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## Formulation And Shelf Life Study Of The Sugar Free, Probiotic Avocado Ice Cream.

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**Abstract:** A study was undertaken to standardize an innovative nutritious product and to see its customer acceptability. 'Probiotic Avocado Ice Cream' was the name of the product designed and its shelf life was studied for a period of 2 weeks. This Probiotic Ice Cream has probiotic curd which has Good bacteria in it such as lactobacillus and bifidobacterium bacteria Which help to improve the gut health by simply increasing good bacteria which helps to fight with bad one which impairs gut health. The food product was gluten-free and sugar-free. The main ingredients were Avocado , Curd, Honey ,and Almond . This product was rich in carbohydrates, protein, B-vitamins and fiber. Shelf life study was done using a 5 point hedonic scale. Sensory evaluation was done on sensory attributes like appearance, aroma, taste, After taste Overall Acceptability and texture/mouthfeel of the product by a scoring method on a 5 point hedonic scale. The other aspects studied were packaging, budgeting, nutritional labelling and marketing. The product was marketed using social media platforms. This product can prove to be beneficial for diabetes patients, obese people and can aid in improving gut health. As per the conducted sensory evaluation for two weeks, this product lasted for 2 weeks if (refrigerated) stored in a cool dry place.

**Index Terms -** Probiotic Ice Cream , Avocado, Shelf life , Sensory evaluation, healthy for gut, Nutritious, Sugar free, Ice cream, Probiotic curd, Nutritional label, Obesity, Diabetes.

### I. INTRODUCTION

Nowadays people are very conscious about what they eat, maintaining good health has become their priority, Maintaining good health and body is not easy as their are very less healthy snacks option available in the market hence people suffering from chronic conditions are not able to enjoy regular ice cream so to overcome this the idea of probiotic avocado ice cream is developed. Probiotic avocado ice cream which was made of Probiotic curd and Avocado pulp which are not commonly seen or used in commercial preparations. Probiotic Avocado Ice Cream is neither available anywhere in the market nor online. Probiotics may contain a variety of microorganisms. which helps in improving gut health. Avocados are a source of vitamins C, E, K, and B6, as well as riboflavin, niacin, folate, pantothenic acid, magnesium, and potassium. They also provide lutein, beta carotene, and omega-3 fatty acids. Avocados contain high levels of healthy, beneficial fats, which can help a person feel fuller between meals. Carotenoids, monounsaturated fats, and fiber have been associated with a reduced risk of chronic diseases, especially when included as part of a balanced nutritious diet.

The product is made up of It also has Avocado Which contains unsaturated fat also it contains anti inflammatory compound, it also contain potassium which helps improve Heart health, Honey in it makes it healthier option to choose from. Almonds will give little amount of fiber and will be a source of Protein. Lime is added to balance the color of the Ice cream as Avocados contain an enzyme called polyphenol oxidase, which causes the flesh to brown when exposed to air or more specifically, when it's exposed to oxygen. So in order to maintain that gorgeous green color, in order to maintain

that gorgeous green color, the flesh of an avocado needs to be protected from oxygen exposure or could be added lime juice in it.

To build the healthiest version of product for people who crave for Ice-cream but are not able to have it because of its bad effect to health Such as Lactose intolerance, is sweet nature affect the people suffering from diabetes, This ice cream contain anti-inflammatory properties which helps to fight infection, This ice-cream also can be eaten by people suffering from obesity, A study reported that consuming probiotic supplements such as lactobacillus and bifidobacterium strains help weight loss the study was conducted on more than 200 individuals, they found out reduction. in their BMI. Hence consuming probiotic ice cream will help in weight reduction This product also contains beta-cholesterol for healthy cholesterol, product also contains a fair amount of protein.

