

Processing And Preparation of Jam Using Hibiscus Sabdariffa (Ambadi) Calyx

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Abstract-

Hibiscus Sabdariffa flaunts ravishing crimson calyx and remarkably zesty flavor quite extensively making it a venerated tropical plant. Growing with large deeply cut leaves and showy flowers it is cherished for cooking purposes. Nutritional and sensory properties of Jam made from *Hibiscus Sabdariffa* calyx were developed and evaluated thoroughly. One control and three variations were prepared with different proportion of sugar and calyx. Significant differences in appearance color flavor taste were revealed between variations through sensory evaluation. Jam nutritional value was rich in calcium 211.7mg, iron 19.5mg, Calorie 322.04kcal and carbohydrate 75.25gm per 100gm essentially. *Hibiscus Sabdariffa* calyx Jam is a nutritious food product with improved sensory attributed over time consistently. Sensory evaluation shows significant improvements in appearance, texture and overall acceptability over time gradually. Product consistency and quality increase with reduced variability overtime generally. *Hibiscus Sabdariffa* is a valuable ingredient in food products offering benefits and sensory benefits simultaneously.

Keywords: Hibiscus Sabdariffa Calyx, Antioxidant, Iron, Process, Preserve

Introduction

Hibiscus Sabdariffa also known as Ambadi, boasts vibrant red Calyx and a tangy citrus-like flavor making it a celebrated tropical plant quite extensively. Valued both for culinary uses and ornamental beauty, it grows with large deeply lobed leaves and striking flowers. Native to West Africa it has naturalized in Asia and West India thriving in tropical and sub-tropical climates where edible parts are harvested. It belongs to mallow family malvaceae which includes flowering plants. Grown extensively for medicinal properties and edible parts in many parts of world owing largely to its adaptability.

Morphology

Hibiscus Sabdariffa grows as annual or perennial herbaceous plant or woody-based depending on climate. It has bushy habit with upright stems. Typically, it reaches height of 4-8 feet and can spread 2-4 feet wide. In optimal growing conditions it achieves maximum height and spared. Flower is showy 3-4 inches in diameter with typical hibiscus shape. They are white to

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pale yellow with dark red spots at base of each petal and appear from mid-simmer. Its flowering period is quite lengthy in some cases.

Fruit- Plants produce striking red calyxes which enlarged sepals encasing seeds still are developing. Edible calyxes are harvested for various culinary purposes and medicinal purposes quite often they have tart flavor and are used to making teas and jams and sauces very frequently nowadays.

Hibiscus Sabdariffa is packed with nutrients that have loads of fiber, iron, folic acid, calcium, vitamin A, C and potassium. Beta carotene antioxidants and phytochemicals like anthocyanins and flavonoids abound within. Nutritional value is exceptionally high here. Phytochemicals thrive remarkably in it alongside tones of essential minerals.

Many benefits of Hibiscus are documented in scientific literature such as antidiabetic reduced blood glucose level and boosting insulin secretion substantially and anticancer property. Our study's main objective entails making Jam from *Hibiscus Sabdariffa* Calyx and subsequently conducting nutrient analysis on this product. This plant is rich in essential nutrients, menstrual cramps and excessive bleeding may be alleviated by it quite effectively. Folate and Vitamin B6 in Ambadi may help reduce homocysteine levels associated with heart disease very significantly. Digestive health may be regulated by Ambadi due to its high fiber and magnesium content preventing constipation naturally. Tribal have traditionally consumed Ambadi for its potential health benefits including immunity and gut health with considerable success. Incorporating Ambadi into vegetarian meals may provide various health benefits vary effectively and safely.

