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Evaluation of Biochemical Characters in Jamun Seed and Fruit (*Syzgium cumini L.).* Germplasm

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A B S T R A C T

The present study was conducted to evalutate five advanced germplasm of jamun for morphological and nutritional value during 2015-16 at the students Student's Instructional Farm of Narendra Deva University Agriculture and Technology, Kumarganj Ayodhya (U.P.) India. A significant variation was detected for all traits suggested that there was considerable variability among germplasm. The protein content in jamun seed was recorded 1.35% (NJ12) to1.89% (NJ6) whereas, in jamun fruit was recorded in range of 1.95% (NJ7) to 2.39% (NJ11) The crude fat content in jamun seed was recorded 0.54% (NJ7) -0.63% (NJ13) whereas, in jamun fruit was recorded in range of 0.82% (NJ13) to 0.91% (NJ7) The crude fibre content in jamun seed was recorded 3.43% (NJ11) -4.18% (NJ6) whereas, in jamun fruit was recorded in range of 2.13% (NJ6) -2.45 % (NJ7) The starch content in jamun seed was recorded 23.08% (NJ13) -24.41% (NJ12) whereas, in jamun fruit total starch was recorded in range of 16.08% (NJ6) -17.12 %(NJ12) The phytic acid content in jamun fruit was recorded NJ6(2.03 mg/100g) - NJ12(2.08mg/100g) Saponin content present moderately in all jamun germplasm. On the basis of overall germplasm were found superior NJ12, NJ6, NJ11, NJ7and NJ13 utilized in further research work.

Introduction

Jamun is an under exploited indigenous fruit tree of India belonging to family Myrtaceae. *Syzygium cumini* is an evergreen tree to a height of 25 m. It is also known as Jaam, Kalojaam, Jamun, Nerale Hannu, Njaval, Neredupandu, Jamblang, Jambolan, Black Plum, Plum, Dhat Plum, Jambolan Plum, Java Plum or Portuguese Plum. The tree is known to be native in India, Bangladesh, Nepal, Sri Lanka, Indonesia, and Malaysia (Ayyanar and Babu, 2012) and has been naturalized throughout Southeast Asia and the Pacific Islands (Dacanay, 2007). In the Philippines, it is found throughout the country and is one of the most popular fruits (Ramos and Bandiola, 2017). The tree is also grown in Myanmar,

Thailand, Nepal, Australia, Kenya, Zambia, Zimbabwe, Madagascar, Colombia, Cuba, Mexico, Brazil, and some parts of the United States of America particularly Florida and Hawaii (Sharma *et al.,* 2012; Faria *et al.,* 2011; and Swami *et al.,* 2012). One hundred grams Jamun fruit comprises almost 83.70-85.80 g moisture, 0.70-0.13 g protein, 0.15-0.30 g fat, 14.00 g carbohydrate, 0.32-0.40 g ash, 0.30-0.90 g crude fiber, 8.30-15.00 mg calcium, 35.00 mg magnesium, 15.00-16.20 mg phosphorus1.20-1.62 mg iron, 26.20 mg sodium, 0.23 mg copper, 13.00 mg sulfur, 8.00 mg chlorine, 0.01-0.03 mg thiamine, 55.00 mg potassium, 8 I.U vitamin A, 0.009-0.01 mg riboflavin, 0.20-0.29 mg niacin, 5.70-18.00 mg ascorbic acid, 7.00 mg chlorine and 3.00 mcg folic acid per 100 g of edible portion (Baliga *et al.,* 2011). Constituents that are reported in the seeds of *Syzgium cumini* are protein (6.3-8.5%), 1.18% fat, 16.9% crude fiber, 21.72% ash, 0.41% calcium, 0.17% phosphorus, fatty acids (palmitic, stearic, oleic and linoleic), fatty oils (30 g kg g/1), including lauric (2.8%), myristic (31.7%), palmitic (4.7%), stearic (6.5%), oleic (32.2%), linoleic (16.1%), malvalic (1.2%), and vernolic acid (3%) 41% starch, 6.1% dextrin, a trace of phytosterol (β-sitosterol) and tannin (predominantly corilagin, ellagitannins, ellagic acid, gal-loyl-galactoside and gallic acid) (6-19%) (Lock *et al.,* 2009; Ranjan *et al.,* 2011). The seeds of jamun fruit contains oils which comprises of 33.2% 1-chlorooctadecane, 8.02% decahydro-8aethyl-1,1, 9.24% tetratet-racontane, 5.29% 4-(2-2-dimethyl-6-6-methylene- cyclohexyl) butanol, 4a,6-tetramethylnapahthalene, 5.15% Octadecane, 3.97% octacosane, 1.72% heptacosane and 1.71% eicosane (Kumar *et al.,* 2009).

