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JACKFRUIT PROCESSING

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'Our Business is Industry…"

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JACKFRUIT PROCESSING

INTRODUCTION

Jackfruit or *nangka* or *langka* is one of the perishable fruits that need to be processed to increase its shelf-life. Fruit loss could reach as much as 50% due to improper handling, microbial infestation, during transportation and storage from the time of harvest. Jackfruit is one of the fruits that ITDI has researched on for appropriate technology which can be transferred for commercial processing.

Initial work was carried out to develop several products from jackfruit. Products include dried jackfruit, jackfruit flakes, jackfruit in-syrup, *pastilyas*, vacuum fried jackfruit, jackfruit leather, jackfruit jam, candied jackfruit, and others.

DRIED JACKFRUIT

Materials Needed

rareripe jackfruit (*sabahin* variety)
pure refined white sugar
sodium metabisulfite (optional)

Utensils Needed

stainless steel bowls
weighing scale
knives
mechanical drier
wire trays line with *sinamay* or cheesecloth
stove & LPG

Procedure

1. Wash jackfruit with clean tap water.
2. Soak in 200 ppm chlorinated water* for 10 minutes to reduce microbial load.
3. Cut into halves.
4. Separate edible yellow pulp from the white pulp.
5. Remove the seeds.
6. Weigh the yellow pulp.
7. Prepare 60% syrup* in a container. Mix sugar (600 g) and water (1L) to dissolve. Bring to boil.
8. Blanch the pulp in syrup until translucent. Cool.
9. Add 0.1% sodium metabisulfite* in syrup. Dissolve thoroughly.
10. Soak overnight.
11. Drain the pulp from the syrup.
12. Rinse the pulp with clean tap water to remove excess sugar from the pulp surface.
13. Lay the pulp in trays lined with cheesecloth.
14. Dry in a cabinet dryer at 60 $\pm$ 5^{o}C for 8 to 12 hours or until the pulp sticks to the cheesecloth.

**please see Annex A*

15. Remove from trays and loosely pack dried jackfruit in ordinary plastic bags.
16. Allow to sweat overnight for moisture equilibration.
17. Coat in confectioner's sugar.
18. Pack in OPP or PP plastic bags of 0.003" to 0.004" thickness at 50g to 100g per pack.
19. Seal, label and store in a cool and dry place.

**please see Annex A*

JACKFRUIT FLAKES

Procedure

1. Weigh previously washed and sanitized jackfruit.
2. Cut and slice.
3. Separate edible yellow pulp from the white pulp.
4. Remove seeds.
5. Weigh yellow pulp.
6. Steam-blanch yellow pulp for 3 minutes.
7. Weigh.
8. Add 5% maltodextrin*.
9. Blend thoroughly using osterizer.
10. Dry jackfruit puree in a drum dryer.
11. Cut/Roll into shapes while hot.
12. Allow to cool at room temperature.
13. Pack in appropriate packaging material and seal.
14. Label and store in a cool and dry place.

**please see Annex A*

JACKFRUIT IN SYRUP

Procedure

1. Weigh previously washed and sanitized jackfruit.
2. Cut/slice.
3. Separate yellow pulp from white pulp.
4. Remove seeds.
5. Weigh yellow pulp.
6. Pack in previously sterilized jars.
7. Prepare 50% syrup*, added with 0.1% citric acid*.
8. Add hot syrup into jars containing the fruit.
9. Remove bubbles formed by exhausting at 80°C for 10 minutes.
10. Seal.
11. Process jackfruit in jars in boiling water for 30 minutes.
12. Cool at room temperature.
13. Label and store.

