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A QUALITATIVE AND QUANTITATIVE STUDY OF NUTRIENTS AND PHYTONUTRIENTS CONTENT OF AVACADO INCORPORATED YOGURT

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Abstract:

Yogurt is a popular fermented product obtained by adding a mixture of lactobacillus bulgaricus and streptococcus thermophilus. Though a very nutritious fruit, avocado is not consumed much by the people because of its bland taste and nutty flavor. It can be more nutritious, delicious, and palatable if it is incorporated into the yogurt. Apart from this, Yogurt and avocado together can do miraculous health benefits.

Methodology:

The yogurt was prepared according to the International Standards of yogurt manufacturing, (IDF, 1995 Standards). The milk was heated to 90^{o} c for 3 min for pasteurization and powdered sugar was added. It is then cooled to 43^{o} c and added with the Avocado pulp in the proportions of 5%, 10% and 15%. This is then followed by the inoculation of the culture about 2%. Yogurt samples were elaborated to be the quantities of 100 ml for each sample. The inoculated milk is then incubated to 45^{o} c for 6-8 hours and then cooled at 5^{o} c. The developed yogurt was coded as AIY$_1$, (5%), AIY$_2$ (10%) and AIY$_3$ (15%) for the analysis purpose.

Results and Discussion:

Organoleptic evaluation (table4.3) was carried out on 1st day of storage to find the acceptability of the developed yogurt. The results of the organoleptic evaluation concluded that yogurt incorporated with avocado pulp was rated satisfactory. A significant increase in the nutrients and phytonutrient content of the yogurt after the incorporation of avocado pulp was observed. All the three samples of AVACADO INCORPORATED YOGURT (AIY) had an extended shelf life for 7days.

Introduction:

Milk has been described as nature's nearly perfect food, as it provides vital nutrients in balanced proportions. Among all fermented dairy products, Yogurt is better known than the other and has more acceptability (1). Yogurt is a popular fermented product obtained by adding a mixture of *lactobacillus bulgaricus and streptococcus thermophilus* (2).This biotechnological food is considered by nutritionists as having high nutritional value because it lacks lactose and has significant concentrations of nutrients(3,4). But most of the dairy products are attributable to the absence of the vitamin c and dietary fiber.

On the other hand, though a very nutritious fruit, avocado is not consumed much by the people because of its bland taste and nutty flavor. It can be more delicious and palatable if it is incorporated into the yogurt. Apart from this, yogurt and avocado together can do miraculous health benefits. Avocado is mainly meant for its fatty acid content. The characteristics nature of yogurt is to enhance the Omega – 3 fatty acids make the incorporation of avocado in yogurt, as a complement for each other and provide many fruitful effects. Keeping all these in mind the investigator has chosen avocado for incorporated in yogurt preparation, as a novel food, with the following objectives.

To:

- ✓ Develop a milk product-Avocado Incorporated Yogurt.

- ✓ Assess the overall acceptability,
- ✓ Estimate the nutrient content,
- ✓ Analyze the phytonutrient composition and
- ✓ Assess the shelf life of the developed yogurt.

Materials and Methodology:

Yogurt can be prepared either by adding the live positive bacterial culture or by adding certain percentage of yogurt that serves as the starter culture, which is commonly called mother culture. The mother culture was adopted for this study. For that yogurt was brought from one of the super market in dindigul. The Nilgris yogurt, one of the product from the Hatsun was used for this study. The nutrient composition of this yogurt is considered as the standard for the present study and it is listed below

Quantitative Analysis of Phytonutrient Composition of Avocado Fruit Pulp:

S.No	Phytonutrients	Indications	Values in µg
1	**ά Carotene**	+	19
2	**β Carotene**	+	57
3	**Flavonoids**	-	Nil
4	**Tanin**	-	Nil

Development of Avocado Yogurt:

Milk
↓
Boiling to 90° C for 3minutes
↓
Addition of sugar about 10 – 12%
↓
Cooling down to 43° C
↓
Addition of avocado pulp at 5, 10, 15%
↓
Stirring → Inoculation of 2% starter culture
↓
Incubation at 45°C
↓
Cooling till 5° C

The yogurt was prepared according to the International Standards of yogurt manufacturing, (IDF, 1995 Standards). The milk was heated to 90° c for 3 min for pasteurization and powdered sugar was added. It is then cooled to 43° c and added with the Avocado pulp in the proportions of 5%, 10% and 15%. This is then followed by the inoculation of the culture about 2%. Yogurt samples were elaborated to be the quantities of 100 ml for each sample. The inoculated milk is then incubated to 45° c for 6-8 hours and then cooled at 5° c.