TableNo.1: Nutritive Value of *Hibiscus Sabdariffa* per 100 grams

Nutrient's	Leaves	Calyx(mg)
Calories	36.57Kcal	
Protein	1.85gm	1.145
Carbohydrate	4.24gm	
Fat	1gm	2.61
Iron	9.56mg	8.98
Total Fiber	3.89gm	12
Omega-3Fats	435mg	
Potassium	161mg	
Vitamin A	857.17mcg	
Beta Carotene	5143mcg	
Vitamin C	35.43mg	

Phosphorus	36.38mg	273.2
Calcium	130mg	1.26
Magnesium	75.75mg	
Zinc	0.63mg	

Nutritional compound in per 100gram [3,10]



Figure:1 *Hibiscus Sabdariffa* plant, Figure:2 *Hibiscus Sabdariffa* Calyx

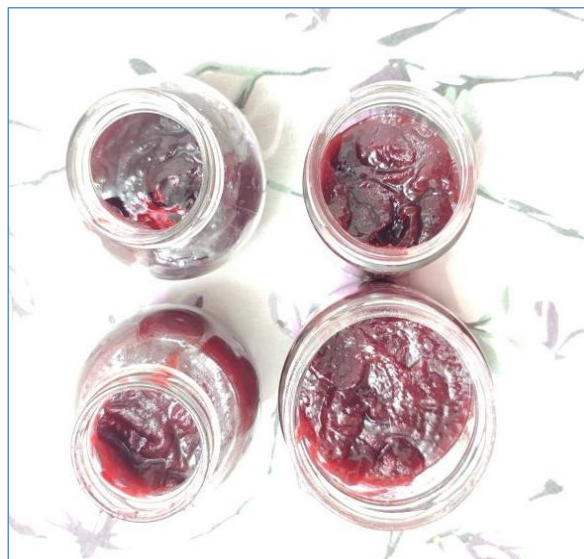


Figure:3 *Hibiscus Sabdariffa* Jam

Methodology

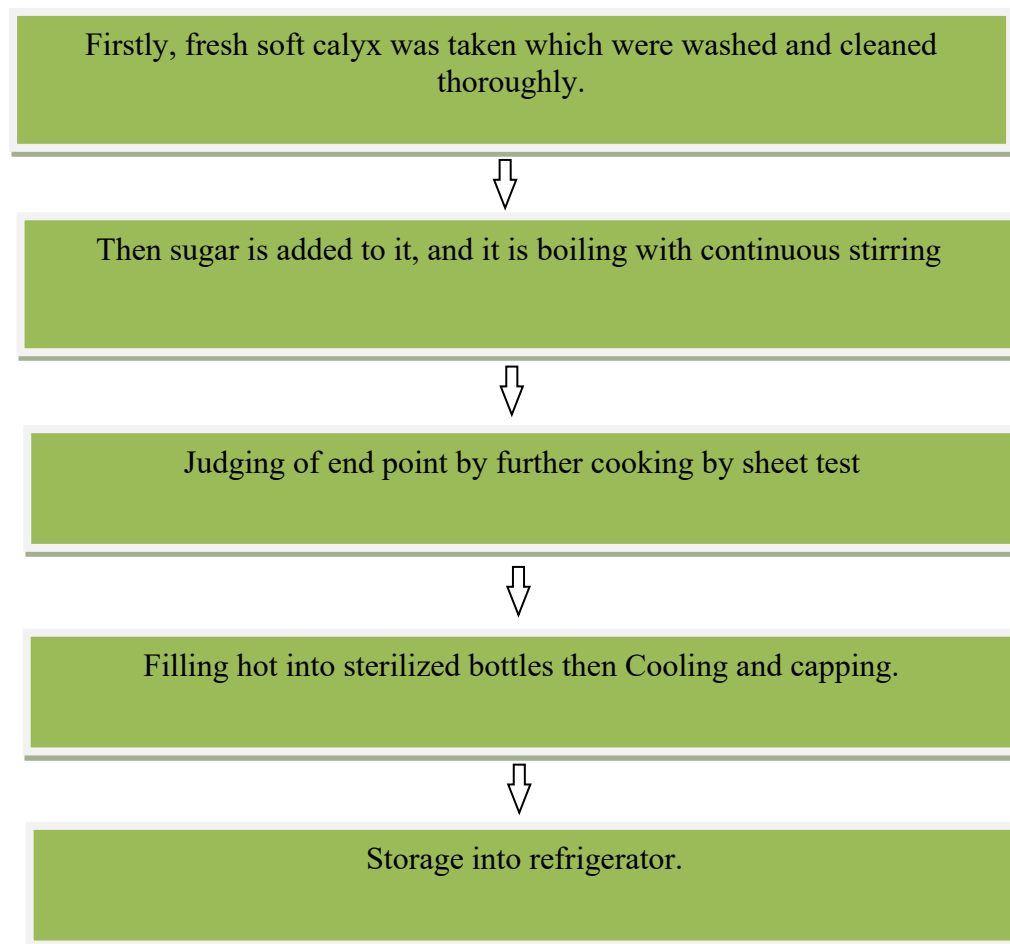
Present work carried out at laboratory of Home Science department Govt. D. B. Girls P. G. (Auto.) College, Raipur, Chhattisgarh. Experiment had done 1 control and 3 variations namely

