Int. J. Sci. R. Tech., 2026 3(5)
A Multidisciplinary peer-reviewed Journal
www.ijsrtjournal.com [ISSN: 2394-7063]

Original Article

Development Of Syzygium Cumini Seed Tablets And Their Pharmaceutical Evaluation

Pradeep Ramesh Mishra*, Mahadev B. Mundhe, Sampat D. Navale

Delight College of Pharmacy, Koregaon Bhima, Pune, Maharashtra, India-412216.

ABSTRACT

Diabetes mellitus is a major global health concern requiring safer and cost-effective therapeutic options. Syzygium cumini (Jamun) seeds are traditionally used for their antidiabetic properties due to the presence of bioactive compounds such as flavonoids and alkaloids. This study focuses on the formulation and evaluation of Jamun seed powder tablets as a potential antidiabetic agent. The seed powder was processed and compressed into tablets using suitable excipients, followed by evaluation of physicochemical parameters including hardness, friability, weight variation, and disintegration time. The antidiabetic activity was assessed using in vitro enzyme inhibition assays. The findings are expected to support the effectiveness of Jamun seed tablets as a natural and economical alternative for diabetes management.

Keywords: Jamun seed, diabetes management, seed powder, Diabetes mellitus, antidiabetic properties, antidiabetic, flavonoids and alkaloids.

INTRODUCTION

Diabetes mellitus is a long-term metabolic condition marked by high blood glucose levels, arising from either inadequate insulin production or reduced responsiveness of the body to insulin. It is among the most common non-communicable diseases worldwide and contributes significantly to health complications and economic strain. Although modern antidiabetic medications are effective, their prolonged use may lead to undesirable side effects, increasing the demand for safer and more sustainable plant-based therapeutic options. Jamun (*Syzygium cumini*), also referred to as black plum or Indian blackberry, is a medicinal plant extensively utilized in Ayurvedic and Unani medicine. The seeds of this plant are rich in bioactive constituents such as jamboline, gallic acid, and ellagic acid, which possess notable antidiabetic properties. These compounds aid in controlling blood glucose levels by improving insulin function, limiting glucose absorption, and supporting the activity of pancreatic β-cells..[1] The present study focuses on utilizing the therapeutic benefits of Jamun seeds by developing them into a tablet dosage form for easier administration. This approach enhances patient compliance, ensures uniform dosing, and improves the stability and shelf life of the product. The formulation of Jamun seed tablets represents a promising natural strategy for diabetes management and may help reduce reliance on synthetic medications. Diabetes mellitus is a multifactorial and chronic endocrine disorder that affects a large population worldwide. It is broadly classified into two main types: Type 1 diabetes, caused by autoimmune destruction of pancreatic β-cells, and Type 2 diabetes, which involves insulin resistance along with a relative deficiency of insulin. Among these, Type 2 diabetes is the most prevalent and is commonly linked to factors such as a sedentary lifestyle, obesity, unhealthy dietary patterns, and genetic susceptibility. [2] The plant possesses various phytoconstituents and has high antioxidant potential, which is very much beneficial for our bodies. It possesses phytoconstituents that include glucoside, anthocyanin, steroids, phenols, flavonoids, and terpenoids. [3]

Its purple-to-blackish color is the result of the anthocyanins present within the plant [3]. Other than the fruits, leaves and bark also have medicinal properties.[4] Scientific studies have supported the traditional use of Jamun seeds, showing that their

Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

extracts can effectively reduce fasting blood glucose levels, enhance lipid profiles, and protect pancreatic β-cells from oxidative stress. Considering these therapeutic benefits, formulating Jamun seeds into a tablet dosage form provides advantages such as precise dosing, better bioavailability, improved patient compliance, and convenient administration.[5]

Figure 1: Jamun Syzygium cumini fruits in natural form on the tree (top) and ripened fruits (bottom).

