



Review Article

Fabulous *Syzgium Cumini* Linn. Skills with Potentiality of Ethanopharmacological Consequence

Bina Rani¹, Bhanwar Lal Jat², Sangeeta Agarwal³, Khushboo Chaudhary⁴, Raaz K Maheshwari⁵

¹Department of Engineering Chemistry & Environmental Engineering, PCE, Sitapura, Jaipur, Rajasthan, India

²Department of Botany, SBRM Govt. PG College, Nagaur, Rajasthan, India

³Department of Chemistry, SSV PG College, Hapur, Bulandshahar, UP, India

⁴Department of Chemical Engineering, MNIT, Jaipur, Rajasthan, India

⁵Department of Chemistry, SBRM Govt. PG College, Nagaur, Rajasthan, India

ABSTRACT

Jamun has been included among a number of herbal medicines found in different parts of the world, such as the bilberry which all have the unique ability to lower elevated blood sugar levels in the body especially in diabetics and hyperglycemic individuals. Herbalist typically recommend remedies made from the jamul to counteract the deleterious effects of long term diabetes. The strong carminative properties of the jamul remedy are also a very effective treatment for dealing with the symptoms of indigestion and other digestive complaints such as excessive gas. Remedies made from the jamul help soothe chronic stomachache and ease abdominal cramps and aid in dispersing excess gas in the abdomen. Extensive work on jamun's pharmacological properties is being carried out in India and elsewhere. Presence of various flavonoides, essential oils and molecules such as gallic acid, oxalic acid, malic acid, betulic acid, phytosterols, resins and tannins contribute to its medicinal properties and pharmacological activities such as antimalarial, anti-infective, antibacterial and gastroprotective. Jams, jellies, squashes, vinegar, juices, beverages, pickles and wine are made from the jamun fruits, industrially. Glucose & fructose are the principal sugars in the ripe fruit with no trace of sucrose. The anthocyanins in the fruit are responsible for coloring the mouth and tongue purple. The fruit and its juice and the seed contain a biochemical called jamboline and glycoside which checks the conversion of starch into sugar therefore, useful for sugar patients. It also contains vitamins C & A, riboflavin, nicotinic acid, choline, folic acid, malaic acid, Na, K, Ca, P, Mn, Zn & Fe. Anthocyanins are present in appreciable quantities and are the reason for the antioxidant activity of the fruit. The seed contains the glycoside, jamboline, gallic acid and essential oils. The leaves have been found to contain essential oils. The antibiotic activity of black berry extract has been widely studied and found useful against a number of microbial agents. The fruit is also considered to be stomachic, carminative, anti scorbutic and diuretic. Vinegar made from black berry fruit is administered in cases of enlargement of spleen, chronic diarrhea and urine retention. Present investigation delineates amazing potential of jamun fruit (sheel) attributable to therapeutic importance, culinary uses & cosmetic applicability precisely.

Keywords: Anthocyanins, Gallic acid, Tannins, Jamboline, glycouria, Anti-oxidants, Hypoglycemic effects, Astringent, Minerals, Digestive disorders, Health benefits

ARTICLE INFO

***Corresponding Author**

Raaz K Maheshwari
Department of Chemistry,
SBRM Govt PG College, Nagaur,
Rajasthan, India
Manuscript ID: AMCL2109



PAPER-QR CODE

Article history: Received 16 August 2014, Accepted 03 November 2014, Available Online 5 December 2014

Analytical and Medicinal Chemistry Letters

Contents

1. Introduction	42
2. Health Benefits of Jamun Fruit in General	43
3. Cosmetic Applicability of Jamun.	44
4. Conclusion	45
5. References	45

Citation: Raaz K Maheshwari et al., Fabulous *Syzygium Cumini* Linn. Skeels with Potentiality of Ethanopharmacological Consequence. *A. Med. Chem. Lett.*, 2014, 1(1): 41-45.

Copyright © 2014 Raaz K Maheshwari et al., This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original work is properly cited.

1. Introduction

The jamun tree (Jamul (*Syzygium cumini* Lim.) is an evergreen tropical tree (Fig. 1 & 2) in the flowering plant family Myrtaceae), native to India, thrives easily in hardy tropical regions and is found in all parts of our subcontinent as well as countries of Southeast Asia and Eastern Africa. In India, this large evergreen tree, is grown widely in the Gangetic plains, and the Cauvery delta in Tamil Nadu. The

most commonly found variety of luscious, glistening royal purple jamun is often oblong and has a deep purple to bluish colour. The pulp of the fruit is grey or pink and has a seed in the centre. Another common variety is seedless. The fruit is acidic and astringent in nature, with a sweet taste. Due to its acidic nature, it is usually eaten with a sprinkling of salt.



