RESEARCH EXPERIMENT NO. 1

Title of the Research Project: Standardization of process for preparation of jaggery from sapota juice (18.4.3.41/18.7.3.9)

Name of the Department: Department of Post Harvest Technology, ASPEE College of Horticulture, Navsari Agricultural University, Navsari – 396 450 Gujarat.

Investigators:

PI : Dr. Dev Raj, Professor and Head (PHT)
Co-PI(s) : Dr. A. K. Senapati, Assistant Professor (PHT)
Dr. Nilam V. Patel, Assistant Professor (PHT)
Dr. FM Sahu, Assistant Professor (PHT)

Background and justification:

Sapota [*Manilkara achras* Fosberg] belongs to Sapotaceae family. Sapota was first introduced to India during late nineteenth century and its cultivation was first taken up in Maharashtra. Fully ripened sapota fruits are delicious and eaten as a dessert fruit. One hundred gram of edible portion of ripe sapota fruit contains carbohydrates (21.49 g), protein (0.7 g), fat (1.1 g), calcium (28 mg), phosphorus (27 mg), Iron (2 mg), ascorbic acid (6 mg) and beta carotene (97 mg). It also has a lot of dietary fibre. Sapota production is steadily increasing in India due to expansion of area under cultivation and improved production technology and; but the inadequacies of handling, storage, transportation and marketing pose problem during glut season which results in heavy postharvest loss ranging from 25 to 40 per cent. Concentration is one of the best alternatives for long term preservation of the produce. However, technology for sapota fruit bar is lacking and the process for fruit bar is very tedious. Among different processed products, sapota based fruit bar can be one of the methods for preserving fruits for its off-season availability, which is concentrated product made from fruit pulp, with a chewy texture and mouth feel. Fruit bar is high calorie food and is a rich source of the vitamins and minerals. Fruit bar, being principally made up from fruit pulp, retains most of these ingredients and form a good nutritional supplement. Presently table sugar which is known as empty calorie food is being added to increase the TSS of fruit bar. Sugarcane juice is extracted from the pressed sugarcane which is rich source of potassium, calcium, iron, and vitamin B beside sugars. Recently, processors have faced the market competition for such products. So, they can add more value to their products by the mean of blending of sugarcane juice. In case of bar, there is a vast possibility to add further value by formulation. Now-a-days, formulation is recent trend; which enhances the nutritive value of product as well as beneficial for the health of consumers. So keeping all the problems in mind, the present investigation shall be taken with following objectives.

Objectives:

1. To study the effect of sapota and sugarcane juice proportion on quality of jaggery from sapota juice
2. To study the quality parameters of jaggery during storage

Year of Commencement: 2022-23

Technical Programme:
Treatment details:

Treatment	Sapota Juice (%)	Sugarcane juice (%)
T_1	0	100
T_2	10	90
T_3	20	80
T_4	30	70
T_5	40	60
T_6	50	50
T_7	60	40
T_8	70	30
T_9	80	20
T_{10}	90	10
T_{11}	100	0

Total Treatments:11
Number of Repetitions =3
Design: CRD
Sample size =200 g
Packaging material: Plastic jar
Storage: at ambient temperature
Observations: 0, 3 ,6,9 and 12 months of storage

B. Physico-chemical Parameters	**B. Sensory Parameters**
1. Recovery (%) 2. Moisture (%) 3. Total Soluble Solids (TSS) °Brix 4. Acidity (%) 5. Total sugars (%) 6. Reducing Sugars (%) 7. Crude Fibre (%) 8. Ash content (%) 9. Iron (Fe) (mg/100 g) 10. Non-enzymatic browning (OD 440 nm) 11. Minerals Contents (%)	1. Colour 2. Texture 3. Flavour 4. Taste 5. Overall acceptability
C. Microbial Parameters	**D. Economics**
1. Total Plate Count (CFU/g), yeast, Mould and coliform Bacteria	

Process Flow-chart:

Collection of fully ripen sapota fruits and sugarcane juice
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Washing, Cutting and Juice extraction of sapota
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Filtration of Juice (Sapota and sugarcane)
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Blending of sapota juice with sugarcane juice as per treatments
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Addition of CaO to maintain pH 6.2
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Concentration of juice by open pan heating till End point

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Cooling at room temperature

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Jaggery

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Packing in plastic jar

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Storage at ambient condition