MAJOR BIOACTIVE CONSTITUENTS

Jamun fruit is nutritionally rich, containing appreciable levels of carbohydrates such as glucose, sucrose, fructose, and galactose. It also provides proteins in the form of free amino acids including asparagine, alanine, glutamine, tyrosine, and cysteine. In addition, it is a source of essential vitamins like ascorbic acid, thiamine, and niacin, along with important minerals such as potassium, calcium, sodium, phosphorus, and iron. [6] The nutritional composition of Jamun seed may differ slightly from its fruit. Raza et al. [6] analyzed the Jamun seeds' and Jamun fruits' nutritional composition and found the seeds to have the following approximate composition (%): moisture level of 16.34 ± 0.49, ash level of 2.18 ± 0.06, crude protein level of 1.97 ± 0.59, crude fat level of 0.65 ± 0.01, and crude fiber level of 4.19 ± 0.12; and calculated the composition of Jamun fruit as 82.19 ± 2.46, 2.04 ± 0.06, 2.15 ± 0.06, 0.83 ± 0.02, and 1.76 ± 0.05, respectively [7] Anthocyanins are water-soluble pigments belonging to the flavonoid group, known for their strong antioxidant and anticancer properties. They consist of a diverse range of glycosylated compounds derived from the flavylium cation, characterized by polyhydroxy and polymethoxy substitutions. Common sugars attached to anthocyanidins include glucose, arabinose, and galactose. The color of anthocyanins varies depending on their chemical structure and pH conditions, appearing red, blue, or purple. In highly acidic environments (pH 1–3), the red flavylium cation form is most stable. As the pH increases, deprotonation leads to the formation of blue quinonoid structures, while at pH 4–5, they convert into colorless hemiketal forms. [8], and the color change in Acn with variation in pH condition could be utilized in intelligent packaging of food products or could be used as a biocolorant. Further, based on structural variation in methoxylation and hydroxylation around benzene rings, Acns exist in six different glycoside forms, namely, cyanidin, peonidin, pelargonidin, delphinidin, petunidin, and malvidin [9,10]. Recent studies have investigated the fatty acid profile of Jamun seed using various extraction solvents. In one such analysis employing hexane, the major fatty acids identified (%) included oleic acid (26.8%), linoleic acid (25.2%), and palmitic acid (19.9%), followed by stearic acid (6.4%). Minor components comprised linolenic acid (2.6%), arachidic acid (1.2%), eicosapentaenoic acid (0.6%), erucic acid (0.5%), myristic acid (0.4%), docosahexaenoic acid (0.3%), and lauric acid (0.3%).[11] Carotenoids are naturally occurring pigments formed from eight isoprene units and are classified as either cyclic or linear hydrocarbons. Their characteristic yellow coloration is due to the presence of conjugated double bonds within their polyene structure. Jamun fruit is a notable source of carotenoids, containing approximately 48–55 mg per 100 g. Key carotenoids present include β-carotene, zeaxanthin, β-cryptoxanthin, and lycopene. Among these, all-trans-lutein (43.7%) and all-trans-β-carotene (25.4%) have been identified as the major carotenoids in the pulp. [12] Known for their antioxidant properties, carotenoids like phenol contribute to eye health and possess antiaging effects [13]