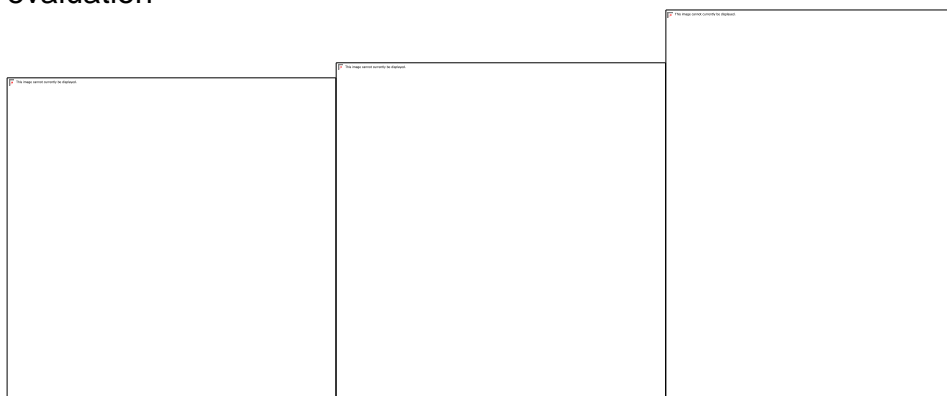
### Objective of the study:

1. To innovate a healthy, nutritious and palatable product for all age groups.
2. To make a product good for gut health
3. To design a nutritional label.
4. To study the shelf life of the product using a sensory evaluation method.
5. To understand the budgeting aspects.
- 6 To select a cost effective packaging material.
7. To learn marketing skills

### METHODOLOGY:

A unique food product was designed by the undergraduate student of Food Science and Nutrition, Each recipe is healthy with its own twist One of the recipe was Probiotic Avocado ice cream Prior to this recipe, there had been some attempts of trying out other nutritious ways for the same recipes which didn't reach its expected outcome.

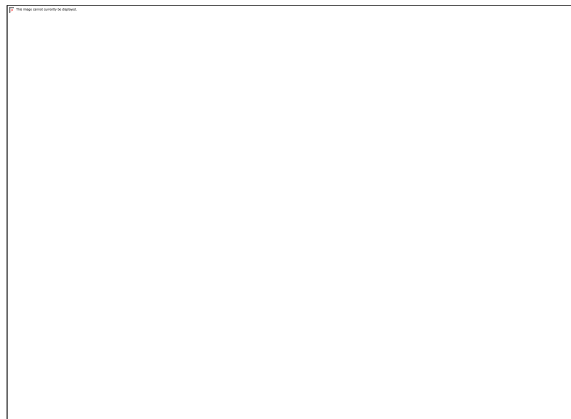
1. Initially, vanilla essence was added to Increase the palatability but due to its low acceptance it became a failed attempt. (Figure-1)
2. In the Second attempt Condensed milk is added to make the ice cream more flavor full and tastier but it also did not work as the ice cream is a probiotic, And also it is very costly and not so nutritious (Figure-2)
3. The third attempt was to make an ice cream which resemble like Avocado for which Avocado shell is used as a base and to resemble the seed Chocolate ball with nuts in it added but it failed because there were less avocado shell and with those it is not possible to make the appropriate amount (Figure-3)
4. Finally In the last attempt the Nutritious ,probiotic ice cream is made with natural sweetener Honey and with no added preservatives and is also finalized by looking at its score point from sensory evaluation



(Figure-1).

(Figure-2).

(Figure-3)



(figure)

