

# FORMULATION OF VALUE-ADDED PRODUCTS FROM JAMUN SEED WITHOUT LOSS IN THE PHYSICOCHEMICAL AND MEDICAL PROPERTIES

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## ABSTRACT:

The aim of this study was to evaluate the physicochemical, proximate composition of Jamun (*Syzygium Cumini*) seed vitamins and minerals. The physical characteristics such as jamun color were registered as white to pink. The forms of the jamun seed were similar to the oblong forms. Jamun or Java plum seed was found to be long, wide and weight (18.20 mm, 11.05 mm and 1.62 g). Jamun seeds have been evaluated for their chemical composition as (53, 1.02, 3.84, 31.62, 7.01 and 1.51 g/100 g) such as moisture, crude fat, crude protein, carbohydrate or raw Fibres. The vitamin A (3 IU/100g), B3 (0.09 mg/100g) and C (0.21 mg/100g) presence values were recorded in jamun seed. Mineral values for jamun seed powder were iron, calcium, magnesium, phosphorus, potassium and zinc (0.140, 0.651, 0.010, 0.072, 16.07 and 0.009 mg/100g). The conclusion was that the traditional medicinal plant seed jamun (*Syzygium Cumini*) provides a strong source of nutrients such as protein, fiber, vitamins, and minerals.

**Keywords:** Jamun fruits, Jamun seed, Physicochemical, Nutritional, Vitamin, Value Addition.

## I. INTRODUCTION:

India is the source of many fruit cultivations and the majority of crops are confined to its growing area only. Their commercial production is lacking despite their high nutritional and medicinal properties. The majority of underused fruits are in many Ayurvedic formulations' core recipes. Jamun is the most common underused fruit that gains its popularity (*Syzygium cumini*). This species is native to Southeast Asia and India but has also been recorded as cultivated in Hawaii, Australia, Kenya, Florida, etc. The jamun fruits are grown annually and are available from June to July]. And jamun fruits are described as sweet savory berries. Kaatha, Narendra Jamun-6 and Konkan bhar doli are popular cultivars for jamun. The jamun fruit is a large berry, long-shaped and deep purple or bluish in colour. It has a purple pink pulp and a juicy fruit and a sweet fruit.

The world output of Jamun is estimated at 13.5 million tons annually, 15.4 percent of which was contributed by India. India is the second largest producer of Jamun in the world. In ayurvedic medicine, traditionally, jambul fruits, leaves, seeds and bark are used. For decades, Jamun seed powder has been used as a natural way to balance the amount of balanced blood sugar. It is a very tasty, detoxifying herb with properties to preserve normal urination and sweating. It has a hypolipidemic and cardioprotective immunomodulatory property. There are also studies on the antioxidant and radiation protection properties of the Jamun seed extract, as well as anti-inflammatory, anti-pyretic, anti-allergic, anti-bacterial and gastro-protective properties. It also works as a hepatic stimulant, digestive, cooling agent and blood purifier. Jamun seeds contain a glycoside, called jambolanas that helps to maintain glucose levels as normal. Ayurvedic text indicates that 1-3 g of jamun powder daily is an

average dose of diabetes care. No physicochemical and nutritional properties of Jamun seed are systematically studied.