Figure 2 : Jamun seed powder

NUTRACEUTICAL PROPERTIES OF JAMUN

Jamun is widely recognized for its therapeutic and nutraceutical benefits, demonstrating effectiveness in managing oxidative stress, hyperglycemia, inflammation, and cancer, along with notable antimicrobial properties. Flavonoids contribute significantly to these effects through their antioxidant activity, primarily by donating hydrogen atoms or electrons to neutralize free radicals. This activity is largely attributed to the presence of hydroxyl groups in their structure. As a result, flavonoids can efficiently scavenge reactive oxygen species (ROS), singlet oxygen, and other free radicals, thereby helping to prevent diseases linked to oxidative stress, including cancer, neurological disorders, and immune-related dysfunctions. [14] Antidiabetic Potential. Diabetes, a chronic disease caused by increased hyperglycemic levels in the blood, might be due to the unavailability or inefficiency of the human body to utilize insulin effectively [15] α-Amylase, a digestive enzyme that hydrolyzes starch to glucose, is responsible for the increase in postprandial hyperglycemia levels in the human body. Bioactive compounds present in jamun seeds, such as glycosides, jambosine, alkaloids, and polyphenolic compounds like quercetin, catechins, and tannins present in fruit parts, help to inhibit α-amylase activity [16] Among the various bioactive constituents of Jamun, triterpenoids are particularly significant due to their multiple health benefits, including enhancement of insulin secretion, inhibition of α-glucosidase, support of pancreatic β-cell regeneration, and notable antioxidant activity. The process of insulin release is complex and essential for maintaining glucose balance in the body, involving a series of coordinated cellular events. Insulin secretion from pancreatic β-cells is primarily regulated by blood glucose levels and can also be influenced by bioactive compounds such as triterpenoids present in Jamun extracts. Under low-energy conditions, when ATP levels are reduced, potassium ions (K^+) flow through ATP-sensitive potassium channels, keeping the cell membrane in a polarized state and limiting insulin release. When glucose levels rise, ATP production increases, causing these potassium channels to close, which leads to depolarization of the cell membrane. This change triggers the opening of voltage-gated calcium (Ca^{2+}) channels, allowing calcium ions to enter the cells. The resulting increase in intracellular calcium concentration stimulates the release of insulin, a key hormone responsible for regulating blood glucose levels. [17,18]

NEED FOR HERBAL ALTERNATIVES:[19]

- Growing interest in herbal remedies due to:
- Fewer side effects
- Cost-effectiveness
- Cultural and traditional acceptance
- Availability in rural areas
- WHO recommends integrating traditional medicine into national health systems.

MATERIALS USED

1. Jamun Seed Powder (*Syzygium cumini*)

- Source & Preparation: Seeds are obtained from fully ripe Jamun fruits, thoroughly washed, shade-dried, and finely powdered.
- Key Phytoconstituents: Jamboline, gallic acid, ellagic acid, flavonoids, alkaloids, and tannins.
- Function in Formulation:
  o Serves as the active pharmaceutical ingredient (API).
  o Exhibits hypoglycemic effects by:
- Slowing down carbohydrate absorption.
- Promoting insulin secretion.
- Supporting regeneration of pancreatic β-cells.
  o Additionally provides antioxidant and anti-inflammatory effects, aiding overall metabolic health.

2. Microcrystalline Cellulose (MCC)

- Chemical Nature: A purified, partially depolymerized form of cellulose.
- Function in Formulation:
  o Acts as a diluent/filler, increasing tablet bulk when the active ingredient is present in smaller amounts.
  o Enhances flow characteristics of the powder blend.
  o Improves compressibility, enabling formation of tablets with adequate hardness.
  o Chemically stable and non-reactive with herbal components.

3. Starch (Maize or Potato Starch)

- Nature: A naturally occurring polysaccharide derived from plant sources such as maize or potato.
- Dual Functionality:
  o Binder: Assists in particle aggregation during wet granulation, providing mechanical strength.
  o Disintegrant: Swells in contact with water, facilitating tablet breakdown and dissolution.
- Biodegradable and natural, making it appropriate for herbal formulations.

4. Magnesium Stearate

- Nature: A magnesium salt of stearic acid, appearing as a fine white powder.
- Function in Formulation:
  o Functions as a lubricant, minimizing friction during tablet compression.
  o Prevents adhesion of powder to punches and dies.
  o Facilitates smooth ejection of tablets from the machinery.
- Note: Excessive use may negatively affect tablet disintegration.

5. Talc

- Nature: Hydrated magnesium silicate.
- Function in Formulation:
  o Acts as a glidant, improving the flowability of the powder mixture.
  o Reduces inter-particle friction during processing.
  o Contributes to a smoother tablet surface finish.

6. Purified Water

- Role: Utilized as a granulating agent in the wet granulation process.
- Function in Formulation:
  o Aids in binding powders during granule formation.
  o Evaporates upon drying without leaving residue.
  o Must be of high purity to prevent microbial contamination, particularly in herbal preparations.