Figure 1

Children are fond of this fruit as it colours the tongue purple due to anthocyanin, a plant pigment. Jamun is 70 % edible. Glucose and fructose are major sugars found in a ripe jamun. The fruit is laden with a large number of minerals and provides fewer calories compared to other fruits. A medium-sized jamun provides about 3-4 calories. The seed of the fruit is also rich in protein carbohydrates and traces of calcium. It is also a source of iron, providing 1-2 mg/ 100 grams and also vitamin C, providing 18 mg/

100 grams (~40 mg – daily adult requirement). It provides folate and vitamin B, carotene, phytochemicals (anti-oxidants), magnesium, potassium and fibre. Jamun is believed to be of special use in treatment of diabetes. In Unani and Ayurvedic system, it is used to treat digestive disorders including diarrhoea. Extracts of the bark, seeds and leaves have been found to cause a marked prolonged decrease in blood sugar and glycouria (sugar in urine)²⁻⁵.



Figure 2

In middle age, many people in the modern world become susceptible to type II diabetes, this lifestyle disease is increasingly prevalent throughout much of the world as

lifestyles and dietary habits change. Herbal treatment with jamun remedy is effective during the early and mild stages of the disease, when it is also accompanied by a strict

dietary regimen by the affected person. Several studies provide evidence that jamun has hypoglycemic effects with up to 30 % reduction in blood sugar reported in some studies. Seeds are rich in alkaloids which have hypoglycemic effects. With the onset of rains, come the much loved jamuns. This Indian blackberry has a unique astringent taste. Popularly known as the black plum, the fruit has several beauty benefits to offer. Also, the fruit has medicinal properties, which can treat several ailments. From curing acne and dark spots to indigestion, it does it all. So, take a look at a few beauty and health benefits of this super fruit. In 1911, this tree was introduced in Florida by the USDA (United States Drug Authored). In the wild however, it grows all over India. It's a large and hardy

evergreen tree and lives for over a hundred years. It starts flowering in the month of March and continues till May. Thereafter, with the onset of monsoon in June it starts bearing fruit. The flowers are white and have a sweet fragrance. The fruits Don't ripen at the same time and are picked daily. Fruits resemble the grapes and are oblong or ovoid in shape. Only ripe fruits are picked as they don't ripen once they are picked. They have a single seed and a soft dark purple colored almost black skin and a lighter purple flesh. When eaten, the fruits coat the mouth and the tongue a deep purple color that stays for a few hours. The fruit's sweet and tart and leaves a slight astringent action in the mouth⁶.



Figure 3

The flowers are rich in nectar and yield high quality honey when apiculture is done close by. Industrially, fruits can be made into Jams, jellies, squashes, vinegar, juices, beverages, pickles, puddings and wine. The seeds of Jamun are extensively used in India for treatment of diabetes and other ailments. Besides its sweet, sometimes astringent, edible fruit, the seed (Fig. 5) is also used in various alternative healing systems like Ayurveda (to control

diabetes), Unani and Chinese medicine for digestive ailments. The leaves and bark are used for controlling blood pressure and gingivitis. Wine and vinegar are also made from the fruit. Precautions to be adopted: Never eat Jamun on empty stomach. Never drink milk after consuming jamun. Don't eat them in excess as it may cause body aches and fevers.

Nutritional Levels in Jamun

[Nutritional value/ 100 g (3.5 oz)]

Energy	251 kJ (60 kcal)
Carbohydrates	15.56 g
Fat	0.23 g
Protein	0.72 g
Water	83.13 g
Vitamin A	3 IU
Thiamine (vit. B1)	0.006 mg (1%)
Riboflavin (vit. B2)	0.012 mg (1%)
Niacin (vit. B3)	0.260 mg (2%)
Pantothenic acid (B5)	0.160 mg (3%)
Vitamin B6	0.038 mg (3%)
Vitamin C	14.3 mg (17%)
Calcium	19 mg (2%)
Iron	0.19 mg (1%)
Magnesium	15 mg (4%)
Phosphorus	17 mg (2%)
Potassium	79 mg (2%)
Sodium	14 mg (1%)