## Ingredient list

List of ingredient	Nutritional benefits	Nutritional profile
<b>Avocado</b>	Rich Source of Antioxidants, Helps to Prevent Cancer, Heals Digestive Disorders, Helps to Lower Cholesterol and Prevent Heart Disease, Helps to Prevent Cravings and Increases Fat Loss, Helps to Prevent Blood Sugar Imbalance, Reduces Inflammation, Improves the Health and Appearance of Skin, Inhibits Fungal Infections, Excellent Source of Potassium	Avocados have a unique nutrition profile. It is rich in monounsaturated fats, they have a very low glycemic index, They are high in antioxidants, They contain lots of fiber and are rich in vitamins and minerals, such as B-vitamins, vitamin K, potassium, copper, vitamin E, and vitamin C.
<b>Curd</b>	Improves digestion, Helps in weight reduction, Improves bone strength, Healthy heart, Enhances immunity, Makes skin healthy and shiny, Effective hair care, Offers vaginal health, Ensures brain health, Stimulates appetite	Curd is rich in calcium, phosphorus, potassium, magnesium and sodium, and is a significant source of vitamin B12 as well as a certain amount of folic acid.
<b>Honey</b>	Honey may Soothe a Cough, Aids Wound Healing, may Support Reproductive Health, may Promote Regularity and have a positive impact on the treatment of irritable bowel syndrome (IBS). may Reduce Cancer Risk.	The calories in honey come from carbohydrates, specifically sugar, The glycemic index of honey is estimated to be around 60. There is no fat in honey, Honey contains trace amounts of protein, but not enough to contribute to your daily protein requirements, The vitamins and minerals in honey may include B vitamins, calcium, copper, iron, zinc, and others, which are mainly derived from the soil and nectar-producing plants.
<b>Almond</b>	Reduces Risk of Heart Disease, Helps Lower Cholesterol, Improves Diabetes Risk and Management, Supports Gut Health, may provide metabolic Benefits.	Almonds are a good source of fiber and have a lower glycemic index, Almonds Contains monounsaturated fat, They are good source of plant-based protein, containing small amount of essential and non-essential Amino acid,

		They are a good source of iron, Calcium, Vitamin E and magnesium.
<b>Lime</b>	Fights Oxidative Stress, Increases Iron Absorption, Reduces Kidney Stone Risk, May Help Treat Malaria This may be because of the antioxidant properties of vitamin C and other flavonoids in lime juice.	there is only a trace amount of fat in limes. Limes also have only a small amount of protein  Limes contain antioxidant compounds,

**TABLE-2- AMOUNT OF INGREDIENTS FOR THE PREPARATION OF PROBIOTIC AVOCADO ICE CREAM**

Ingredient	Trial 1	Trial 2	Trial 3	Trial 4	Standard
<b>Avocado</b>	100g	100g	100g	100g	100g
<b>Curd</b>	100g	100g	100g	100g	100g
<b>Honey</b>	-	-	-	80g	80g
<b>Sugar</b>	20g	-	20g	-	-
<b>lemon</b>	5	5	5	5	5
<b>Condensed milk</b>	-	50g	-	-	-
<b>Chocolate</b>	-	-	20g	-	-
<b>Vanilla essence</b>	1.6	-	-	-	-
<b>Almond</b>	10g	10g	20g	20g	20g

## Preparation of Probiotic Avocado Ice Cream

(Method)

Steps	Procedure
1	<b>Formation of curd</b> <ul style="list-style-type: none"> <li>The very first step is to boil the milk for a few minutes. In this process the water from the milk will evaporate and the milk will thicken a bit.</li> <li>Then, the milk is allowed to cool to room temperature.</li> <li>Then one spoon of curd is added to the milk and mixed very well. This curd acts as a precursor.</li> <li>Then, it is kept overnight so that the entire milk is converted into curd.</li> </ul>
2	Meanwhile, Peel the Avocados and mash it with the help of a grinder until it converts into a thick paste.
3	Now in a bowl, Add curd and beat it into until it becomes a thick paste, at this point add the mashed Avocados in it and grind it into a hand mixer, Mix it properly.
4	Once the batter is mixed properly, Add Honey and lime and with the help of whisk or hand mixer Mix it properly.
5	Now, In a clean bowl transfer the beaten battered and keep it in the refrigerator
6	After 2 hours Remove the bowl from the refrigerator and beat it again with the hand mixer. This step will improve the consistency of the ice cream .
7	At this point Add Almond and Keep it again into the freezer until the Ice cream is properly frozen
8	Remove the Ice cream from the freezers, scoop it into a bowl and Enjoy!

