A

Project Report

On

“Banana Flavoured soya Yoghurt”

Submitted to

ARTS, COMMERCE AND SCIENCE COLLEGE, SONAI, AHMEDNAGAR

In partial fulfilment of the requirements for the degree of

Bachelor of Vocational

in

FOOD PROCESSING (DAIRY TECHNOLOGY)

By

GHULE PRASAD MADAN

&

CHITALE RAJENDRA BHARAT

Dr. R.R Dandawate

Guide

Ms. Patole M.A

Co-Guide

DEPARTMENT OF B.VOC FOOD PROCESSING

MULA EDUCATION SOCIETY’S

ARTS, COMMERCE AND SCIENCE COLLEGE, SONAI, AHMEDNAGAR

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CERTIFICATE

Certified that **GHULE PRASAD MADAN AND CHITALE RAJENDRA BHARAT** has carried out the project work entitled ***"Banana Flavoured soya Yoghurt"*** for the award of the degree of Bachelor of Vocational (Food Processing) from Mula Education Society's Arts, Commerce and Science College, Sonai, Ahmednagar under my supervision. The project embodies results of original work, and studies are carried out by the student himself and the contents of the project work do not form the basis for the award of any other degree to the candidate or to anybody else from this or any other University/Institution.

Dr. R.R Dandawate
Nodal Officer
Department of B.Voc
Arts, Commerce and Science College, Sonai
Ahmednagar

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Date : 21 /10/2021 **GHULE PRASAD SAHEBRAO**

Place: Sonai **CHITALE RAJENDRA BHARAT**

1.INTRODUCTION

Yogurt is a fermented milk product and as such is a means of preserving the nutrients in milk. A wide variety of yogurts are now available around the world, ranging from very-low-fat fruit yogurts to Greek-style yogurt with a fat content around 8 g per 100 g. Yogurt can be made from cows', ewes', goats', or buffalo's milk. This article reviews the nutritional composition of a range of yogurts, provides data on yogurt consumption around the world and discusses the importance of yogurt for different population groups. (*See* BUFFALO | Milk; MILK | Dietary Importance; SHEEP | Milk.)

Since yogurt is derived from milk, it provides protein, calcium, and other minerals, and a range of vitamins (Table 1). Levels of some vitamins, such as vitamin B_1 and pantothenic acid, are reduced as they are utilized by the bacterial culture used to produce the yogurt. However, folic acid levels are typically higher than in milk since folic acid is produced by the bacteria. Refer to individual nutrients.

Yoghurt is a dairy production that has more profits than milk. Digestive system in some of people has an allergy to lactose (sugar of milk), but lactose is transformed to lactic acid in yoghurt and dose not create allergy.

3. MATERIALS AND METHODS

3.1 Ingredients- 1 .Soya milk

2. banana (Chiquita)

3.sugar

4. vanilla Essence

5 .starch

.

3.2 Equipment's used

- **Weighing balance**: Electronic weighing balance is used for weighing raw materials.
- heavy pot with a lid.
- **Electronic blending machine (planetary mixer**): It is used for mixing and blending of ingredients like fat , sugar, refined wheat flour, essence, etc.

  .

3.3 Methodology for preparation of *Banana Flavoured soya Yoghurt*

The following flow chart and discussion provide a general outline of the steps required for making yogurt.

General Yogurt Processing Steps

- Adjust Milk Composition & Blend Ingredients
- Pasteurize Milk
- Homogenize
- Cool Milk
- Inoculate with Starter Cultures

- Hold
- Cool
- Add Flavors & Fruit
- Package

1. Adjust Milk Composition & Blend Ingredients

Milk composition may be adjusted to achieve the desired fat and solids content. Often dry milk is added to increase the amount of whey protein to provide a desirable texture. Ingredients such as stabilizers are added at this time.

2. Pasteurize Milk

The milk mixture is pasteurized at 185°F (85°C) for 30 minutes or at 203°F (95°C) for 10 minutes. A high heat treatment is used to denature the whey (serum) proteins. This allows the proteins to form a more stable gel, which prevents separation of the water during storage. The high heat treatment also further reduces the number of spoilage organisms in the milk to provide a better environment for the starter cultures to grow. Yogurt is pasteurized before the starter cultures are added to ensure that the cultures remain active in the yogurt after fermentation to act as probiotics; if the yogurt is pasteurized after fermentation the cultures will be inactivated.

3. Homogenize

The blend is homogenized (2000 to 2500 psi) to mix all ingredients thoroughly and improve yogurt consistency.

4. Cool Milk

The milk is cooled to 108°F (42°C) to bring the yogurt to the ideal growth temperature for the starter culture.

5. Inoculate with Starter Cultures

The starter cultures are mixed into the cooled milk.

6. Hold

The milk is held at 108°F (42°C) until a pH 4.5 is reached. This allows the fermentation to progress to form a soft gel and the characteristic flavor of yogurt. This process can take several hours.

7. Cool

The yogurt is cooled to 7°C to stop the fermentation process.

8. Add Fruit & Flavors

Fruit and flavors are added at different steps depending on the type of yogurt. For set style yogurt the fruit is added in the bottom of the cup and then the inoculated yogurt is poured on

top and the yogurt is fermented in the cup. For swiss style yogurt the fruit is blended with the fermented, cooled yogurt prior to packaging.

9. Package

The yogurt is pumped from the fermentation vat and packaged as desired.

