Agri Articles
(e-Magazine for Agricultural Articles)
Volume: 06, Issue: 02 (MAR-APR, 2026)
Available online at http://www.agriarticles.com
©Agri Articles, ISSN: 2582-9882

Custard Apple (Sitaphal): Processing, Value Addition, and Expanding Opportunities in Food Technology

*Garje Somnath Babasaheb and Dr. P. U. Ghatge
College of Food Technology, VNMKV, Parbhani, Maharashtra, India
*Corresponding Author's email: somnath2003garje@gmail.com

Custard apple (*Annona squamosa*), commonly known as Sitaphal, is an important tropical fruit grown in dry and semi-arid regions of India. It is highly suitable for marginal lands and requires minimal irrigation and care, making it ideal for small and resource-poor farmers. The crop is drought-tolerant and can grow well in low-fertility soils, which increases its importance in sustainable agriculture. Traditionally consumed as a fresh fruit, custard apple is now gaining recognition in the food processing industry due to its rich pulp and unique flavor.

Nutritional Value and Health Benefits

Custard apple is a nutrient-rich fruit with high energy content. It contains natural sugars like glucose and fructose, providing instant energy. It is a good source of vitamin C, which boosts immunity, and B-complex vitamins that support metabolism. The fruit is also rich in minerals such as potassium, magnesium, calcium, and iron. Its dietary fiber helps improve digestion, while antioxidants protect the body from harmful free radicals. Due to these benefits, custard apple is considered both a nutritious and health-promoting fruit.

Challenges in Handling and Storage

Despite its advantages, custard apple has a very short shelf life, typically lasting only 2–3 days after ripening. The fruit becomes soft quickly and is highly sensitive to mechanical damage during handling and transportation. Its delicate pulp and multiple seeds make processing difficult without proper equipment. Due to the lack of storage facilities and processing units in rural areas, a large portion of the fruit is wasted during peak harvest season, leading to economic losses for farmers.

Processing Techniques in Custard Apple

Food processing plays a crucial role in reducing post-harvest losses. The first step is pulp extraction, where the edible pulp is separated from seeds and peel using manual or mechanical methods. The extracted pulp can be preserved using refrigeration for short-term storage or freezing for long-term preservation. Freezing at low temperatures helps retain the fruit's natural flavor, color, and nutrients. Advanced techniques such as dehydration and spray drying are also used. Dehydration removes moisture to produce flakes or powder, while spray drying converts pulp into fine powder suitable for instant food products. These techniques improve shelf life and make storage and transportation easier.

Value-Added Products from Custard Apple

Value addition significantly enhances the market potential of custard apple. The pulp can be used to prepare a variety of products such as ice cream, kulfi, milkshakes, yogurt, jams, and

ready-to-serve beverages. Custard apple ice cream is particularly popular due to its creamy texture and rich taste. The fruit is also used in bakery products like cakes and pastries.

In addition, custard apple powder is increasingly used in health foods, baby food formulations, and instant dessert mixes. These products not only reduce wastage but also provide higher economic returns compared to selling fresh fruits.

Role of Food Technology in Shelf Life Improvement

Food technology helps in maintaining quality, safety, and extending shelf life of custard apple products. Techniques such as cold storage, pasteurization, hygienic processing, and modified atmosphere packaging (MAP) are widely used. These methods prevent microbial growth and preserve freshness. Proper packaging materials also protect the product from moisture and contamination, ensuring longer storage stability and better market acceptance.

Opportunities for Farmers and Entrepreneurs

Custard apple processing offers great opportunities for farmers and small-scale entrepreneurs. Instead of selling fresh produce at low prices during peak season, farmers can process fruits into pulp or value-added products and sell them at better prices. Establishing small processing units or cooperative models can help reduce post-harvest losses and generate employment in rural areas. With increasing demand for natural and healthy food products, custard apple-based products have strong market potential.

Conclusion and Future Potential

Custard apple is more than just a seasonal fruit; it is a valuable resource for the food processing industry. With proper processing, value addition, and application of modern food technology, it can become a profitable and sustainable crop. Reducing wastage and developing innovative products will not only benefit farmers but also meet the growing consumer demand for nutritious foods. The future of custard apple lies in expanding its processing potential and strengthening its role in the agri-food sector.