



SHELF LIFE STUDY OF AN AVOCADO TURMERIC SPREAD

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Abstract: A nutritious avocado turmeric spread was designed for every individual who loves spreads which are not only tasty but healthier too. Avocado turmeric spread was developed with homemade cream, homemade ghee, turmeric, powdered sugar, avocado, black pepper and salt, without preservatives and food additives. The product provided fairly good amount of energy, protein, fats, sodium, potassium and calcium. Shelf life study was done of the product using 5 point hedonic scoring test on attributes such as appearance, aroma, color, texture, taste and spreadability. The other aspects studied included designing a nutritional label, packaging, and costing. The product was marketed using digital platform to see its acceptability.

Index Terms - Avocado, Turmeric, Ghee-based spread, Fruit spread, Gluten free, Nutritious spread.

I. INTRODUCTION

A spread is a food that is generally spread with a knife on foods like bread in order to enhance the texture and flavor of the food. Some other foods like dips and sauces are also used to improve the flavor and texture of the food. But Spreads are different from dips and sauces since spreads are spread on the food whereas dips and sauces are given as a side dish and food are dipped into them and not spread on the food^[1]. The most common spreads in the Indian market is Butter branded by companies like Amul, jam branded by companies like kissan, Mayonnaise and Cheese spread branded by companies like funfood or veeba. There are problems associated with consumption of cheese. So, therefore replacing cheese with ghee in spreads and making it more nutritious and tasty by adding fruits like avocado, guava, beetroot etc., vegetables, pulses, nuts, soya and many more^[2]. There have been research papers where vegetables like celery and certain herbs were incorporated into dips and spreads. It increased the acceptability, taste and also the consumption of vegetables amongst the preschool children^[3]. Keeping these points in mind the present study was taken up to design a nutritious spread with following objectives

1. To design a nutritious and healthy spread
2. To assess the shelf life of the spread
3. To design a nutritional label
4. To select a packaging material
5. To understand the marketing and the budgeting aspects of a food product.

II. METHODOLOGY

An innovative food product was thought of because avocado is not a common fruit in India due to its foreign origin. Avocado is an immunity booster which also helps in treatment of cardiovascular disease and also cancer. This COVID-19 pandemic has created havoc in the world. It has made people realize the worth of immunity. Therefore, this product was made to introduce a new variation to already available products to boost immunity.

Since a food product was supposed to be designed as part of our undergraduate project, the product which was initially thought about was edible cutlery. But, due to the lack of the required infrastructure, the product was scrapped and chocolate spread was considered for the next. But chocolate is very common and many products are already there in the market. Since something nutritious and healthy was expected, Avocado Turmeric spread with ghee as the base instead of cheese was thought of.

There was no recipe online nor was there any similar product made earlier. There was an avocado dip which was made by blending avocado and water. So, this recipe was used to make the avocado mash which was then blended with homemade cream, homemade ghee, turmeric, black pepper and salt.

III. MATERIALS

The avocado turmeric spread was confirmed after 2 trials. The sensory evaluation was done for the 1st trial which was done among 6 naïve panel members using scoring technique. The scorecard consists of 5 point hedonic scale ranging from like a lot to dislike a lot. Attributes that were scored were appearance, aroma, color, texture, taste and spreadability. During the first trial, the results of sensory evaluation showed that the spread did not have a pleasant taste as shown in figure 1. The feedback of the panelist was that the taste of the turmeric was overpowering (amounts given in table 1).

So to improve its taste, 2nd trial was done by adding powdered sugar and reducing the amount of turmeric as shown in table 2. This resulted in the improvement of the taste and the color aspect of the spread as shown in figure 2.

Due to positive feedback from the panel member, this product was finalized. This standardized product was packed in a small plastic bottle and kept in refrigerator for further shelf study.

Ingredients	Amount
Cream	1 cup
Ghee	1 tbsp.
Turmeric	1 tsp.
Avocado	1
Black pepper	½ tsp.
Salt	¼ tsp.