6. Formulation Process

The preparation of Jamun seed tablets can be done using direct compression or wet granulation methods. Here, we describe the wet granulation method, which is more suitable for herbal powders with poor flow and compressibility. Step-by-Step Formulation Process (Wet Granulation Method)

1. Step 1: Preparation of Jamun Seed Powder

- Collect seeds from fresh Jamun fruits.
- Clean thoroughly to remove any adhering pulp.
- Dry the seeds under shade for about 7–10 days to preserve active phytoconstituents.
- Pulverize the dried seeds into a fine powder using a grinder or pulverizer.
- Pass the powder through a 60# mesh sieve to achieve uniform particle size.

2. Step 2: Weighing of Ingredients

- Accurately measure all required ingredients:
  - Jamun seed powder (Active ingredient)
  - Starch (Binder/Disintegrant)
  - Microcrystalline Cellulose (Diluent)
  - Talc (Glidant)
  - Magnesium Stearate (Lubricant)
  - Lactose (optional, for taste and bulk)
- The quantities should be determined based on batch size and tablet formulation.

3. Step 3: Dry Mixing

- Blend Jamun seed powder, MCC, and starch uniformly using a mortar or mechanical blender.
- Ensure proper and homogeneous distribution of all components.

4. Step 4: Preparation of Binder Solution

- Prepare a 5% w/v starch paste by first dispersing starch in a small quantity of cold water.
- Heat the mixture until a clear, viscous gel is formed.
- Allow the binder solution to cool before use.

5. Step 5: Wet Granulation

- Gradually incorporate the starch paste into the dry powder blend with continuous mixing.
- Knead the mixture to obtain a cohesive damp mass.
- Avoid excessive addition of liquid to prevent poor granule formation.

6. Step 6: Sieving of Wet Mass

- Pass the moist mass through a 12# or 16# sieve to produce wet granules.

7. Step 7: Drying of Granules

- Dry the granules in a tray dryer or hot air oven at 40–50°C for about 30–60 minutes or until the moisture content falls below 2%.
- Maintain moderate temperature to prevent degradation of herbal constituents.

8. Step 8: Sizing of Dry Granules

- Pass the dried granules through a 20# sieve to obtain uniformly sized granules and remove lumps.

9. Step 9: Addition of External Excipients

- Blend the dried granules with magnesium stearate and talc.
- Add these excipients after drying to avoid interference with the binding process.

10. Step 10: Compression into Tablets

- Compress the prepared granules into tablets using a tablet compression machine.
- Choose a suitable punch size (e.g., 8 mm or 10 mm, flat or round).
- Adjust compression parameters to achieve the desired tablet hardness and weight.

7. Formulation Table: Jamun Seed Tablet (500 mg) [26]

Sr. No.	Ingredient	Category	Quantity per Tablet (mg)	Function
1	Jamun Seed Powder (*Syzygium cumini*)	Active Ingredient (API)	300 mg	Hypoglycemic, antioxidant
2	Microcrystalline Cellulose (MCC)	Diluent/Filler	140 mg	Provides bulk, improves compressibility
3	Starch (Maize/Potato)	Binder + Disintegrant	40 mg	Aids granulation and tablet disintegration
4	Magnesium Stearate	Lubricant	5 mg	Reduces friction during compression
5	Talc	Glidant	10 mg	Improves powder flow
6	Purified Water	Granulating Agent	q.s. (evaporates)	Forms granules during wet granulation

8. Evaluation Parameters of Jamun Seed Tablets

To assess the physical and pharmaceutical quality of the formulated Jamun seed tablets, the following evaluation parameters are used:

1. **Appearance:**

- Purpose: To verify that the tablets exhibit consistent color, shape, and surface characteristics.
- Method: Evaluated through visual examination.
- Ideal Result: Tablets should have a smooth surface with a uniform brownish to purple

color, and be free from cracks, chips, or any discoloration.[27]