(Hygiene and proper sanitation needs to be taken care of during the preparation)

**Materials Required:** Hand mixer, whisk, Refrigerator safe bowl, spoon, Refrigerator, weighing scale, measuring cups, knife.

### SENSORY EVALUATION FOR STANDARDISED RECIPE

Sensory analysis is a scientific discipline that applies principles of experimental design and statistical analysis to the use of human senses for the purposes of evaluating consumer products. The discipline requires panels of human assessors, on whom the products are tested, and recording the responses made by them.

The Probiotic Avocado Ice cream was confirmed after 4 trials. The sensory evaluation for ice cream was done among 8 naive panel members using a scorecard method. The scorecard consists of a 5 point hedonic scale ranging from - like a lot to dislike a lot. Attributes that were scored were appearance, aroma, taste, sweetness and texture/mouthfeel.

#### Score Value Assigned-

5- Like a lot

4-Like a little

3- Neither like nor dislike

2- Dislike a little

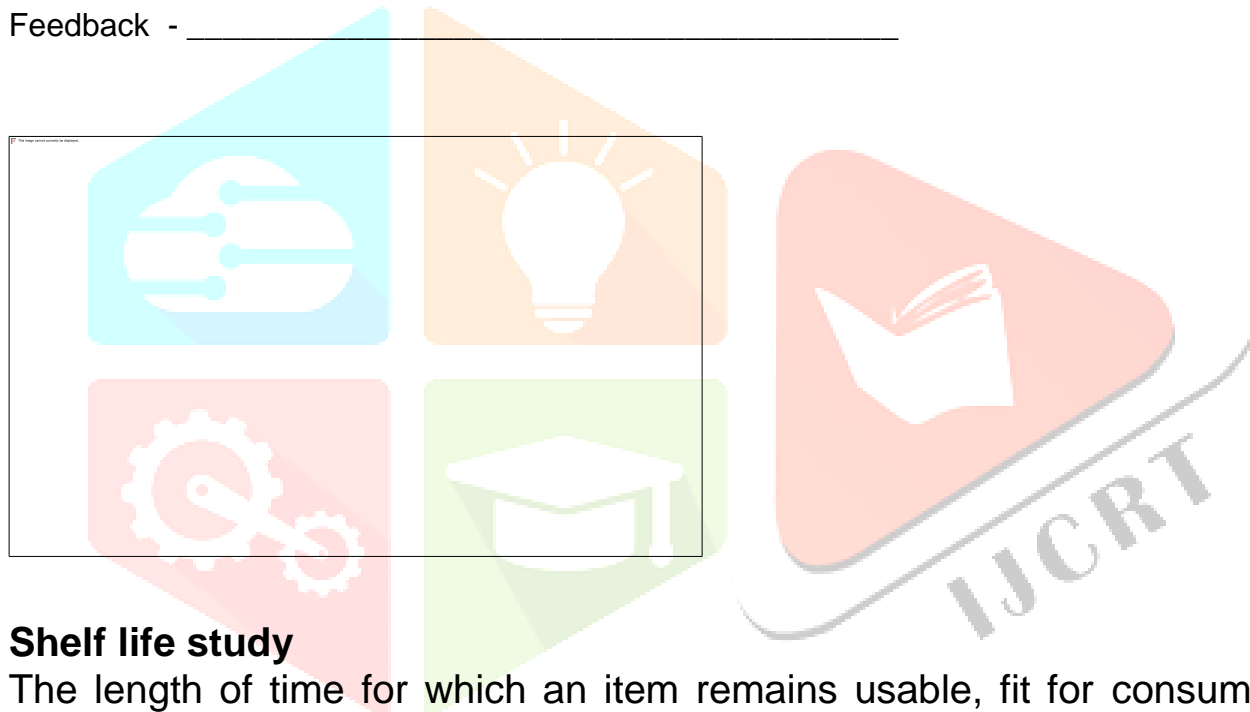
1 - Dislike a lot

**Score card**

Instruction - \_\_\_\_\_

Name of the evaluator					
points	1	2	3	4	5
Color					
Texture					
Taste					
Overall acceptability					
Aftertaste					
Smell					