Materials and Methods

The present research work was carried out during season 2015-16. Five germplasm of jamun namely NJ6, NJ7, NJ11, NJ12 and NJ13 were collected from main experimental station of horticulture Narendra Deva university of agriculture kumarganj Ayodhya. The total mineral content was estimated by the method Total fat content was analyzed by A.O.A.C. method (1965). The content of crude fiber in dried sample of mango was analysed by the method as described by Hart and Fisher (1971). Starch was estimated through following anthrone reagent method, described by McCready *et al*., (1950). Phytic acid in the jamun seed and pulp has been analyzed by the method of Wheeler and Ferrel (1971).

Results and Discussion

Maximum crude protein content in jamun seed was found in NJ6 (1.89%) and minimum value was found in NJ12 (1.35%) Raza *et al.,* (2015) duly supported the above result and found crude protein in jamun seed 1.97% and in jamun fruit 2.15%.

Maximum crude fat content in jamun seed was found in NJ13 (0.63) minimum crude fat content was found in NJ7(0.54%) A similar result carried out by Suradkar *et al.,* (2017), Ansari *et al.,* (2017), Ali *et al.,* (2013) maximum crude fibre content in jamun seed was found in NJ6 (4.18%) minimum value was found in NJ11(3.43%) Menakam and Venkatasubramanian (2017), Raza *et al.,* (2015) closely supported the above result and reported crude fiber in jamun seed i.e. 4.19% and in jamun fruit i.e. 1.76 %. Maximum total starch content in jamun seed was found in NJ12 (24.41%) minimum value was found in NJ13 (23.08%).

Present findings are in the conformation with earlier work of Patel and Rao (2014) maximum phytic acid content in jamun fruit have been found in NJ12 (2.08mg/100g) minimum phytic acid content was found in

NJ6(2.03 mg/100g) Sood *et al.*, closely correlated with the above results and observed Kasmal fruit contain low concentration of phytic acid. Saponin content is present in all jamun germplasm.

Table.1 Biochemical composition in jamun fruit

Germplasm	Crude protein in jamun fruit	Crude fat in jamun fruit	Crude fiber in jamun fruit	Total starch in jamun fruit
NJ6	2.13	0.88	2.13	**16.08**
NJ7	1.95	0.91	2.45	**16.17**
NJ11	2.39	0.90	2.34	**17.00**
NJ12	2.12	0.82	2.21	**17.12**
NJ13	2.07	0.82	2.28	**16.41**
SEm±	0.032486	0.00524	0.02562	0.02076
Cd at 5 %	0.101	0.016	0.080	**0.065**

Table.2 Biochemical composition in jamun seed

Germplasm	**Crude protein in jamun seed**	**Crude fat in jamun seed**	**Crude fiber in jamun seed**	**Total starch in jamun seed**	**Phytic acid in jamun fruit**	**Saponin in jamun fruit**
NJ6	1.89	0.62	4.18	**23.15**	**2.03**	Present
NJ7	1.80	0.54	3.86	**23.29**	**2.06**	Present
NJ11	1.53	0.60	3.43	**24.13**	**2.06**	Present
NJ12	1.35	0.61	4.05	**24.41**	**2.08**	Present
NJ13	1.45	0.63	3.87	**23.08**	**2.04**	Present
SEm±	0.04091	0.01191	0.01616	**0.023**	**0.00284**	
CD at 5%	0.127	0.037	0.050	**0.072**	**0.009**	