Source: USDA Nutrient Database

2. Health Benefits of Jamun Fruit in General

It's digestive and activates the liver and spleen. It's a good remedy for urinary diseases. Regulates heartbeat. Purifies

blood, cures anaemia and stops skin eruptions. Stops diarrhoea and dysentery. Relieves throat affections and other respiratory diseases. Removes worms. Vinegar made from the fruit gives relief in colitis, indigestion, stomach

diseases. It relieves gas and improves digestive power. It breaks renal stones. Jamun leaves have anti-bacterial properties and are used for making medicines for strengthening of the teeth and gums. In fact, the ash of its leaves is one of the essential ingredients in tooth powders (manjan) and is effective in treating spongy gums. Ash of jamun leaves (powder obtained after drying and burning them) mixed with an equal amount of ash of hard almond shell makes an excellent manjan. Its regular use strengthens teeth by checking gum infection and bleeding. A little peppermint added to this manjan can cure bad breath as well. The K content in jamuns is high, with a 100g serving containing 55 mg of K. People who eat unhealthy diets may face deficiency of this vital ingredient, and that may lead to heart disease, high blood pressure and stroke among other things⁸⁻¹¹.

It is important that you eat foods like jamun and tomatoes which are rich in this ingredient, as such foods often contain many other nutrients also that are beneficial for



Figure 4

It is so because the iron content makes up for the blood loss, thus keeping women healthy. A decoction of the bark and powdered seeds (Fig. 6) is believed to be very useful in the treatment of diarrhea, dysentery and dyspepsia. The fruits can be processed for squashes, sherbets, syrups, jams (Fig 7), jellies, wines, vinegar and juices.

The juice cools the body in the heat of summer and quenches thirst. It also helps in the proper functioning of the digestive system due to its extremely soothing and cooling effect. Regular use of Jamun juice (Fig. 8; Ia,Ib) helps in managing blood sugar and cholesterol levels, prevents the onset of Alzheimer's disease, boosts the immune system and helps in slowing down ageing and cartilage deterioration in osteoarthritis.

3. Cosmetic Applicability of Jamun

Jamun seeds are the best remedy to treat acne. For this, grind some dry jamun seeds and add some cow milk to it. Mix it well. Apply this paste on your pimples before going to bed. Wash it off the next morning. Remember, your pimples cannot be treated overnight; results will only show over a period of time. So, make sure you apply it regularly

your health. Leaves of the jamun tree are great for your digestive system and oral health. The leaves have been traditionally used in Ayurvedic medicine to treat diarrhoea and ulcers. They also have anti-bacterial properties which makes them an ingredient in many medicines for treating oral health problems. The fruit is known to cure menstrual problems as well. Jamun fruit and leaves are most useful for women during menopause or sterility. Jamun leaves have the power of fertility for females and can be taken with honey at any time of the day on a daily basis for at least a month. An infusion of the fresh tender leaves of jamun fruit prepared by pouring 250 ml of boiling water over 20 gm. of fresh jamun leaves, and allowing it to steep for two hours, is an excellent remedy for sterility or miscarriage due to an ovarian or endometrium functional disorder. The infusion may be taken with either two teaspoons of honey or 200 ml of buttermilk. To get relief from vomiting one can take extracts of Jamun leaves mixed in honey two times a day¹².



Figure 5

for better results. Alternatively, you can prepare another concoction of jamun seed powder, orange powder, a few drops of almond oil, red lentil powder (masoor dal) and rose water. Apply this paste on your entire face. Rinse with cold water after 15 minutes. Jamun can also work wonders for people with oily skin, because of its astringent properties. Prepare a face mask using jamun pulp, barley flour, aonla juice and rose water.

Apply this pack evenly on your face and rinse it off once it dries off. A regular application of it will control your skin's oil secretion levels. Have you stopped stepping out of your house due to dark spots and pigmented skin? Well, no more! Take a look at another jamun pack that will treat your ugly marks.

For this, mix jamun seed powder, lemon powder and gram flour (besan). Add a few drops of almond oil and rose water to this dry mixture. Make a paste out of it. Apply it on your face, and let it stay till it dries off completely. Wash it off with cold water. Follow this routine for at least a month, and you will surely see promising results¹³⁻¹⁵.