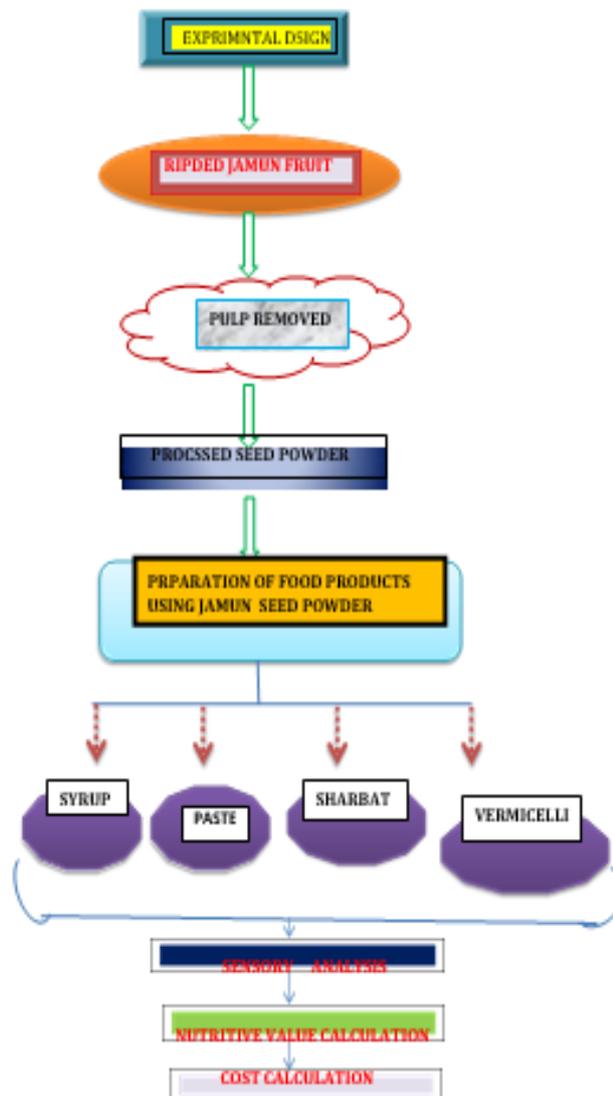
This research is therefore conducted to study the physicochemical, proximate, vitamin, composition of minerals and successful implementation of jamun seed.

## II. MATERIALS AND METHODS:

Jamun seeds have been collected from Vegetable market, Vaniyambadi. The proposed research was carried out in Department of Food and Nutrition, Marudhar Kesari Jain College for Women, Vaniyambadi, Tirupattur district.

The physical characteristics such as colour, form, weight, length, width and texture were measured by method (Shahnawaz and Sheikh) [6]. Chemical characteristics such as Humidity, crude fat, crude protein, carbohydrate, crude fiber and ash (AOAC 2005) [7]. Vitamin A content was spectrophotometrically measured using a modified standard method (AOAC 2000) [8]. The normal treatment of vitamin B3 (Anuradha et al., 2013) was followed [9]. The (Hussian et al., 2006) method [10] was used to determine vitamin C and A method of estimating mineral content such as iron, calcium, magnesium, phosphorous potassium and zinc was adopted (Ranganna 2011) [11].

### Experimental design:



### Preparation of Jamun seed powder and other formulations:

The seeds of evenly matured sickness and sound jamun must be chosen. Jamun fruit pulp and seed were separated by pulper. After that the seed has been washed in water and dried at 60°C in a dryer for 48 hours and dried up and ground the seed in a pulverized to a fine powder of 0.58 mm of average particle size.