3.4 Chemical Analysis

1. **Moisture Content-** Moisture content of the eggplant flesh powder was determined using the hot air oven method (AOAC, 2000).
2. **Protein Content-** Crude protein was estimated using the micro Kjeldahl method (Pelican Equipments)
3. **Fat Content-** Fat content was estimated using soxhoplus (Pelican equipment's).
4. **Crude Fiber Content-** Crude fibre was estimated using fibroplus (Pelican Equipments)
5. **Ash Content-** The ash fraction contains all the mineral elements but it allows to nitrogen-free-extract (by difference) from dry matter
6. **Carbohydrate Content-** Carbohydrates are calculated on the basis of determination of the remaining four parameters.
7. **Iron Content-** Iron was introduced during the mixing of the cookie batter. Spectrophotometric measurement of the Iron Content of cookies was introduced in accordance with the AOAC protocol.

4. RESULT AND DISCUSSION.

4.1 Analysis

4.1.1 Analysis of yoghurt samples

Microbiological analysis: All media were obtained in dehydrated forms and were prepared according to the manufacturer's instructions. Plate count agar was used to determine the total bacterial count (Houghtby *et al*., 1992). MacConkey agar was used to determine the coliform count (Christen *et al*., 1992) and Potato dextrose agar was used to determine yeast and mould counts (Frank *et al*., 1992).

Glasswares such as Petri-dishes, test tubes, pipettes, flasks and bottles were sterilized in a hot oven at 170°C for two hours, whereas distilled water and tips were sterilized by autoclaving for 15 min at 121°C (Marshall, 1992).

Pour plate technique was used for total bacterial and coliform counts and surface (spread) plate technique was done for yeast and mould counts. One milli liter from a homogenous sample was serially diluted into 9 mL ringer solution to prepare eight fold dilutions from 10^{-1} to 10^{-8} (Houghtby *et al*., 1992). Then for total bacterial and coliform counts, one ml of each sample was transferred into a sterile duplicate plate and 15-20 mL of the selected media was added. The medium was mixed immediately and shake for 5-10 sec. For yeast and mould, one milli liter of diluted

samples were spread over pre prepared dried plates. Then the cultured plates were incubated at 32°C for 48 h, 37°C for 24 h and 25°C for 5 days for the total bacterial, coliform and yeast and mould, respectively. The plates containing 25-250 cfu were enumerated for total bacterial count, whereas the plates containing 15-150 cfu were enumerated for coliform and yeast and mould count (Christen *et al*., 1992).

Statistical analysis: The data were analyzed statistically using completely randomized design. The analysis of variance (ANOVA) tests were carried out by using the general linear model procedure of the SPSS (Version 13.0). The means were separated by Duncan Multiple range test. Significant differences were determined at p = 0.05. The value of total bacteria, coliform and yeast and mould counts were transformed into log values.

4.2 Chemical composition: The means for Total Solids (TS), solids not fat (SNF), fat, protein and ash content and titratable acidity for recombined milk yoghurt were 14.02±0.91, 10.95±0.78, 3.06±0.41, 3.89±0.51, 0.66±0.09 and 1.31±0.19, respectively. Whereas for the fresh milk yoghurt the means were found as 15.04±0.87, 11.51±0.82, 3.53±0.14, 4.42±0.23, 0.82±0.17 and 1.33±0.15, respectively (Table 1). The chemical contents of yoghurt samples were affected significantly ($p<0.01$) due to variations of the manufacture and type of milk used, while non significant differences were found for titratable acidity due to variation of type of milk used. Similarly the storage period affected significantly ($p<0.01$) Total Solids (TS), Solids Not Fat (SNF) and protein contents and titratable acidity.

The results obtained from **chemical analysis** of both type of yoghurt revealed that mean of total solids for powder milk yoghurt was lower than that obtained from fresh milk yoghurt. The higher value in fresh milk yoghurt might be because of enrichment of fresh milk with 15% milk powder (Attita Allah *et al*., 2010). Variations of some compositional contents of yoghurt were reported previously by Aly *et al*. (2004), El-Zubeir *et al*. (2005), Karagozlu *et al*. (2005) and Haj *et al*. (2007). Solids Non Fat (SNF), protein and fat content of all samples were in line with El-Bakri and El-Zubeir (2009). The result agrees with Sudanese Standards (2007), which stated that the minimum SNF content should be 8.20%. The average ash content of all samples of plain set yoghurt supported by Attita Allah *et al*. (2010). Titratable acidity revealed higher values than that reported by Haj *et al*. (2007) and lower than the results obtained by El-Zubeir *et al*. (2005). This might be due to the presence of some bacteria as shown in the present results. The differences in **chemical composition** between manufactures might be due to the variation of milk type and the conditions of processing that used to produce the yoghurt (Rasic and Kurmann, 1978). Moreover, Tamime and Robinson (2000) reported that the quality of yoghurt depending on the type of milk used.

The total bacterial count (TBC) of all yoghurt samples collected revealed result higher than that reported by Haj *et al*. (2007) and lower than that reported by El-Bakri and El-Zubeir (2009) Abdalla and El-Zubeir (2006) reported that higher counts were obtained for the factory commercial samples compared with those manufactured as experimental trial in the factory. Moreover pasteurization of the whole milk revealed lower counts, which could be attributed to elimination of contaminants.

The coliform count revealed results higher than that obtained by El-Bakri and El-Zubeir (2009) who found that the means level of coliform in plain and fruit yoghurt samples were log 4.03±4.41 and 3.59±4.15, respectively. Also they added that only 43.75% of samples had coliform count lower than 10^2 which is the maximum determined in most of the international standards. Tamime and Robinson (1999) reported that the total coliform decrease during storage period due to the inhibitory effect of increase acid production. Also they added that the presence of coliforms in the samples is indicative of post pasteurization contamination at one or more stages during processing.

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