4. Conclusion

This purple fruit has a special mention in traditional streams of medicines, namely Ayurveda and Unani. It is used to treat digestive disorders, including diarrhoea, dysentery and dyspepsia. If someone experience digestive problems, then you should drink jamun juice, or have jamun pulp mixed with curd. The whole fruit, including the pulp and the seed are recommended for digestive disorders including diarrhoea and is highly recommended for the control of sugar levels in the blood. Undoubtedly jamun is one of the best fruits for diabetic patients. Jamun seeds (dried and powdered) contain a glucose called jamboline, which has the ability to control the conversion of starch into sugar. It is also helps in reducing the quantity of sugar in urine. Not only does it keep blood sugar levels in check, it also prevents common diabetes symptoms like frequent thirst and urination from appearing. The fruit also has healthy amount of nutrients like Ca, Fe, K and Vitamin C making it great for one's body's immunity and bone strength. Besides jamun, one can eat these foods to improve immunity without spending too much. Medicinally, the fruit is stated to be an astringent, stomachic, carminative, antiscorbutic and diuretic. The juice of the ripe fruit, or a decoction of the

fruit, or Jamun vinegar, may be administered in India in cases of enlargement of the spleen, chronic diarrhea and urine retention. The leaves of the Jamun tree possess anti-bacterial properties and are used for making medicines for the strengthening of the teeth and gums. Jamun leaves, stems, flower buds, opened blossoms, and bark have some antibiotic activity and are helpful as poultices on skin diseases. Due to its high astringent properties, it is used for gargles and as a mouthwash particularly for bleeding gums (gingivitis). Ashes of the bark, mixed with water, are spread over local inflammations, or blended with oil and applied to burns. Water diluted juice is used as a gargle for sore throat and as a lotion for ringworm of the scalp. Recent medical studies have found that jamun fruit, may help in breast cancer treatments as it seems to inhibit the proliferation of breast cancer cell lines. In addition, studies also show an anticancer potential of jamun fruit extract. These could be possibly due to several bioactive phytochemicals including polyphenols which have the purple pigment called anthocyanin. Studies show that berry fruit consumption may also provide benefits during chemotherapy and radiation.

5. References

1. Arun R, Prakash MV, Abraham SK, Premkumar K. Journal of Ethnopharmacology. **2011**, 134(2):329-33. doi:10.1016/j.jep.2010.12.014. Epub 2010 Dec 21.
2. Hossain S, Chowdhury IH, Basunia MA, Nahar T, Rahaman A, Choudhury BK, Choudhuri SK, Mahmud I, Uddin B. Journal of Complement Integrated Medicine. **2011**, Jan. 8. doi: 10.2202/1553-3840.1445.
3. Farswan M, Mazumder PM, Parcha V, Upaganlawar A. Pharmacognosy Magazine, **2009**, 5 (18): 127-133.
4. Rani B, Singh B, Maheshwari RK. Global Journal of Medical Research, **2014**, 13 (7): 54-59.
5. Maheshwari RK, Garg A, Rajnee. Indo-Global Research Journal of Pharmaceutical Science, **2012**, 2 (3): 367-369.
6. Rani B, Maheshwari RK, Rajnee. Universal Journal of Pharmacy, **2013**, 2 (30): 17-24.
7. Maheshwari RK, Parmar V, Joshef L. (). World Journal of Pharma Research, **2013**, 2(4): 804-820.
8. Jagetia GC, Baliga MS, Venkatesh Pl. Journal of Radiation Research, **2005**, 46(1): 59-65. doi: 10.1269/jrr.46.59
9. Singh P, Rani B, Chauhan AK, Maheshwari RK. International Journal of Pharmacy, **2012**, 3(1): 46-47.
10. Maheshwari RK, Rani B, Singh P. Journal of Pharmacy Research, 2009, 2(3):569-573.
11. Vyas M, Maheshwari RK, Chauhan AK, Prasad M, Rajnee. Indo Global Research Journal of Pharmaceutical Science, **2012**, 2(3): 365-366.
12. Maheshwari RK, Rani B, Rajnee, Parihar S, Sharma M. International Journal of Medical & Pharma Research, **2013**, 1 (1): 135-138.
13. Rani B, Maheshwari RK, Malhotra J, Chauhan AK, Sharma P, Sharma S. American Journal of PharmTech Research, **2012**, 2 (2): 253-262.
14. Rani B, Singh U, Sharma R, Gupta A, Dhawan NG, Sharma AK, Sharma S, Maheshwari RK. Asian Journal of Pharma Research & Health Care, **2013**, 5(2): 58-64.
15. Maheshwari RK. Journal of advanced Scientific Research, **2013**, 3(3): 1-2.