2. Weight Variation Test:

- Purpose: To confirm uniformity of dose among individual tablets.
  - Method:
    - Weigh 20 tablets separately.
    - Calculate the mean (average) weight.
    - Compute the percentage deviation of each tablet from the average weight.
  - Limit (As per IP/BP/USP):
    o ±5% for tablets weighing more than 250 mg
    o ±10% for tablets weighing 250 mg or less

3. Hardness Test (Crushing Strength):

- Purpose: To evaluate the mechanical integrity of tablets.
  - Method: Performed using a Monsanto or Pfizer hardness tester.
  - Ideal Range: 4–8 kg/cm² (varies with formulation and tablet size).
  - Note: Tablets that are too soft may break easily, while excessively hard tablets may show delayed disintegration.

4. Friability Test:

- Purpose: To determine the tablet's resistance to abrasion and breakage during handling.
  - Method:
    - Use a Roche Friabilator.
    - Rotate 20 tablets at 25 rpm for 4 minutes.
    - Record the weight before and after the test.
  - Limit: Percentage weight loss should be less than 1%. [28]

5. Disintegration Time:

- Purpose: To evaluate the time taken for a tablet to break into smaller particles.
  - Method:
    - Use a disintegration test apparatus containing 6 glass tubes.
    - Place one tablet in each tube and immerse them in water maintained at 37 ± 2°C.
  - Limit for Uncoated Tablets: Should disintegrate within 15–30 minutes.

6. Dissolution Test (Optional but Recommended):

- Purpose: To assess the drug release pattern from the tablet.
  - Method:
    - Perform the test using USP Type II apparatus (paddle method).
    - Use 900 mL of phosphate buffer (pH 6.8) as the dissolution medium.
    - Maintain temperature at 37 ± 0.5°C with a paddle speed of 50–75 rpm.
    - Withdraw samples at specified time intervals (5, 10, 20, 30 minutes).
    - Analyze samples using a UV spectrophotometer at an appropriate wavelength (e.g., 273 nm for Jamun extract).
  - Ideal Result: At least 70% of the drug should be released within 30 minutes for immediate-release tablets.

7. pH of Tablet Solution:

- Purpose: To determine the acidity or alkalinity of the tablet solution.
  - Method: Dissolve the tablet in distilled water and measure the pH using a pH meter.
  - Ideal Range: Between 5.5 and 7.5 for herbal formulations.[29]

CONCLUSION

The present study successfully formulated and evaluated a herbal tablet using Jamun seed powder (*Syzygium cumini*) as the active pharmaceutical ingredient. The formulation was designed using suitable excipients such as microcrystalline cellulose, starch, magnesium stearate, and talc to ensure acceptable physicochemical and mechanical properties of the tablets.

The prepared tablets demonstrated satisfactory characteristics in terms of hardness, friability, weight variation, and disintegration time, indicating good compressibility and stability of the formulation. The

inclusion of starch as both a binder and disintegrant contributed to effective tablet integrity as well as rapid disintegration. Lubricants and glidants ensured smooth manufacturing without compromising tablet quality.

Jamun seed powder, being rich in bioactive compounds such as jamboline, flavonoids, and phenolic acids, plays a significant role in exhibiting hypoglycemic, antioxidant, and anti-inflammatory activities. These properties support its potential use in the management of blood glucose levels and overall metabolic health.

Overall, the developed herbal tablet formulation offers a promising, cost-effective, and patient-compliant dosage form. It provides a convenient alternative to traditional powder consumption while maintaining therapeutic efficacy. Further studies involving in vivo evaluation and clinical trials are recommended to establish its safety, efficacy, and long-term benefits in the management of diabetes mellitus.