T1, T2 and T3. Raw materials were collected locally from market. Good quality *Hibiscus Sabdariffa* Calyx was used vigorously to prepare Jam.

Table2: Preparation formulation of Jam

Ingredients	Treatments			
	T0	T1	T2	T3
H.S. calyx(gm)	45	70	50	30
Sugar(gm)	55	30	50	70

Method



Variation:

- In T0, sugar and H.S. calyx percentage was 55% and 45%.
- In T1, sugar and H.S. calyx percentage was 30% and 70%.
- In T2, sugar and H.S. calyx percentage was 50% and 50%.

- In T3, sugar and H.S. calyx percentage was 70% and 30%.

Table No. 3: Nutritive value of *Hibiscus Sabdariffa* Calyx Jam per 100gm

S. No	Components	Value
1.	Calorie	322.04kcal
2.	Carbohydrate	75.25gm
3.	Protein	0.66gm
4	Ash	0.66gm
5.	Fiber	1gm
6.	Fat	2gm
7.	Calcium	211.7mg
8.	Iron	19.5mg
9.	Moisture	20.33%

Table No. 4: Sensory Evaluation of *Hibiscus Sabdariffa* Calyx Jam

Sensory parameters	Control T0	T1	T2	T3
Appearance	7.33 ± 1.78	7.33±1.90	8.00±1.47	8.42±0.82
Texture	7.25±1.72	6.83±1.99	7.83±1.53	8.33±0.65
Smell/Aroma	7.50±1.55	7.25±1.92	7.67±1.55	8.42±1.25
Taste	7.58±1.62	6.58±1.88	7.58±1.56	8.33±1.07
Overall acceptability	7.42±1.96	6.58±1.61	7.58 ±1.49	8.50±0.91

Result and discussion

In table 4 sensory parameters of a product are evaluated across different time points versus control. Most parameters show marked improvement over time indicated by increased mean score. Variability decreases significantly over time, suggesting more consistent quality. At T3 mean scores for most parameters peak indicating highest acceptability. Notable improvements are observed in appearance texture and overall acceptability with mean score rising sharply from control to T3. Appearance jumps from 7.33 at control to 8.42 at T3 with reduced

variability. Texture score increased from 7.25 at control to 8.33 at T3 with less deviation. Overall acceptability means score surges from 7.42 at control to 8.50 at T3 and variability drops noticeably. The products' sensory attributes improved remarkably over time with most significant gains at T3. Consistency in quality increases as variability reduce substantially by T3.