The developed yogurt was coded as S1 (5%), S2 (10%), S3 (15%) for the analysis purpose.

Organoleptic Evaluation of the Developed Product:

Organoleptic evaluation can be defined as the evaluation of the sensory quality of the food such as appearance, flavor, texture, taste by means of the human sensory organs (shahantha k, 2003).

The score card is defined as an evaluation card sample coded with letters (or) numbers with descriptive term such as very good, good, fair, poor, very poor.(Potter and Hotchkiss,2002). The yogurt samples were presented in the order of standard at the

first followed by S1, S2 and S3 in separate bowls. Water was used for rinsing between samples. The technique was performed using the spoon. The S1, S2, S3 was scored high and showed higher acceptability than the other samples and hence, it was taken for the further estimation.

Organoleptic Evaluation of the Developed AIY:

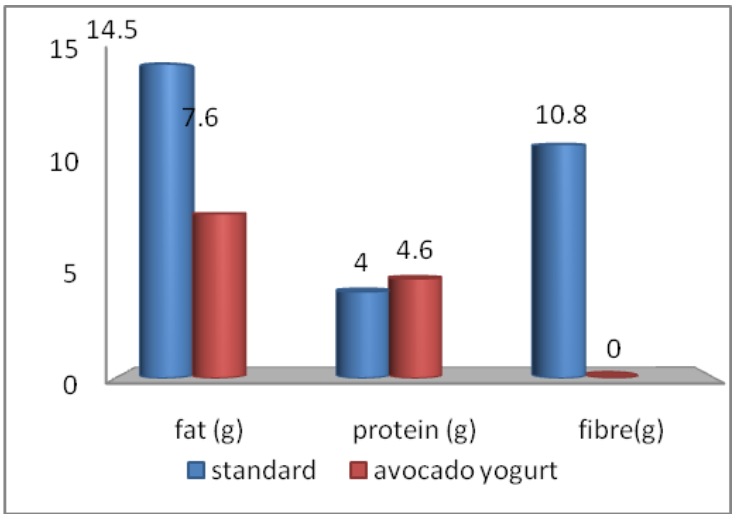
S.No	Attributes	Standard	AIY1	AIY2	AIY3
1	Appearance	20	19	19.2	19.7
2	Colour	20	19	20	20.5
3	Flavour	21	20	19	18
4	Texture	20	18	19	17
5	Taste	19.5	20	15	17.5
6	Overall Acceptability	19.5	19.8	20	19.1

Nutrient Composition of the Avocado Incorporated Yogurt:

The nutrients namely protein, fat and fibre of the avocado fruit yogurt were analyzed and the result are presented in the Table

Nutrient Content of the Developed AIY:

S.No	Nutrients/100 gm	Avocado Yogurt	Standard Yogurt
1	Fat	14.5	4.0
2	Protein (g)	8.6	4.6
3	Fibre	10.8	Nil



From the above table and figure it is clear that the nutrient composition of the yogurt incorporated with avocado pulp juice had considerable amount of protein about 8.6g, fat about 14.5g, fibre about 10.8g. A significant increase in the nutrient content of the yogurt after the incorporation of avocado pulp was observed. Codex (2008) regulations for yogurt indicate that the minimum milk protein content is 2.7 percentage (except for concentrated yogurt where the minimum protein content is 5.6% after concentration) and the maximum fat content is 15 percentage.

Shelf Life of the Avocado Incorporated Yogurt:

Microbial content of avocado yogurt was analyzed and found to have no coliform colonies during the storage period. This indicated that there is no adverse contamination in the developed product. Yeast and mould count was nil on the 1st day and increased to 2 – 6 coliform from 7th to 14th day in all the samples. The acidity levels were increasing from day one to 14th day in all the three variations. The highest acidity levels were in AIY_3 sample.

Conclusion:

From the study, it may be concluded that the avocado fruit yogurt has a good quantity of proximate nutrients and phytonutrients. The protein, fibre and fat content were found to be high in whole yogurt than in the standard yogurt. All the three samples of avocado yogurt had an extended shelf life .The overall acceptability was high for the sample AIY_3 avocado pulp yogurt with 10 per cent incorporation. To put in a nutshell, avocado incorporated yogurt is a powerhouse of many nutrients and can be used not only in the treatment and the prevention of the diseases but also provide a healthier survival by increasing the immune response, fighting against the carcinogens, maintaining a healthy gastro intestinal system, lowering the serum cholesterol, eliminating the allergens and inhibition of pathogenic organisms.

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