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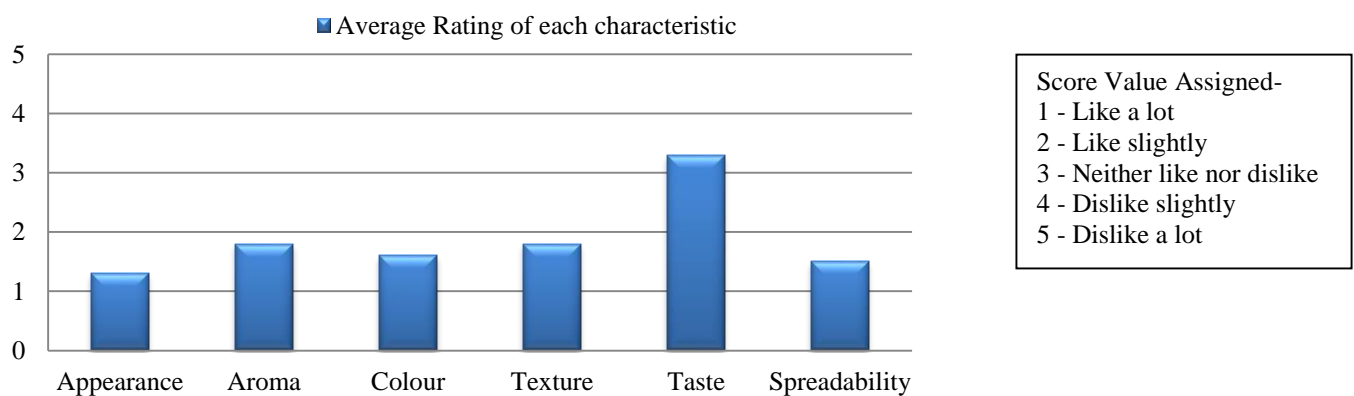


figure 1 - result of sensory evaluation for the first trial

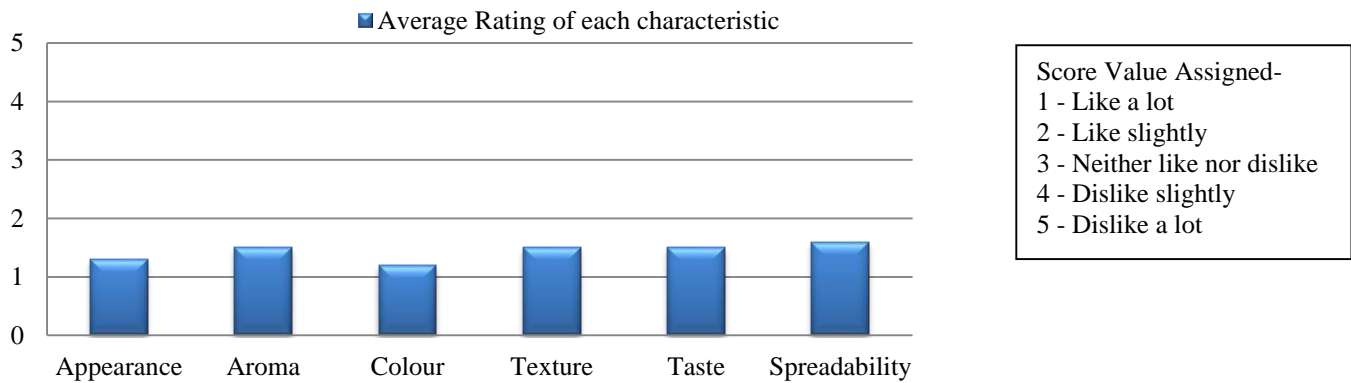


figure 2 - result of sensory evaluation for the second trial

IV. METHOD OF PREPARATION OF AVOCADO TURMERIC SPREAD

1. Make Homemade Ghee

- i. Boil the milk properly and let it cool in the refrigerator for 12 hours.
- ii. Collect the malai and store it in the refrigerator
- iii. Repeat the steps given above for 8 days
- iv. Take half of the malai stored and blend it with water to wash it
- v. Strain the watery portion and keep the remaining for 1 hour in a pan at low temperature till the color turns brown.
- vi. Strain the ghee and store it at room temperature.

2. Make Homemade Cream

- i. Take the remaining half of the malai and whisk it for 5 minutes.
- ii. Add half cup milk and half cup powdered sugar
- iii. Whisk for another 5 minutes.
- iv. Store the cream in refrigerator.

3. Prepare Avocado Mash

- i. Cut the avocado in two half and throw the seed.
- ii. Scoop out the soft or the fleshy part of the avocado with the help of a spoon.
- iii. Blend the soft part and gradually add water for liquid consistency
4. Blend the Avocado mash, homemade cream, homemade ghee, turmeric, black pepper, powdered sugar and salt.
5. Pack the avocado turmeric spread in a small bottle and store in refrigerator.

