

Peel Jelly:

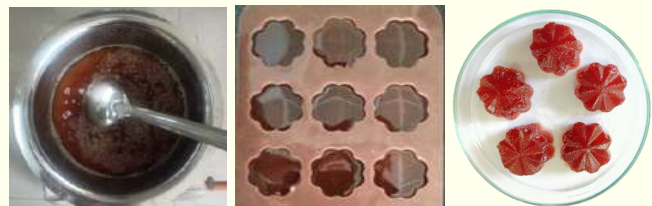
A clear, strained solution of pulp-free fruit extract with pectin is boiled with sugar and acid to make jelly. These are semi-solid foods made by gelling fruit or vegetable juice or extracts with sugars. To prepare jelly, freshly harvested dragon fruits were washed and peeled. The peels were chopped into cubes (10–15 mm), water was added in a 1:4 proportion, and the mixture was cooked for nearly an hour. The extracted liquid was then filtered and boiled with the addition of sugar. Pectin, citric acid, and KMS were added at a specific Brix level of the solution. After reaching the desired consistency, the hot mixture was poured into bottles and molds. The pictorial representation and complete process flowchart for producing jelly using an optimized process developed by ICAR–NIASM are described herewith.



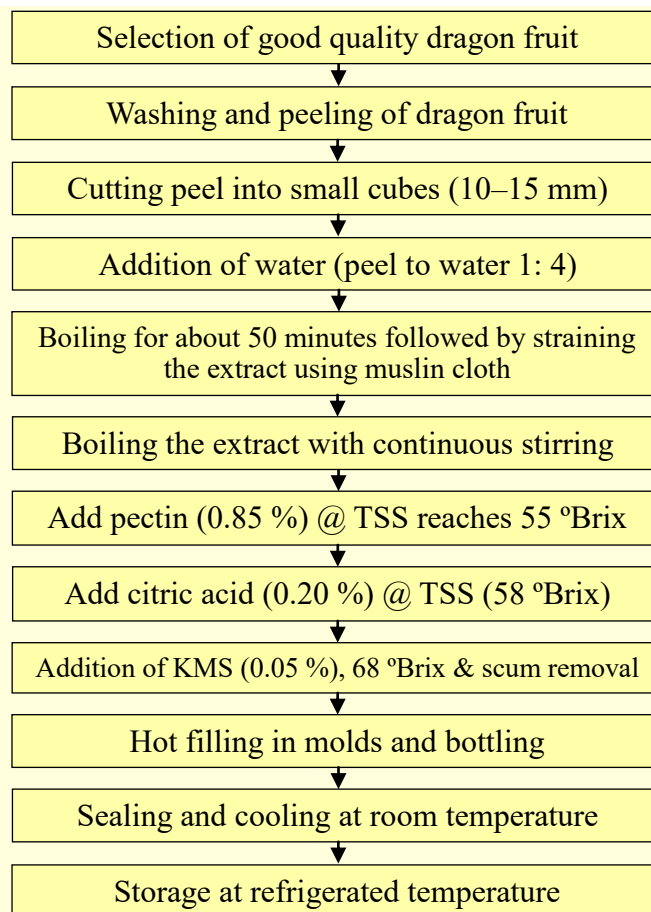
1. Peel cubes 2. Boiling 3. Peel & extracts



4. Straining 5. Peel wastes 6. Extractant



7. Boiling mixture 8. Pouring in mold 9. Jelly



Flowchart for preparation of peel jelly



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Prepared by:

GC Wakchaure, JD Choudhari, Ritu Kukde, KS Reddy

ICAR-NIASM, Baramati 413 115, Maharashtra

Tel: 02112-254057, FAX: 02112-254056

Website: <http://www.niam.icar.gov.in>

Dragon Fruit Peel Processing for Edible Products



**ICAR–National Institute of Abiotic Stress Management
Baramati, Pune, Maharashtra 413115**

भाकृअनुप -राष्ट्रीय अजैविक स्ट्रेस प्रबंधन संस्थान

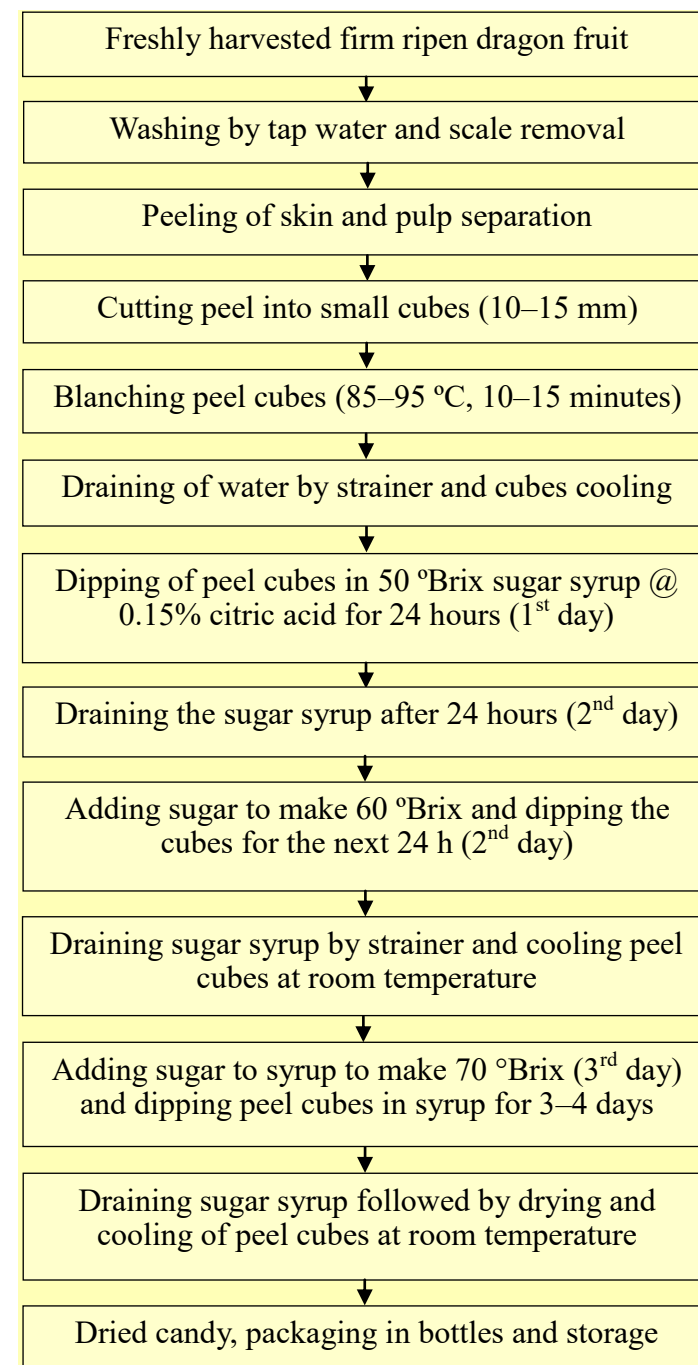
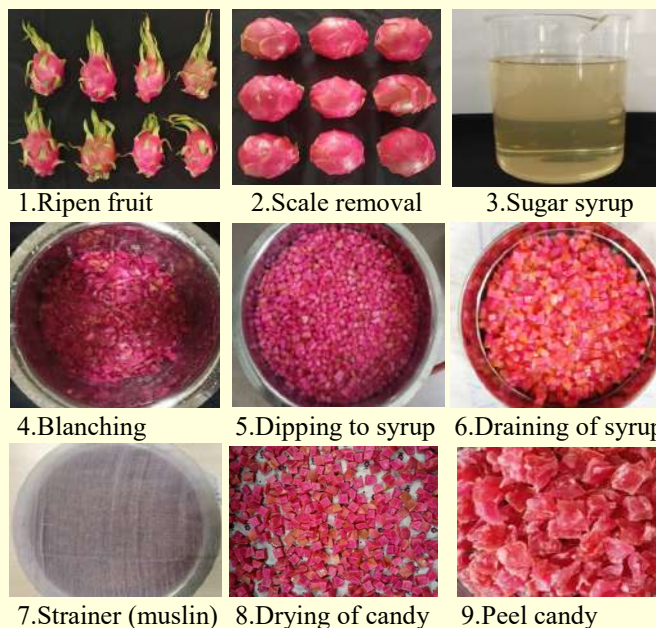
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Introduction:

- Dragon fruit (Kamalam) is becoming a popular crop in India, expected to cover 50,000 ha in next three years owing to its high stress tolerance and health benefits.
- It provides tremendous scope for processing into valorised products from its edible and non-edible portions, reducing perishability and waste disposal challenges.
- Fruit has got several applications in the food, medicinal, and cosmetic sectors. Especially its pulp can be processed into juice, jam, RTS, wine, jelly, marmalade, beverages, nectar, squash, ketchup, ice-cream, dried powder, and preserves through value addition technologies. This extends the shelf-life, keeps prices stable during the glut season, makes the product available throughout the offseason, and thus helpful to generate additional income for farmers.
- Apart from its high nutraceutical and medicinal profile, handling by-product wastes such as fruit peels and bulk stem segments as feedstock for food, feed, biofuels, and fiber for industrial applications is equally important for achieving profitable agriculture on degraded lands.
- Considering the largest non-edible part, the peel accounts for 35–40% of the fruits weight and is rich in phytochemicals (betacyanins, phenolics) used to extract natural reddish-purple food colorants, pectin, and cosmetic embellishments.
- This could possibly be processed into edible, nutritious items such as peel candy, jelly, and many other products. The process of making peel candy and jelly, standardized and developed at ICAR–NIASM, is briefly described here from perspective of small entrepreneurs and farmers.

Peel Candy:

Candied fruit is made by an osmotic dehydration process, where whole fruits or pieces of fruit are treated with glucose syrup or cane sugar, then drained of the syrup and dried. To prepare peel candy, freshly harvested ripe dragon fruit was washed, peeled, and the pulp was separated. The peel was cut into 10–15 mm cubes and blanched in boiling water (85–95 °C) for 10–15 minutes to retain colour. Cubes were treated with sugar in three stages. On the first day, they were coated with a sugar syrup (50 °Brix) and left for 24 hours. The next day, the second part of the syrup was added, and the cubes were left overnight. On the third day, the cubes were mixed with boiled sugar syrup (70 °Brix) and boiled together for 5–10 minutes to reach 75 °Brix. The peel cubes were dried at room temperature for 3–4 days until crispy, then packed in plastic bags or bottles for storage. The pictorial representation and complete process flowchart for making dragon fruit peel candy are depicted.



Process flowchart for preparation of peel candy