### III. RESULT AND DISCUSSION:

#### Processing of jamun seed powder:

##### Collection of jamun fruit



##### Removal of Pulp



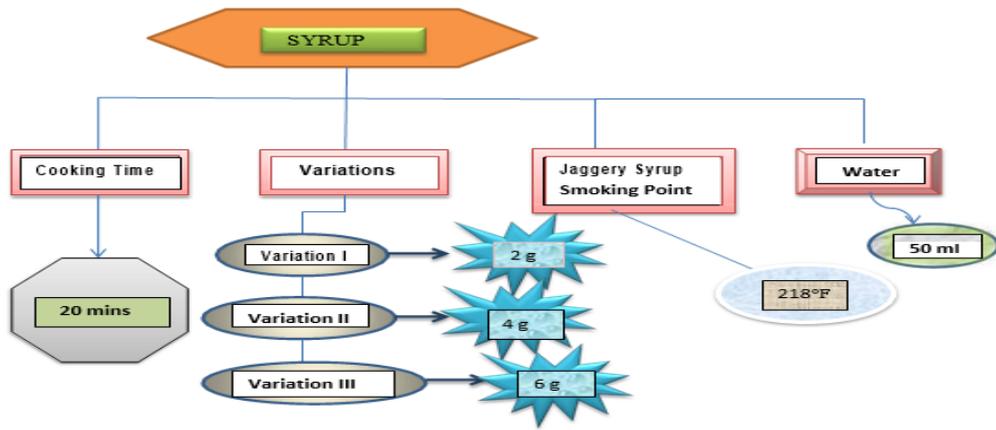
##### Sun drying of the seeds



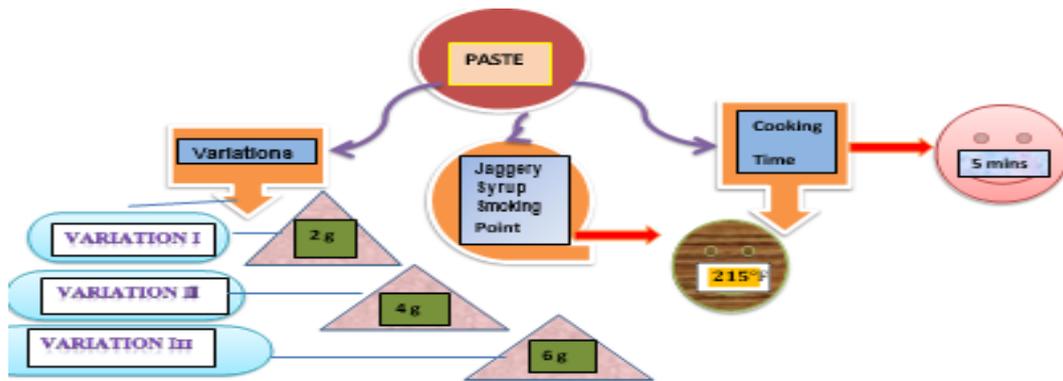
##### Making of jamun seed powder



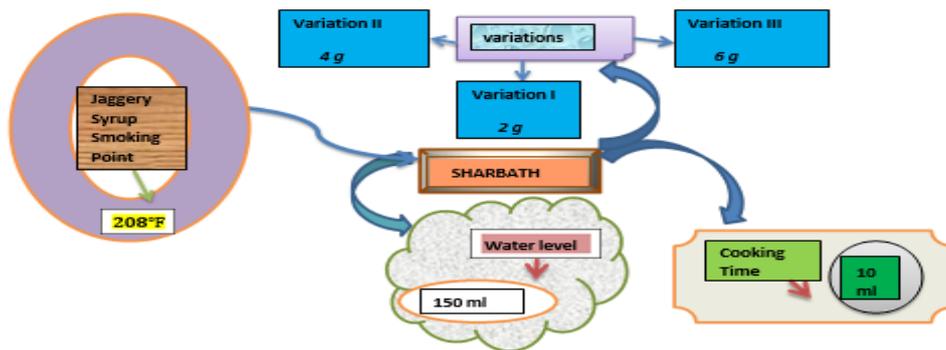
#### Preparation of Jamun seed Syrup:



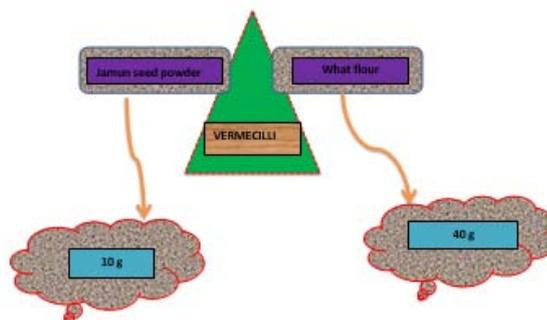
**Preparation of Jamun seed Paste:**



**Preparation of Jamunseed Sharbath:**



**Preparation of Jamunseed Vermicelli:**



**Sensory Evaluation of the Developed Products:**



**Physical characteristic of jamun fruit and seed:**

Physical characteristics help to identify the fruit visually. Consequently, those physical properties in table 1.

Table 1 results show the specifics of the calculated physical characteristics. Jamun was marked as dark lilac, white to pink jamun seed and even black was marked with the color of jamun seed kernel. The forms of the kernel were like the oblong shape of the jamun seed. There were 18.20 (mm) kernel lengths of jamun seeds respectively. The jamun seed kernel width has been reported respectively as 11.05 (mm). The results showed that jamun seed was 1.62 by weight (g)

**Table1:**Physical characteristic of jamun fruit and seed

Sr.No.	Physical characteristic	
	Parameters	Seed
1	Colour	Whitetopink
2	Shape	Oblong
3	Length(mm)	18.20
4	Width(mm)	11.05
5	Weight (g)	1.62
6	Texture	Coarse

It has been shown that the visual inspection of the smooth texture, seed and seed kernel revealed that the physical characteristics of jamun fruit are coarse in texture. Similar findings were also found for jamun physical characteristics (Ghosh et al., 2017) [12]. The findings of the current study on physical properties of jamun fruits are closely linked to the finding of (Muhammad et al., 2009) [13].

