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Roselle Flower Jam: Unlocking the Nutritional, Environmental, and Economic Potential of an Underutilized Crop

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In recent years, value addition in agriculture has gained significant attention as a means to enhance farmers' income, reduce post-harvest losses, and promote sustainable rural livelihoods. India possesses a vast diversity of horticultural crops; however, many nutritionally rich plants remain underutilized due to limited awareness, inadequate processing facilities, and weak market linkages. One such crop with immense untapped potential is Roselle (*Hibiscus sabdariffa* L.). Roselle is traditionally cultivated on a small scale and is mostly marketed in raw or minimally processed form, resulting in low economic returns to farmers. Converting Roselle calyces into value-added products such as jam can significantly improve shelf life, consumer acceptance, and market value. Roselle flower jam is a natural, health-oriented, and eco-friendly food product that aligns well with the growing consumer preference for functional and minimally processed foods.

Roselle (*Hibiscus sabdariffa*): A Multifunctional Crop

Roselle belongs to the family *Malvaceae* and is best known for its bright red, fleshy calyces. The crop is hardy, adaptable to diverse agro-climatic conditions, and requires comparatively low inputs, making it suitable for sustainable and smallholder farming systems. The calyces of Roselle are nutritionally rich and contain several bioactive compounds, including:

Figure 1. Roselle (*Hibiscus sabdariffa* L.) plant

- High levels of vitamin C, supporting immunity
- Anthocyanins, responsible for the attractive red colour and antioxidant activity
- Organic acids that contribute to a pleasant sour taste and preservation
- Dietary fibre and polyphenols, beneficial for digestive and overall health

Due to these attributes, Roselle is an excellent raw material for the preparation of jams, jellies, syrups, beverages, and herbal products.

Preparation of Roselle Flower Jam

Roselle flower jam can be prepared using simple ingredients and basic processing techniques, making it ideal for household-level, self-help groups, and small-scale entrepreneurs.

Materials required:

- Fresh Roselle calyces
- Sugar
- Citric acid (for acidity regulation)
- Pectin (for gel formation)
- Clean potable water

- Sterilized glass jars

Methodology:

1. **Harvesting and Cleaning:** Fully mature Roselle calyces were harvested and thoroughly washed to remove dust and foreign matter.
2. **Seed Removal and Pulp Extraction:** Seeds were manually separated, and the calyces were crushed to obtain a uniform pulp.
3. **Cooking and Concentration:** The pulp was heated with sugar under controlled conditions. Citric acid and pectin were added to maintain acidity and achieve proper gel consistency.
4. **End-Point Determination:** Cooking was continued until the desired total soluble solids (TSS) and gel formation were achieved.
5. **Filling and Packaging:** Hot jam was filled into sterilized glass jars, sealed immediately, and allowed to cool for proper setting.

Figure 2. Preparation of Roselle flower jam

Importance of Roselle Flower Jam

Nutritional Benefits

Roselle flower jam retains a significant proportion of its natural antioxidants and pigments, making it a healthier alternative to artificially coloured commercial jams. Regular consumption may support immunity and general well-being.

Economic Potential

Value addition considerably enhances the market price of Roselle calyces. Jam preparation creates opportunities for entrepreneurship, employment generation, and income diversification, particularly for rural youth and women.

Environmental Sustainability

- Roselle cultivation requires minimal chemical inputs
- Processing generates negligible waste
- Natural colour eliminates the need for synthetic additives

Thus, Roselle-based products contribute to environment-friendly and sustainable food systems.

Social Impact

- Encourages skill development in food processing
- Promotes utilization of locally available resources
- Strengthens community-level self-reliance

Results and Consumer Acceptability

Results and Observations

The Roselle flower jam exhibited an intense natural red colour, a smooth texture, and a balanced sweet–tangy flavour profile that was highly appealing to consumers. Sensory evaluation indicated excellent acceptability across different age groups. The product demonstrated good shelf stability under ambient storage conditions, with no noticeable deterioration in colour or consistency.

Figure 3. Roselle flower Jam

Additionally, the jam showed strong market potential due to its unique identity as a natural, antioxidant-rich product. Compared to conventional fruit jams, Roselle jam stood out for its visual appeal, functional benefits, and distinctive taste. These observations strongly indicate the commercial viability and scalability of Roselle-based value-added products.

Conclusion

Roselle flower jam represents a promising example of how underutilized crops can be transformed into high-value, nutritionally rich, and environmentally sustainable food products through scientific processing. The product successfully combines health benefits, economic viability, and ecological responsibility. With the growing consumer demand for natural and functional foods, Roselle flower jam has immense potential to occupy a niche in domestic and specialty markets. Wider adoption of such value-addition practices can contribute significantly to sustainable agriculture, the reduction of food losses, and the promotion of rural entrepreneurship. Embracing crops like Roselle is a step toward building a resilient, diversified, and future-ready agri-food system.

References

1. Babalola, S. O., & Babalola, A. O. (2015). *Hibiscus sabdariffa: A review of its phytochemistry and pharmacological activities.* Journal of Food Science and Nutrition, 3(2), 1–7.
2. ICAR (2018). *Value Addition in Horticultural Crops*. Indian Council of Agricultural Research, New Delhi.
3. Da-Costa-Rocha, I., Bonnlaender, B., Sievers, H., Pischel, I., & Heinrich, M. (2014). *Hibiscus sabdariffa L. – A phytochemical and pharmacological review.* Food Chemistry, 165, 424–443.
4. FAO (2019). *Value-added products from fruits and vegetables for income generation*. Food and Agriculture Organization of the United Nations.
5. Fellows, P. J. (2017). *Food Processing Technology: Principles and Practice* (4th ed.). Woodhead Publishing, UK.
6. Gopalan, C., Rama Sastri, B. V., & Balasubramanian, S. C. (2019). *Nutritive Value of Indian Foods.* National Institute of Nutrition (ICMR), Hyderabad.
7. Kumar, S., & Singh, D. (2018). *Value addition of underutilized horticultural crops for income generation.* Indian Journal of Agricultural Sciences, 88(3), 345–352.
8. Morton, J. F. (1987). *Roselle.* In Fruits of Warm Climates (pp. 281–286). Florida Flair Books, Miami.
9. Ranganna, S. (2014). *Handbook of Analysis and Quality Control for Fruit and Vegetable Products* (2nd ed.). Tata McGraw-Hill Publishing Company, New Delhi.