V. PACKAGING

Packaging minimizes the damage to the product that can be physical, chemical or microbial. The packaging material used here is high density polyethylene plastic as shown in figure 4. This type of plastic is most commonly used to store foods like butter. A research study was conducted in which crackers and sponge, vanilla and butter biscuit were stored in different packaging materials like propylene, HDPE and paper bag for 28 days. It was observed that in paper bag, hardness of the sponge biscuit and crackers had increased and the hardness of the vanilla biscuit had decreased. In HDPE and propylene, there was a slight decrease in the hardness for all the samples. This proved that HDPE and propylene was effective and it protected the product from environmental influence^[4].



figure 3



figure 4

VI. NUTRITION LABELLING

Nutrition labels are often displayed on the back or side of packaging. A review paper was conducted to assess the effect of nutritional labeling on consumer buying behavior. Nutrition label defines the nutrient content of a food and it also guides the customer to make a proper food selection. In this situation, people are a lot more aware of the harmful ingredients that might be in the food product. Therefore Nutritional labels help the consumer to know about the ingredients in the food

product. The label consists of a lot of information like date of manufacturing, date of expiry, the contents of the container and also the nutritional facts. Earlier, people only used to look at the expiry dates but now people are becoming more aware so they also look at the ingredients and the nutritional values^[5]. A nutritional label was designed for 'Avocado turmeric spread' which consisted of ingredients, nutritive value table, packaging date, expiry date, vegetarian mark, manufactured by and contact details as shown in figure 5 and 6.



figure 5 – front label

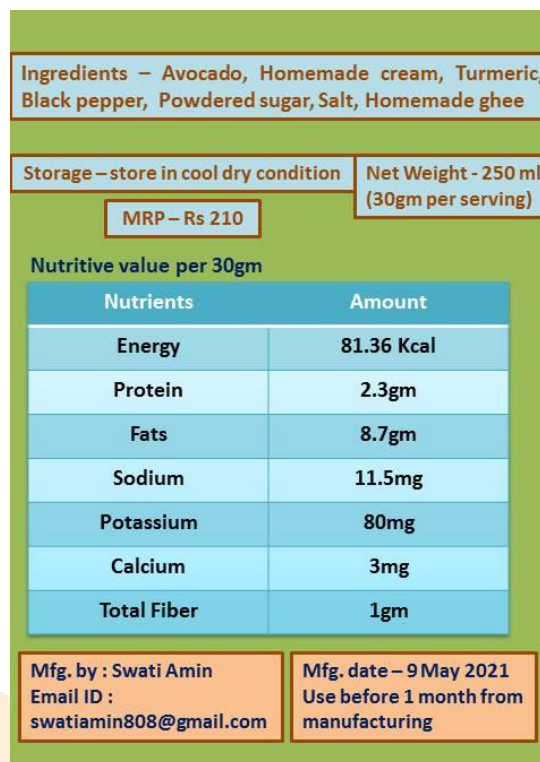


figure 6 – back label

VII. BUDGETING

Budgeting is a very important aspect while developing a product because it helps in deciding the price of the product. It should not be too high and should be affordable for the consumer. Budgeting includes cost of the raw ingredients, packaging material and miscellaneous which includes electricity, gas, salary of the employee, rent, travelling expenses etc. as shown in table 3.

Expenditure	Price
Raw Ingredients	120
Labeling	10
Packaging Material	45
Miscellaneous (Travel, Rent, Employer's Salary, Electricity, Gas, Maintenance)	35
Total	210

Total cost of 1 bottle of avocado turmeric spread was Rs. 210/-. If 50 bottles were to be sold, then the total gain would be Rs. 10,500/- out of which the profit would be Rs. 2250/-. Since, the ingredients were bought at wholesale prices, the profit was more.

VIII. SHELF LIFE STUDY FOR 4 CONSECUTIVE WEEKS

To study the shelf life study of avocado turmeric spread, sensory evaluation was conducted for 4 consecutive weeks which was done by 6 naive panel members. The scorecard consists of 5 point hedonic scale ranging from like a lot to dislike a lot. Attributes that were scored were appearance, aroma, color, texture, taste and spreadability.