**Proximate composition of jamun seed:**

Table 2 results showed that jamun seeds contain moisture, crude fat, crude protein, carbohydrates, roughness and ash, and that the parameters used to determine the next composition of jamun seed powder is different.

Proximate composition (Table 2) suggested that jamun seeds contain 53g/100g, 1.02 g/100g, 3.84 g/100g, 31.62g/100g, 7.01 g/100 g and 1.51 g/100g, respectively, of moisture, raw fat, crude protein, starch and ash. These results were consistent with previous findings Prasad et al. (2010), which recorded the composition of

jamun seed of 9,34±1,99% moisture, 2,42±0,44% crude protein, 0,92±0,52% raw fat, 6,08±1,11% crude fiber, and 2,93±2,82% ash, were reported [14].

Previous studies have shown 40.86- 57.33% moisture, 2.42-5.05% protein, 1.47-6.21% ash, 1.55-8.00% fat, and 1,28-to-10,95% crude fiber in java plum seeds (Kochar et al., (2006) [15]; Swami et al., (2012) [16]. The present seed composition findings were similar to previously recorded values, with the exception of higher protein and fiber content.

**Table2:** Proximatecompositionofjamunseed

Sr.No.	Proximatecomposition	
	Parameters	Values(g/100g)
1	Moisture content	53
2	CrudeFat	1.02
3	Crudeprotein	3.84
4	Carbohydrate	31.62
5	Crudefiber	7.01
6	Ash	1.51

\*Eachvalueisaverageofthree determinations

**Vitamincontentofjamun seed:**

The quantitative estimation of vitamins present in the jamunseedisgiven in Table3.

**Table 3:** Vitamincontentofjamunseed

Sr.No.	Vitamincontent	
	Vitamins	Values(mg/100g)
1	VitaminA(Retinol)	3 IU/100g
2	VitaminB3(Niacin)	0.09
3	VitaminC(Ascorbicacid)	0.21

\*Eachvalueisaverage ofthreedeterminations

Table 3 data showed that jamun seed contained fat-soluble vitamins A (Retinol) 3 IU/100g and water-soluble vitamins B3 (Niacin) 0,09 (mg/100g) and vitamins C (Ascorbic acid) 0,21 (mg/100g). Jamun seeds contain higher amounts of water-soluble vitamins.

**Mineralcompositionofjamun seed:**

The figures showed an approximate mineral composition of jamun seed powder in Table 4. Results show that the various parameters used to evaluate the nutritive value of jamun seed powder were iron, calcium, magnesium, phosphorous potassium and zinc.

**Table 4:**Mineral compositionofjamun seedpowder

Sr.No.	Mineralcomposition	
	Minerals	Values(mg/100g)
1	Iron	0.140
2	Calcium	0.651
3	Magnesium	0.010
4	Phosphorous	0.072
5	Potassium	16.07
6	Zinc	0.009

\*Eachvalueisaverageofthree determinations

In the jamun seeds had 0.140, 0.6501, 0.010, 0.072, 16.07 and 0.009 mg/100g of trace element content (mg/100g) of iron, calcium, magnesium, phosphorous, potassium and zinc. Current seed composition findings were similar to previously recorded mineral content values (Ayya et al., 2015) [18] and (Veeram et al., 2017) [19]. [19]. These findings reflect previous conclusions (Desai et al., (2018) [20].

#### IV. CONCLUSION

It was studied that, the composition of Jamun seeds in physicochemical, proximate, vitamins and minerals. For the design of processing machinery and equipment the physical parameters are important. Jamun contains a sufficient quantity of fat and protein. There are also significant amounts of ascorbic acid vitamin C and minerals (Iron, Calcium or Potassium), which can also be used to produce functional foods.

#### V. ACKNOWLEDGEMENTS

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#### VI. CONFLICT OF INTEREST

The creators reported no irreconcilable situation. This report doesn't contain any investigations with human or creature subjects experienced by any of the authors.

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