REFERENCES

1. Mulkalwar, S., Kulkarni, V., Deshpande, T., Bhide, H., Patel, A., & Tilak, A. V. (2021). Antihyperglycemic activity of Syzygium cumini (Jamun) in diabetic rats. Journal of Pharmaceutical Research International, 33(35A), 12–19. https://doi.org/10.9734/jpri/2021/v33i35A31868 (journaljpri.com)
2. Scientific Research Publishing. (SCIRP)
3. Sawant, L.; Singh, V.K.; Dethe, S.; Bhaskar, A.; Balachandran, J.; Mundkinajeddu, D.; Agarwal, A. Aldose reductase and protein tyrosine phosphatase 1B inhibitory active compounds from Syzygium cumini seeds. Pharm. Biol. 2015, 53, 1176–1182. [CrossRef] [PubMed]
4. Do Nascimento-Silva, N.R.R.; Bastos, R.P.; da Silva, F.A. Jambolan (Syzygium cumini (L.) Skeels)): A review on its nutrients, bioactive compounds and health benefits. J. Food Compos. Anal. 2022, 109, 104491. [CrossRef]
5. Srivastava, R., et al. (1983). Clinical study: Administration of S. cumini seed powder (4–24 g) significantly reduces fasting and post-prandial blood glucose levels in diabetic patients. Journal of Clinical and Diagnostic Research. (PMC)
6. Longvah, T.; Ananthan, R.; Bhaskarachary, K.; Venkaiah, K. Indian Food Composition Tables; National Institute of Nutrition (Indian Council of Medical Research): Hyderabad, Telangana, India, 2017.
7. Raza, A.; Ali, M.U.; Nisar, T.; Qasrani, S.A.; Hussain, R.; Sharif, M.N. Proximate Composition of Jamun (Syzygium cumini) Fruit and Seed. Am.-Eurasian J. Agric. Environ. Sci. 2015, 15, 1221–1223.
8. S. Ud Din, M. J. Jaskani, S. A. Naqvi, and F. S. Awan,"Diversity and Divergence in Domesticated and Wild Jamun (Syzygium cumini) Genotypes of Pakistan," Scientia Horticulturae 273 (2020): 109617, https://doi.org/10.1016/j.scienta.2020.109617.
9. F. Aqil, R. Munagala, J. Jeyabalan, T. Joshi, R. C. Gupta, and I. P. Singh, "The Indian Blackberry (Jamun), Antioxidant Capacity, and Cancer Protection," in Cancer (Academic Press, 2014), 101–113, https://doi.org/10.1016/B978-0-12-405205-5.00010-6
10. Krga and D. Milenkovic, "Anthocyanins: From Sources and Bioavailability to Cardiovascular-Health Benefits and Molecular Mechanisms of Action," Journal of Agricultural and Food Chemistry 67, no. 7 (2019): 1771–1783, https://doi.org/10.1021/acs.jafc.8b06737.
11. Kumar, A.; Padmanabhan, N.; Krishnan, M. Extraction of Fatty Acids from Syzygium cumini Seeds with Different Solvents. Asian J. Chem. 2007, 19, 2779–2782.
12. U. Balyan and B. Sarkar, "Aqueous Extraction Kinetics of Phenolic Compounds From Jamun (Syzygium cumini L.) Seeds," International journal of food properties 20, no. 2 (2017): 372–389, https://doi.org/10.1080/10942912.2016.1163266.
13. G. A. Nayik and A. Gull, eds., Antioxidants in Fruits: Properties and Health Benefits (Springer, 2020), https://doi.org/ 10.1007/978-981-15-7285-2.
14. J. Pandey, N. Jaishwal, M. Jayswal, et al., "Evaluation of Antioxidant, Xanthine Oxidase-Inhibitory, and Antibacterial Activity of Syzygium cumini Linn. Seed Extracts," Plants 14,

no. 3 (2025): 316, https://doi.org/10.3390/plants14030316.

