana seed kernel in tissue antioxidant defence system in straptozotocin induced diabetes in rat. Life Sci 75:2717-2731
13. Reynertson KA, Basile MJ, Kennely EJ (2005) An antioxidant properties of seven Myrtaceous fruits. Etnobot Res appl 3:25-35
14. Roy A, Bhattacharya S, Pandey JN, Biswas M (2011) Anti-inflammatory activity of *Syzygium cumini* leaf against experimentally induced acute and chronic inflammations in rodents. Altern Med Stud 1:23-25
15. Sagrawat H, Mann A and Kharya M (2006) Pharmacological Potential of Eugenia Jambolana: A Review. Pharmacogn Mag 2:96-104

16. Shafi P, Rosamma M, Jamil K, Reddy PS (2002) Antibacterial activity of *Syzygium cumini* and *Syzygium travancoricum* leaf essential oils. *Fitoterapia*. 73:414-416
17. Srivastava Y, Venkatakrisna-Bhatt H, Gupta OP (1983) Hypoglycemia induced by *Syzygium cumini* Linn seeds in diabetes mellitus. *Asian J Med Sci* 26:489-491
18. Steinmetz EF (1960) A botanical drug from the tropics used in the treatment of diabetes mellitus. *Acta Phytother* 7:23-25