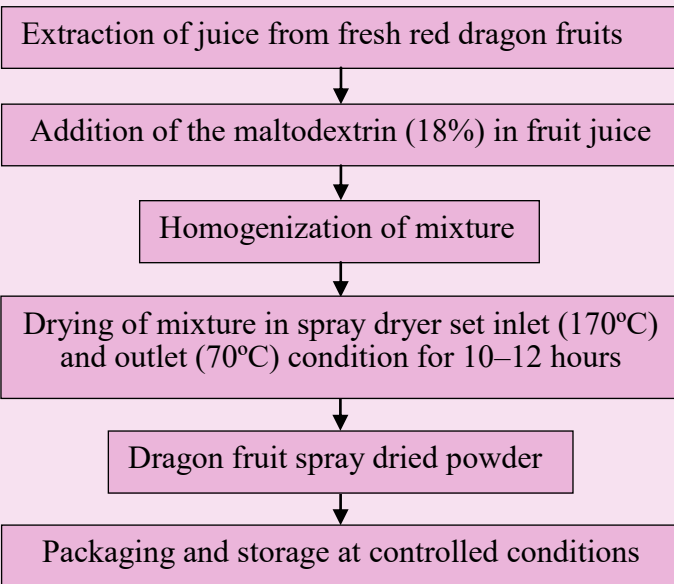


### 3. Spray dried pulp powder:

Dragon fruit pulp powder is prevalent due to its long shelf life, economic value, and ease of use as a natural colourant in processed foods. Spray-drying is the best method, producing high-quality powder at a lower cost with maltodextrin. ICAR–NIASM has standardized the spray-drying process for preparing pulp powder from freshly prepared red dragon fruit juice by adding 25% maltodextrin, as detailed in the flowchart. About 210 g of spray-dried powder is produced from 1 kg of fresh juice, yielding over 80%.



### 4. Pulp canning:

Canning preserves food using heat, sealing it in airtight containers under aseptic conditions. Suitable for high and low-acid foods, it prevents microbial contamination and inactivates enzymes, enhancing shelf life. The process involves weighing, cleaning, blanching (95–100°C for 8–10 minutes), filling cans with sugar syrup, capping, steam autoclaving (118°C), cooling, labeling, packaging, and storing in a dry place.

### 5. Pulp jam:

Jam is made by heating pulp with sugar to a thick consistency. ICAR–NIASM standardized process includes washing, peeling, pulping, adding sugar (45–55%), pectin (1%), and citric acid (0.5%), heating at 105 °C for 10 minutes, homogenization, bottling, and storage.



Pulp Jam

Pulp cubes canning



*AgriSearch with a human touch*

Technical Folder No. 75 (2024)

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## Dragon Fruit Pulp Processing and Valorised Products



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बारामती, पुणे, महाराष्ट्र ४१३११५

## Introduction

- Dragon fruit has emerged as a super crop owing to its high stress tolerance, ease of cultivation and high economical and health benefits.
- The pulp, peel, seeds, flower buds, and dried flowers and stem of the dragon fruit are highly nutritious, containing antioxidants with potent bioactive compounds, fiber, vitamin C, calcium, and phosphorus. Dragon fruit also exhibits beneficial activities against microbes and diseases like diabetes, obesity, hyperlipidemia, and cancer including cardiovascular activities.
- Being seasonal, dragon fruit is harvested from June to October, making availability challenging during off-seasons. Thus, processing may be the only choice since it enhances shelf life, stabilizes prices during the glut season, and assures supply in the offseason.
- When fully mature, it has white or coloured pulp (17–74%), many tiny black seeds (3–15%), and bright red or yellow skin (36–38%).
- Specifically, dragon fruit pulp has low-calorie content and is rich in soluble fibers, phytochemicals, and minerals. It can be processed into fresh cut fruit, juice, wine, jam, jelly, dried powder and preserves using acids, sugars, and the other organoleptically accepted additives.
- These products can be stored for more than three months under ambient conditions without microbial spoilage or significant quality loss. Additionally, red and pink dragon fruit pulp is used as a natural colouring ingredient.
- The processes for producing different valorized products from dragon fruit at ICAR–NIASM are described in detail from farmers' and small-scale entrepreneurs' perspectives.