**please see Annex A*

JACKFRUIT *PASTILYAS*

Materials Needed	**QUANTITY**		
mashed ripe jackfruit	1	kilo	(5 cups)
sugar	300	g	(2¼ cups)
butter or margarine	200	g	
full cream powdered milk	1	cup	

Utensils Needed

rolling pin	spatula
frying pan	kitchen knife
chopping or kneading board	wax paper

Procedure

1. Blend or mash ripe jackfruit.
2. Add sugar and milk.
3. Cook over slow fire. Stir constantly until a smooth mixture is obtained. The mixture should not stick to the sides of the frying pan.
4. Transfer the cooked mixture over a kneading board covered with wax paper. Cool.
5. Spread butter and small amount of sugar over the mixture.
6. Sprinkle small amounts of sugar over the wax paper. Spread the mixture using a rolling pin until it is 1-inch thick.
7. Make slices of about 4 x 1 cm.
8. Wrap individually.

ANNEX A

HOW TO PREPARE

I. Calcium Hypochlorite Stock Solution (CHLORINATED WATER)

A. Concentration of desired solution: 10,000 ppm stock solution = C_2
Volume of desired solution: 1 gallon (3.78 liters) = V_2
Percentage available chlorine in hypochlorite granules: 70% = C_1

Calculation:

$$\mathbf{C_1 V_1 = C_2 V_2}$$

where:

V_1 = volume of desired concentration
V_2 = required amount needed for final concentration
C_1 = percentage available in solution/granules
C_2 = concentration of desired solution

$$C_1 = \frac{C_2 V_2}{V_1}$$

$$V_1 = \frac{C_2 V_2}{C_1}$$

$$C_2 = \frac{C_1 V_1}{V_2}$$

$$V_2 = \frac{C_1 V_1}{C_2}$$

Problem:
Prepare one gallon stock solution with 10,000 ppm concentration using calcium hypochlorite (CaOCl) granules with 70% available chlorine.

Required:
Amount of calcium hypochlorite granules needed to prepare 10,000 ppm concentration of stock solution.

Solution:
Volume of stock solution = 1 gal (3.78L; $\text{density}_{\text{water}}$ = 1 kg/L; therefore 3.78 kg)

Weight of stock solution = 3.78 kg

$$C_1 = \frac{C_2 V_2}{V_1}$$

$$C_1 = \frac{(3.78 \text{ kg})\ (1\%)}{70\%} = \textbf{0.054 kg or 54 g}$$

Preparation:

Dissolve 54 g calcium hypochlorite granules in 1 gallon water. Mix.

B. Prepare a gallon chlorinated water with concentration of 30 ppm needed to sanitize food handlers hand. How much stock solution with concentration of 10,000 ppm is required to make the desired chlorinated water for sanitizing food handler's hand?

Given:

Let V_2 = Volume of desired chlorinated water = 3.78 L

C_2 = Concentration of desired chlorinated water = 30 ppm

C_1 = Concentration of stock solution = 10,000 ppm

Required:

V_1 = Volume of stock solution needed to prepare a gallon of chlorinated water with concentration of 30 ppm

Solution:

$$V_1 C_1 = V_2 C_2$$

$$V_1 = \frac{V_2 C_2}{C_1} = \frac{(3.78 \text{ L})\ (30 \text{ ppm})}{10{,}000 \text{ ppm}}$$

$$V_1 = \textbf{0.01134 L or 11.34 mL}$$

Preparation:

Add 11.34 mL of stock solution from A to 1 gallon water. Mix.

To 11.34 mL of stock solution from A, add enough water to make 1 gallon. Mix thoroughly.

C. Prepare a gallon of chlorinated water with concentration of 200 ppm.

COMPUTATION - SAME AS B.

II. ***60% syrup***

Basis: 1 kilo of edible pulp = 600 grams sugar + 400 mL water

III. ***50% syrup***

Basis: 1 kilo of edible pulp = 500 grams sugar + 500 mL water

IV. ***0.1% sodium metabisulfite*** *(antioxidant)*

0.1% convert to 0.001 = 0.001 x 1 kilo = 0.001 kg or 1 gram

V. ***5% maltodextrin*** *(bulking agent and for color protection)*

Basis: 1 kilo edible pulp

convert 5% to 0.05 ----- 0.05 x 1 kilo =0.05 kilo or 50 grams

VI. ***0.1% citric acid***

0.1% convert to 0.001 = 0.001 x 1 kilo = 0.001 kg or 1 gram