In table 3 nutritive value of *Hibiscus Sabdariffa* Calyx Jam per 100gm is presented here thoroughly. Moisture content stands at 20.33%, which seems relatively moderate. This nutritious Jam contains pretty high amounts of calcium 322.04kcal, carbohydrate 75.25gm, 211.7mg and iron 19.5mg per 100gm making it good source. Some macronutrients composition reveals only 2gm fat, 1gm fiber and 0.66gm protein indicating low levels of these nutrients basically. Particularly calorie, carbohydrate, calcium and iron content on the jam may provide some nutritional benefits for consumers somehow. Such data can be utilized for food labeling purpose effectively providing essential nutritional info to consumers about product content.

Conclusion

Hibiscus Sabdariffa Calyx Jam shows considerable enhancement in sensory attributes over time with most pronounced gains observed at T3. Marked enhancements in product appearance, texture and overall acceptability are accompanied by reduced variability indicating increased quality consistency, obviously. Nutritional profile reveals moderate moisture content and high level of calcium and iron making it good source of minerals. Macronutrients composition shows relatively low fiber and fat levels *Hibiscus Sabdariffa* Calyx Jams nutritional benefits provide value to consumers somehow. Study finding suggests *Hibiscus Sabdariffa* Calyx Jam can be nutritious and acceptable food product with potential food industry application. Overall study highlights potential of *Hibiscus Sabdariffa* as a valuable ingredient in food products offering both sensory and nutritional benefits effectively.

Reference

1. Gardenia.net. (n.d.). Hibiscus sabdariffa (Roselle): Grow & care guide. Retrieved from <https://www.gardenia.net/plant/hibiscus-sabdariffa-roselle-grow-care-guide>
2. Izquierdo-Vega, J. A., Arteaga-Badillo, D. A., Sánchez-Gutiérrez, M., Morales-González, J. A., Vargas-Mendoza, N., Gómez-Aldapa, C. A., & Madrigal-Santillán, E. (2020). Organic Acids from Roselle (*Hibiscus sabdariffa* L.) A Brief Review of Its Pharmacological Effects. *Biomedicines*, 8(5), 100. doi: 10.3390/biomedicines8050100
3. Longvah, T., Ananthan, R., Bhaskarachary, K., & Venkaiah, K. (n.d.) (2017) Indian Food Composition Tables. National Institute of Nutrition (Indian Council of Medical Research)
4. Medically Reviewed by James Beckerman, MD, FACC on August 04, 2024, Written by WebMD Editorial Contributors
5. Mishra, A., Nandini, V., & Joglekar, A. (2021). Development of new product by Mahua (*Madhuca longifolia*) flowers. *Kala Sarovar*, 24(1), 0975-4520.

6. Nisa, R., Ariawan, S., & Wahyuni, S. (2017). Effect of roselle (*Hibiscus sabdariffa*) on changes in hemoglobin levels in pregnant women with anemia taking iron supplement. *Belitung Nursing Journal*, 3(6), 771-777. doi: 10.33546/bnj.305
7. PFA, 2004. The prevention of food adulteration rules, 1955'. A.16.07.287. <http://www.mohfw.nic.in/pfa%20acts%20and%20rules> .pdf (accessed 14. 07.09). Google Scholar
8. Suresh, V., & Ammaan. (2017). Medicinal uses of Roselle (*Hibiscus sabdariffa*). *Journal of Medicinal Plants Studies*, 5(4), 97-98.
9. Wisetmuen, E., Pannangpetch, P., Kongyingyoes, B., Kukongviriyapan, U., Yutanawiboonchai, W., & Itharat, A. (2013). Insulin secretion enhancing activity of roselle calyx extract in normal and streptozotocin-induced diabetic rats. *Pharmacognosy Research*, 5(2), 65-70. doi: 10.4103/0974-8490.110520
10. Yang, X., Darko, K. O., Huang, Y., He, C., Yang, H., He, S., Li, J., Li, J., Hoher, B., & Yin, Y. (2017). Resistant starch regulates gut microbiota: Structure, biochemistry and cell signalling. *Cellular Physiology and Biochemistry*, 42(1), 306-318. <https://doi.org/10.1159/00047738>