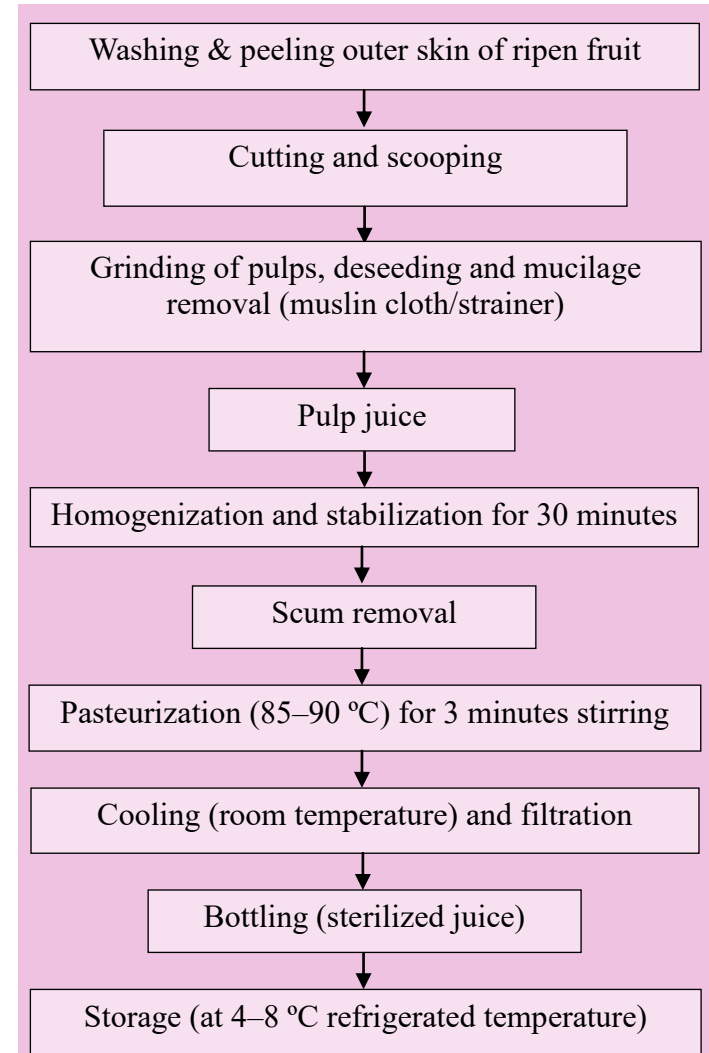
## 1. Fresh cut and minimal processing:

This is short-term method, which preserves fresh-cut dragon fruit pulp with minimal processing or by freezing. Key steps include (i) washing with potable water to remove dirt, debris, or surface contaminants, (ii) peeling by removal of the outer skin (peel) with a sterile knife, (ii) slicing into ½–1 inch pieces, and (iv) packing into food-grade plastic containers which typically modified internal atmosphere by altering the gas composition. This method extends the shelf life of fresh-cut dragon fruit by up to 10–14 days at 4–6°C without altering its quality.



## 2. Fruit juice:

Dragon fruit pulp juice is one of the most popular processed products due to its longer shelf life, improved nutritional and organoleptic qualities, and high concentration of antioxidants and vitamin C. The storage stability of pitaya juice at  $20 \pm 2^\circ\text{C}$  can be improved by adding 1% ascorbic acid, which reduces light damage and allows for the use of transparent packaging materials. ICAR–NIASM has developed and standardized a manual juice extraction method for well-ripened, freshly harvested dragon fruit (red/white). The process involves various steps: washing, peeling, cutting, scooping, deseeding, mucilage removal, homogenization, scum removal, pasteurization, cooling, filtration, bottling, and storage, as detailed in the flowchart.



White pulp

White pulp juice

Red pulp

Red pulp juice