



### Short Review Paper

## Syzygium cumini: a review of its phytochemical and homoeopathic uses

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### Abstract

*Syzygium Cumini* in India commonly known as jambul, jambolan, jamblang or kala jamun. It is used in Homoeopathy as a medicinal substance. This plant is used for treatment and in prevention of different diseases in Homoeopathy practice from more than one fifty years back in different countries. This plant especially restoration the body wt. and inhibits the excessive blood glucose levels, as well as recovery in the activities of antioxidant enzymes like catalase, peroxidase and super oxide dismutase. Fruits are used in pimples emaciation, prickly heat, diabetes Insipidus, urinary system to cure number of diseases such as urinary tract infections, cystolithiasis, dysuria and in the Homoeopathic system of medicine for many years. *Syzygium* was an important medicinal plant since long and therefore, scientists are also curious to prove the pharmacological and phytochemical actions.

**Keywords:** Syzygium, Homoeopathy, Phyto chemical studies.

### Introduction

*Syzygium cumini* belongs to Myrtaceae and known as jambul, Jambolan and Kala Jamun in India. Health organizations in the world also recommended that *Syzygium cumini* is safe drug in various diseases<sup>1</sup>. In Ancient times this plant was well known since 500 BC. According to the literatures, growing plant up to thirty two meter heights also live more than one twenty years. *Syzygium cumini* plant bark is rough and dark grey colour becoming light grey colour with smoother higher up.

The wood of the plant is water proof and leaves have a turpentine, pinkish, dark green with a yellow midrib when mature. *Syzygium* leaves are used for live stock<sup>2</sup>. This whole plant has good nutritional values. *Syzygium cumini* plant start

flowering from February to May, plant flowers are fragrant and small about six millimeters in diameter and fruits develop by April to July<sup>3</sup>. *Syzygium Cumini* fruits are oblong dark grey colour and fruits are combination of sweet, sour and stringent in flavor.

### History and distribution

*Syzygium cumini* is located in South Asia, India, Indonesia, Sri Lanka, Bangladesh as well as Nepal and some other countries. In India *Syzygium cumini* available more in Himalayas, Kerala, Karnataka, Andhra Pradesh, North India and East India. This plant is also found in China, Philippines, Russia, Thailand and other countries etc. *Syzygium* was used successfully for different diseases in Africa, Israel<sup>4</sup>, Algeria, California and West Indies etc.



(I) Flower in Stage



(II) Fruiting Stage



(III) Mature Fruit Stage



(IV) Seeds of Syzygium Cumini

**Figure-1:** Different Stages of Syzygium Cumini.

## Botanical Description

*Syzygium cumini* belongs to Myrtaceae family and the plant is a medium sized tree 10 – 30 meter height straight to crooked, cumini trunk stout, 40-90 cm in diameter. The plant leaves are 3-9 cm broad, 7-18 cm long, thick, elliptic, lower surface dull yellow and upper surface green colour. *Syzygium* flowers are 5-6 long and wide, white or pink, small about 6 mm long, calyx, conical, green base 2 mm long, united in to a cap. A fruit of plant is crowded in clusters, 1-2 cm long and seed of each berry is strongly astringent and slightly bitter 1-2.5 cm long, sometimes 3 cm angular also can live long years. Cumini fruits single and round or oval to elliptic in shape, outer layer is dark brown and green in colour, mild layer light pink in colour, inner layer of the fruits white in colour. The plants fruit formation take place about 32 days after flowering.

## Phytochemical and medicinal studies

*Syzygium cumini* phytochemicals helps to bring human beings from disease to health status (Vital Force) without any side effects. In this plant leaves have myricitrin, myricetin, noctacosanol, mycaminose and maslinic acid<sup>5,6</sup>. *S. cumini* seeds are gallic acid, ellagic acid, Jambosine and quercetin etc., plants flowers have myricetin, kampferol, ellagic acid and oleanolic acid<sup>5,7</sup>. *Syzygium* stem are gallotannin, myricetane, ellagitannin, betulinic acid, friedelin, gallic acid and kaempferol. This plant fruits contain petunidin, anthocyanins and delphinidin<sup>5,6,8</sup>. It is widely used throughout India and in Homoeopathy medicine for the treatment of Type 2 Diabetes Mellitus and Diabetes Insipidus.

*Syzygium cumini* fruits contain glucoside, ellagic acid. This acid cause starch which convert in to glucose in case of Hyperglycemia conditions<sup>9</sup>. The whole plant can be used in different ailments like inflammatory conditions, colic, amoebic and bacillary dysentery, fistula, cough with expectoration, blisters in decades worm infections and diabetes<sup>10</sup>. These plants are also used in cancer, abdominal pain, gastroesophageal diseases and piles<sup>11</sup>.

