RESEARCH EXPERIMENT

Title of the Research Project: Standardization of formulation for preparation of fruit bar from sapota pulp (**17.10.3.25** /17.4.3.70)

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

Investigators:

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Background and justification:

Sapota [*Manilkaraachras*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 sugarcane juice proportion and KMS concentration on quality of fruit bar from sapota pulp
2. To study the quality parameters of fruit bar during storage.

Year of Commencement: 2021-22

Technical Programme:

Treatment details:

Factor 1. Blending Proportion (B)

Treatment	Sapota Pulp (%)	Sugarcane juice (%)
B_1	90	10
B_2	80	20
B_3	70	30
B_4	60	40
B_5	50	50

Factor 2. Potassium metabisulphite (K):

K1: Control

K2: 50 ppm
K3: 100 ppm
K4: 150 ppm

Treatment Combinations: 20

Details of Treatment Combinations

$B_1 K_1$	$B_2 K_1$	$B_3 K_1$	$B_4 K_1$	$B_5 K_1$
$B_1 K_2$	$B_2 K_2$	$B_3 K_2$	$B_4 K_2$	$B_5 K_2$
$B_1 K_3$	$B_2 K_3$	$B_3 K_3$	$B_4 K_3$	$B_5 K_3$
$B_1 K_4$	$B_2 K_4$	$B_3 K_4$	$B_4 K_4$	$B_5 K_4$

Number of Repetitions =3

Design: CRD with factorial concept

Sample size = 50 g (Finish product)

No of samples per treatment per repetition =20

Binding agent: 0.5 % Pectin

Packaging material:400 Gauge HDPE Bag

Storage: at ambient temperature

Observations: Storage study at 0, 3, 6, 9 months of storage

A. Physico-chemical Parameters	**B. Sensory Parameters**
1. Recovery (%) 2. Moisture (%) 3. Water activity 4. Total Soluble Solids (TSS) °Brix 5. Acidity (%) 6. Total sugars (%) 7. Reducing Sugars (%) 8. Dietary Fibre (%) 9. Ash content (%) 10. Iron (Fe) (mg/100 g) 11. Calcium (mg/100 g) 12. Non-enzymatic browning (OD 440 nm)	1. Colour 2. Texture 3. Flavour 4. Taste 5. Overall acceptability
C. Microbial Parameters	
1. Total Plate Count (CFU/g)	

Process Flow-chart:

Collection of fully ripen sapota fruits

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Washing, Cutting and Pulping

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Blending of pulp with sugarcane juice as per treatments

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Concentration of pulp by heating

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Addition of KMS as per the treatment

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Pouring of concentrated pulp on the tray by smearing with glycerin

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Cabinet drying at 60^{o}C up to 16±0.5% moisture content

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Cutting bar into rectangular piece