References

Ali, S., Masudb, T., Abbasic, K.S., Alia, A., Hussaina, A., (2013). Some compositional and biochemical attributes of jaman fruit (*Syzygium cumini L.)* from Potowar region of Pakistan. *Research in Pharmacy* 3(5): 01-09.

Ayyanar, M., and Subash-Babu P., (2012) *Syzygium cumini* (L.) Skeels: A Review of Its Phytochemical Constituents and Traditional Uses. *Asian Pacific Journal of Tropical Biomedicine,* 2 (3): 240-246.

Baliga, M.S., Bhat, H.P., Baliga, B.R.V., Wilson, R., and Palatty, P.L., (2011). Phytochemistry, traditional uses and pharmacology of *Eugenia jambolana Lam*. (black plum): A review. *Food Res. Int*. 44:1776-1789.

Dacanay, A.T.L., (2007). Characterization of

the Physicochemical Properties of the Lyophilized Fruit Juice of *Syzygium cumini* (Myrtcaeae). Unpublished Thesis, University of Santo Tomas

Faria, A.F., Marques, M.C., and Mercadante, A.C., (2011) Identification of Bioactive Compounds from Jambolão (*Syzygium cumini*) and Antioxidant Capacity Evaluation in Different pH Conditions. *Food Chemistry*, 5126: 1571-1578

Kumar, A., Jayachandran, T., and P. Aravindhan, P., (2009). Neutral components in the leaves and seeds of *Syzygium cumini*. *African J. Pharm. Pharmacol*. 3:560-561.

Lock, K., Stuckler, D., Charlesworth, K., and M. McKee, M., (2009). Potential uses and health effects of Indian raspberry. *British Homeopathic J*. 339:459-452.

Menakam, and Venkatasubramanian, C. (2017).Nutrient Content and Antioxidant Profile of Raw And Lyophilized Jamun (*Syzygium Cumini*) Fruit Pulp *International Journal of Chem Tech Research*,10 (2):968-974.

Patel and Rao (2014) Growth and Ripening in Black Plum *Syzygium cumini* (L.) Skeels *International Journal of Fruit Science*, 14:147–156

Ramos, I.L., and Bandiola, T.M.B. (2017) Phytochemical Screening of *Syzygium cumini* (Myrtaceae) Leaf Extracts Using Different Solvents of Extraction. *Der Pharmacia Lettre*, 9 (2): 74-78.

Ranjan, A., Jaiswal, A., and Raja, B., (2011). Enhancement of *Syzygium cumini* (Indian Jamun) active constituents by ultra-violet (UV) irradiation method. Sci. Res. Essays. 6:2457-2464.

Raza,A., Malook, S., Shahzad, N., Qasrani, S.A., Sharif, M.N., Akram, N.M., and Ali M.U.(2015). Extraction of Bioactive Components from the Fruit and Seed of Jamun (*Syzygium cumini*) Through Conventional Solvent Extraction Method. *National Institute of Food Science and Technology, University of Agriculture Faisalabad, Pakistan*, 15(6): 991-996.

Sharma, S. *et al.*, (2012) A Review on Pharmacological Activity of *Syzygium cumini* Extracts Using Different Solvent and their Effective Doses. *International Research Journal of Pharmacy*, 3(12): 2230-8407.

Swami, S.B., Thakor, N.S.J., Patil, M.M., Haldankar, P.M., (2012) Jamun (*Syzygium cumini* (L.)): A Review of Its Food and Medicinal Uses *Food and Nutrition Sciences*, 3, 1100-1117.

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