Feedback - \_\_\_\_\_

**Shelf life study**

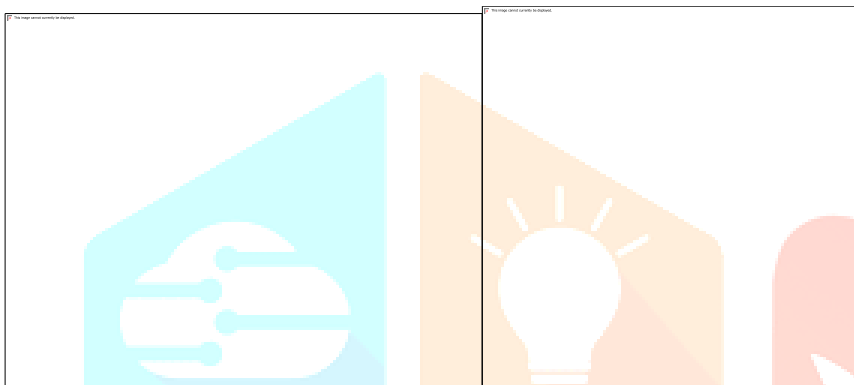
The length of time for which an item remains usable, fit for consumption, or saleable.

Shelf life study was done for two weeks in which found out that The product have no changes in first week and the second week on the start of the Third week the product started to gain moisture and the ice crystals were formed on the top of the ice cream which indicates it not good for consumption

## Packaging material

The principal roles of food packaging are to protect food products from outside influences and damage. Simply stated, packaging maintains the benefits of food processing after the process is complete, enabling foods to travel safely for long distances from their point of origin and still be wholesome at the time of consumption. However, packaging technology must balance food protection with other issues, including energy and material costs, heightened social and environmental consciousness, and strict regulations on pollutants and disposal of municipal solid waste. It is also important to contain the food, and to provide consumers with ingredient and nutritional information, Traceability, convenience, and tamper indication are secondary functions of increasing importance. The goal of food packaging is to contain food in a cost-effective way that satisfies industry requirements and consumer desires, maintains food safety, and minimizes environmental impact.

Hence, for the ice cream, protective packaging is used to avoid needless damage, the packaging material also ensures that it is leak-proof, Easy accessible and handling and maintained hygiene practice. PET polyethylene terephthalate material is used, the packaging material used is reusable, A-1 grade, Transfer proof and About 400 micron is used in the packaging the container is of 250 ml



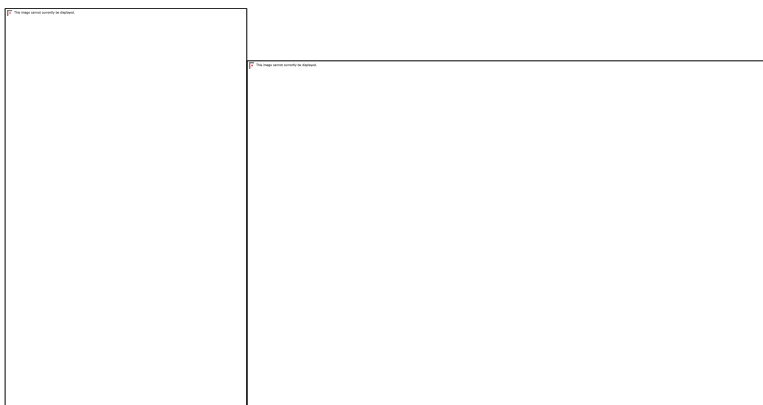
(figure-5).

(figure -6)

## Nutritional labels

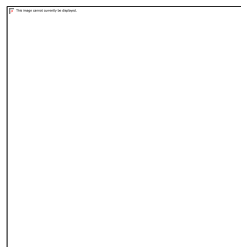
Nutrition labels describe the nutrient content of a food and are intended to guide the consumer in food selection. The front, back, and sides of a package are filled with information to inform us what the food contains and to provide guidance in making healthier selections of processed foods.