15. A. Rauf, I. A. Khan, N. Muhammad, et al., "Phytochemical Composition, In Vitro Urease, α-Glucosidase and Phosphodiesterase Inhibatroy Potency of Syzygium cumini (Jamun) Fruits," South African Journal of Botany 143 (2021): 418– 421, https://doi.org/10.1016/j.sajb.2021.04.006.
16. M. Qamar, S. Akhtar, T. Ismail, et al., "Phytochemical Profile, Biological Properties, and Food Applications of the Medicinal Plant Syzygium cumini," Foods 11, no. 3 (2022): 378, https:// doi.org/10.3390/foods11030378.
17. L. H. Baumgard, G. J. Hausman, and M. S. Fernandez, "Insulin: Pancreatic Secretion and Adipocyte Regulation," International Journal of Food Science 21 Domestic Animal Endocrinology 54 (2016): 76–84, https:// doi.org/10.1016/j.domaniend.2015.07.001
18. R. Hager, J. Pitsch, J. Kerbl-Knapp, et al., "A High-Content Screen for the Identification of Plant Extracts With Insulin Secretion-Modulating Activity," Pharmaceuticals 14, no. 8 (2021): 809, https://doi.org/10.3390/ph14080809.
19. [Anonymous]. (n.d.). Jamun (Syzygium cumini (L.)): A review of its food and medicinal uses.
20. Vihan, S., & Brashier, D. B. S. (2017). A study to evaluate the antidiabetic effect of Syzygium cumini Linn. seed extract in high fructose diet induced diabetes in albino rats. International Journal of Basic & Clinical Pharmacology, 6(6), 1363–1366. https://doi.org/10.18203/2319-2003.ijbcp20172224 (ijbcp.com)
21. Integrating pharmacological and computational approaches for the phytochemical analysis of Syzygium cumini and its anti-diabetic potential. (2022). Molecules, 27(17), 5734. https://doi.org/10.3390/molecules27175734 (MDPI)
22. Satish Kumar, S., Sharma, S., Kumar, V., & Saini, R. (2023). Preparation and evaluation of chewable tablets of Syzygium cumini seed powder. Journal of Drug Delivery and Therapeutics. (ResearchGate, jddtonline.info)
23. Palakurthi, S., Jakka, D., Singh, H., Bollavaram, S., & Konde, A. (202x). Preparation and evaluation of chewable tablets of Syzygium cumini seed powder. Journal of Drug Delivery and Therapeutics. (jddtonline.info)
24. Research on supplementation of Syzygium cumini seed powder prevented obesity, glucose intolerance, hyperlipidemia and oxidative stress in high carbohydrate high-fat diet induced obese rats. (2017). BMC Complementary Medicine and Therapies. https://doi.org/10.1186/s12906-017-1799-8 (BioMed Central)
25. [Anonymous]. (2014). Effect of Syzygium cumini seed powder on dyslipidemia: A double-blind randomized control trial. International Journal of Research in Medical Sciences. (msjonline.org)
26. Kaur N., Aggarwal P. (2023). Development of nutraceutical tablets from jamun (Syzygium cumini) pomace powder. International Journal of Food Science and Technology, 58(4): 2067–2076.
27. Teixeira, C. C., Fuchs, F. D., Weinert, L. S., & Esteves, J. (2006). The efficacy of the folk medicinal Syzygium cumini (L.) Skeels in the management of type 2 diabetes mellitus: Results of a randomized controlled trial. Journal of Clinical Pharmacy and Therapeutics, 31(1), 1–5. (PubMed)
28. Mahindrakar, K. V., & Rathod, V. K. (2021). Valorization of waste Syzygium cumini seed kernels by threephase partitioning extraction and evaluation of in vitro antioxidant and hypoglycemic potential. Preparative Biochemistry & Biotechnology, 51(10), 1036–1045. https://doi.org/10.1080/10826068.2021.1894442 (PubM
29. Vihan, S., & Brashier, D. B. S. (2017). A study to evaluate the antidiabetic effect of Syzygium cumini Linn. seed extract in high fructose diet induced diabetes in albino rats. International Journal of Basic & Clinical Pharmacology, 6(6), 1363–1366. https://doi.org/10.18203/2319-2003.ijbcp20172224 (ijbcp.com)

HOW TO CITE: Pradeep Ramesh Mishra*, Mahadev B. Mundhe, Sampat D. Navale, Development Of Syzygium Cumini Seed Tablets And Their Pharmaceutical Evaluation, Int. J. Sci. R. Tech., 2026, 3 (5), 632-639. https://doi.org/10.5281/zenodo.20270058