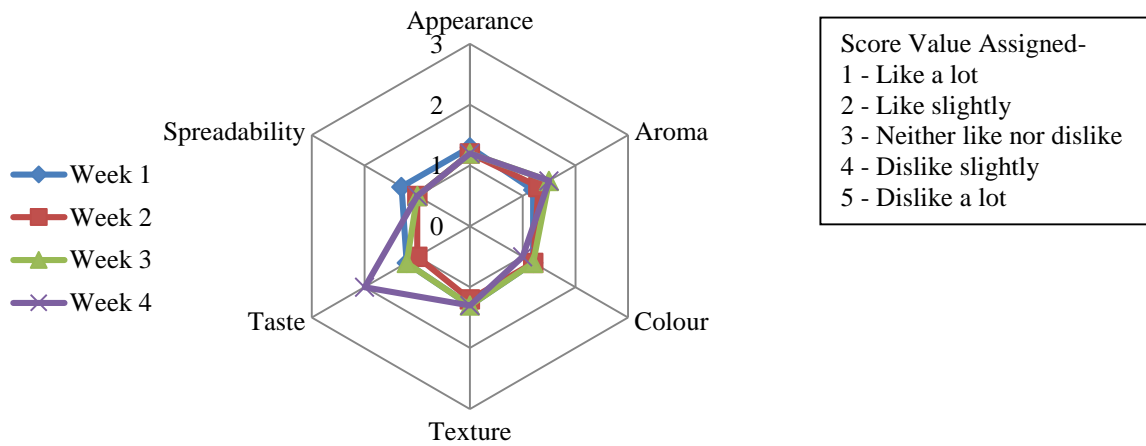


figure 7 - sensory evaluation for 4 weeks

- As seen in the figure 7, during the 1st week, all the characteristics of the product were rated between like a lot to like slightly that is between 1 and 2. This tells that the product was highly acceptable.
- In the 2nd week, there was a slight decline in aroma but the appearance, texture and taste had slightly enhanced. But the ratings for all the characteristics were still between like a lot to like slightly that is between 1 and 2.
- In the 3rd week, the appearance, color and taste remained the same but there was a slight decline in the aroma, texture and taste. But the ratings for all the characteristics were still between like a lot to like slightly that is between 1 and 2.
- In the 4th week, the appearance, aroma, texture and the spreadability being the same as the 3rd week, there was a slight improvement in the color and the taste aspect of the spread has declined to 2 that is like slightly. The feedbacks of the panelists were that it had some aftertaste but they still liked it.

IX. MARKETING

Firstly, the photo of the product along with the nutritional label was posted in social media like Facebook and Whatsapp groups. No specific age group was targeted. Then people's reaction and comments were recorded. Most people were very interested in the product because of its nutritional value. The positive feedback proved that this product is highly acceptable and has a good market.

X. SUMMARY

Avocado turmeric spread is a nutritious fruit spread that can be recommended to all the age groups. It provides a good amount of energy, protein, fats, sodium, potassium and calcium levels. It can be eaten as a dip as well as a spread. Shelf life of the spread for a month proved that it had a very good shelf life and all the characteristic did not deteriorate and if stored in proper storage condition can easily last long. It also got a positive feedback when marketed.

XI. REFERENCE

- 1) A Study of Cheese Spreads and Dips
Steed, Grant M., "A Study of Cheese Spreads and Dips" (1958). All Graduate Theses and Dissertations. 4773. <https://digitalcommons.usu.edu/etd/4773>
- 2) Development of nutritious spread and its storage study
Kajol V Bhos, Gurunath V Mote, Akashya K Sahoo. Development of nutritious spread and its storage study. J Pharmacogn Phytochem 2019;8(4):752-759.
<https://www.phytojournal.com/archives/?year=2019&vol=8&issue=4&ArticleId=9017>
- 3) The addition of a plain or herb-flavored reduced-fat dip is associated with improved preschoolers' intake of vegetables
Savage, J. S., Peterson, J., Marini, M., Bordi, P. L., Jr, & Birch, L. L. (2013). The addition of a plain or herb-flavored reduced-fat dip is associated with improved preschoolers' intake of vegetables. Journal of the Academy of Nutrition and Dietetics, 113(8),1090-1095 <https://doi.org/10.1016/j.jand.2013.03.013>
- 4) Consumer preferences and physical evaluation of shortbread stored in different packaging
Kowalska, M., Janas, S., & Kudelka, W. (2020). Consumer preferences and physical evaluation of shortbread stored in different packaging. International Journal of Consumer Studies, 44, 469-480. <https://doi.org/10.1111/ijcs.12579>
- 5) A Review on the Effects of Nutritional Labelling on Consumer Buying Behaviour
Khandelwal, A., Yadav, R., (2020) A Review on the Effects of Nutritional Labelling on Consumer Buying Behaviour. SSRN Electronic Journal. <http://dx.doi.org/10.2139/ssrn.3815501>