The nutrition information provided must be selected on the basis of dietary recommendations. Using the latest recommended table as per country Example- IFCT table. Nutrition information provided on labels should be truthful and not mislead consumers. At the same time, labelling regulations mention the development of a product which promotes good health. Each ingredient must be of good quality providing proper nutrients. Nutrition labels for Avocado ice cream included its logo, claims, ingredients, value of nutrition per 100 grams, manufacture date, best before, and price per gram contact of product developer Veg, recycle logo. It was printed as a sticker as shown in [figure -7,8]



(Figure-7).

(Figure-8)

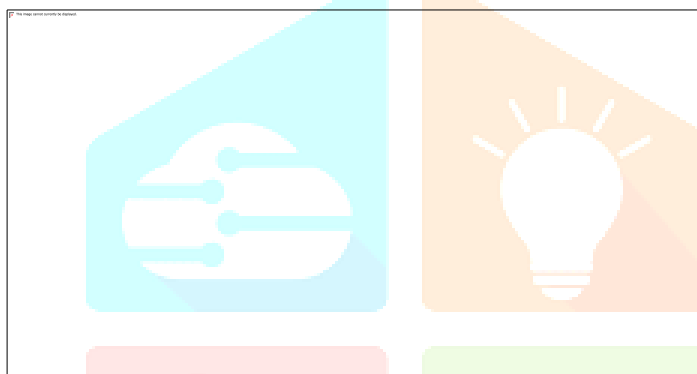


(Figure-9)

### Marketing of the products

The marketing of the product is done online through Social media platforms.

Also the particular product was marketed within the premises of the college. Where Teachers, on-teaching staff students from different departments had come to see, explore and purchase the healthy products displayed. The packaging and labelling part was something with which some of them got attracted to. The product is displayed on 2 March. Some of the attached images show the marketing skills of this product. [Figure- 10,11.]



### Conclusion

This product is structured in a way so that it can be eaten without any guilt or any side effect and the product should provide abundant health benefits

### BUDGETING

#### Cost Per ingredient

Ingredient	price
Avocado	800
Almonds	200
curd	100
honey	250
Lemon	20
<b>Cost of packaging material</b>	
• Container	75
• label	150
• spoon	25
<b>Total</b>	<b>1,620 Rs</b>



## Cost per Container =

Using the total raw material 25 packs of 250ml container were made

Each container were sold for 80 Rs

For 25 ice cream boxes 1,620 rs with profit is 2,000rs were made Each ice cream box sold for 80Rs in which 65 rupees is the cost of ingredient and 15rs is the profit margin per box

**Total profit for 25 box is 380**

## Reference

<https://consumeraffairs.nic.in/sites/default/files/file-uploads/ctocpas/Curd%20%28Dahi%29.pdf>

<https://www.verywellfit.com/almond-nutrition-facts-calories-and-health-benefits-4108974>

<https://www.verywellfit.com/honey-nutrition-facts-and-calories-4164274>

<https://ift.onlinelibrary.wiley.com/doi/full/10.1111/j.1750-3841.2007.00301.x>

<https://www.hsph.harvard.edu/nutritionsource/food-label-guide/#:~:text=The%20information%20on%20food%20labels,healthier%20selections%20of%20processed%20foods.>

<https://pubmed.ncbi.nlm.nih.gov/32144319/>

Michael DR, Jack AA, Masetti G, Davies TS, Loxley KE, Kerry-Smith J, Plummer JF, Marchesi JR, Mullish BH, McDonald JAK, Hughes TR, Wang D, Garaiova I, Paduchová Z, Muchová J, Good MA, Plummer SF. A randomised controlled study shows supplementation of overweight and obese adults with lactobacilli and bifidobacteria reduces bodyweight and improves well-being. *Sci Rep.* 2020 Mar 6;10(1):4183. doi: 10.1038/s41598-020-60991-7. PMID: 32144319; PMCID: PMC7060206.