In homoeopathic and ethnobotanical literature the following medicinal actions of *Syzygium Jambolanum* plant have been reported that Diabetes and insipidus patients have much thirst with profuse flow of urine in every two hours. Skin is prickly heat in upper part of the body: small red pimples, which itched violently, old ulcers of the skin, diabetic ulceration; old ulcers of skin, probably of a diabetic foundation<sup>12</sup>.

Recent Phytochemical Studies showed that the *Syzygium cumini* bark contains carbohydrates and tannins etc., accounting for its long term use as an astringent to combat ailments like dysentery<sup>13</sup>. This plants seeds, bark and fruits shown that anti inflammatory action, antipyretic action in rats and antioxidant action in known case of diabetic rats<sup>14</sup>. Homoeopathic *Syzygium cumini* mother tincture useful for liver, increase in

blood (anemia conditions), gingivitis and also for worm infections in adult and old persons. The whole plants as an mother tincture indicated in uncontrolled Type 2 Diabetes mellitus patients, such as hypoglycemia as well as hyperglycemia and prevent complications of diabetes<sup>5</sup> i.e. Diabetes Neuropathy, Diabetes retinopathy and diabetes nephropathy<sup>15</sup>. *Syzygium cumini* whole plant (fruits, leaves, seeds, bark) having large usages in Global Homoeopathy system especially in gastric ulcers. Because *S. Cumini* have rich in gastroprotective activity (due to its effects on both defensive and offensive factors). Indian medical as well as International medical journals conclusion that *Syzygium cumini* can be beneficial in human with diabetes.

## Pharmacological studies

**Anti diabetic Activity:** According to Karnic et al the *Syzygium cumini* (ethanolie) have decrease blood sugar level by 20 percentages after 1 hour in excessive glucose in rabbits<sup>16</sup>. According to Bansal et al., reported that hypoglycemia controlled by after oral application of *S. Cumini* seed (cathepsin increase activity)<sup>14</sup>. Bose and Achrekar proved the clinical effectiveness of the *Syzygium cumini* seeds in untreated control diabetic animals<sup>18,19</sup>. Many research studies showed that this plant fruit increase stimulation of insulin secretion in case of hypoglycemic condition.

The *Syzygium cumini* seeds action of mechanism due to the potentiation of insulin effect of plasma by elevation pancreatic secretion of insulin from beta cells of islets of langerhans and its release from the bound from mechanism of mycaminose similar to the glibenclamide.

**Anti Allergic Activity:** Brito studies showed that this plant seeds shows antiallergic effect is due to the inhibition of mast cell degranulation and of histamine and serotonin effects where as the inhibition of eosinophil accumulation in the allergic pleurisy model<sup>20</sup>.

**Anti Inflammatory Activity:** Muruganandan study shows that *Syzygium* seeds have a potent anti inflammatory activity without any side effect to gastric mucosa and other systems also. He also noticed that more anti inflammatory activities are in *Syzygium cumini* stem and seeds<sup>21</sup>.

**Anti Pyretic Activity:** Sharma et al. evaluated chloroform extracts of dried seeds showed antipyretic activity and Dr. Mahapatra studied methanol extracts of *Syzygium* seeds administered intraperitoneally to rats at dose of fifty milligrams per kg were active versus yeast induced pyrexia<sup>22</sup>.

**Anti Diarrhoeal Activity:** Mukherjee explained that antidiarrhoeal activity in *Syzygium* against different experimental models of diarrhea in rats. It produced significant inhibition of diarrhea and significant decreased gastrointestinal motility in rats (charcoal meal tests)<sup>23</sup>.

## Conclusion

The information collected above on *Syzygium cumini* across the globe having similarity with available literature. *Syzygium* plant bark, seeds, leaves; fruits are used for the treatment of different diseases especially in Type 2 Diabetes Mellitus (Chronic) and Diabetes Insipidus. According to the review literature, the *Syzygium cumini* medicinal plants are safer in admission for various diseases. These plants were used successfully for different diseases in different countries with safe results.

This review describes the information about *Syzygium* which includes Homoeopathic description, botanical description, medical action and Phytochemical and pharmacological studies. *Syzygium* is one of the plants used in Homoeopathic system for the treatment of chronic Type 2 Diabetes Mellitus<sup>15</sup> and insipidus, urinary system, upper respiratory, worms infections, lower intestinal tract, skin and diabetic ulcerations.

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