

Development and Quality Assessment of Ice Cream Prepared by Using Aloe vera and Sago Powder.

Sushant saurav*, Shanker Suwan Singh**

*M.Sc. Food Technology, Warner College of Dairy Technology, SHUATS, Naini, Prayagraj, (U.P),India.

**Assistant Professor, Food and Dairy Engineering, Warner College of Dairy Technology,SHUATS, Naini, Prayagraj, (U.P), India. E - mail shanranu80@gmail.com

Abstract

Ice Cream is popular desserts among consumers of all age groups.sensory attributes of icecream are the major factor determining the market success of the product. It is dairy based dessert that is frozen prior to consumption.it contains air cell entrapped in liquid phase other components like protein,fat globules, stabilisers ,sugar soluble and insoluble salts. Both stabilisers and emulsifiers improve the texture of ice cream by enhancing its viscosity and limiting the movement of free water molecules.Ice cream made from milk aloe vera juice and milk powder is healthy both are good source of vitamins and minerals aloe vera is advantageous for all age groups. The final product is kept for sensory assessment by using nine hedonic point It is much critical to control the balance ice cream properties by maintaining its structure, texture and body.

Keywords: FCM, SMP, Cream, Stabilizer, Sugar, Aloevera, Sago powder, Organoleptic, Physico-Chemical analysis.

Introduction

Ice cream is a frozen food that can also include various fruits, nuts, and other ingredients. It is made from milk fat, milk solids without fat, sweeteners, and flavourings. The Code of Federal Regulations, which details the solids, fat, and air contents, has a legal definition of ice cream in the United States. The kinds and proportions of the components used in frozen desserts, as well as some of the production conditions, are determined by these regulatory requirements. Commercial ice creams differ greatly in terms of body, flavour, melt, and texture because minimal contents (apart from air content) are typically mentioned in federal criteria

SAGO POWDER:-

Sago is beneficial for diets because it has minimal fat and calorie content. It doesn't include gluten or casein and has a very low protein level. Sago is also safe for diabetics to consume because it does not immediately elevate blood glucose levels (low glycaemic index). Sago, a resistant starch, lowers the risk of colon cancer and constipation. Sago can even be used in place of wheat powder for making white bread, biscuits, and cookies. A substitution of between 30% and 40% won't have any impact on the product's quality. Sago can be manufactured with great potency. Sago palms have a larger annual starch yield than other sources of carbohydrates, such as rice, at up to 25 tonnes per hectare.

MILK:-

A nutrient-rich liquid diet called milk is created by mammals' mammary glands. For young mammals, including breastfed human newborns before they are able to digest solid food, it is the main source of sustenance. Colostrum, or early-lactation milk, contains antibodies that boost the immune system and lower the risk of several diseases. It also contains lactose and protein, among other nutrients. Milk intake between species occurs frequently; many people eat other mammals' milk.

ALOE VERA :-

Aloe vera is known by a variety of common names, including medicine plant, burn plant, and first aid plant. The Arabic term "Alloeh," which means brilliant bitter stuff, is perhaps where its name originates. In the literature, aloe vera is referred to by a variety of names, including aloe barbadensis Mill, aloe chinensis Bak, aloe elongate Murray, aloe indica Royale, aloe officinalis Forsk, aloe perfoliata, aloe rubescens DC, aloe vera L. var. littoralis Konig ex Bak, aloe vera L. Today, the aloe vera industry is booming, and the gel is utilised in several products for health, medicine, and aesthetic purposes, including fresh gel, juice, and other formulations

Materials and Method

The Experiment “Development and Quality Assessment of Ice Cream Prepared by Using Aloe vera and Sago Powder” was carried out in a research lab of “Warner College of Dairy Technology” Sam Higginbottom Institute of Agriculture, Technology and Sciences, Deemed to be University, Prayagraj. Ingredients were collected from local market of Naini, Prayagraj.

The required materials can be listed under Raw materials and Equipment section.

Raw Materials:

Milk, Sago powder, FCM,SMP, Cream, Sugar, Alo vera, Emulsifer.

TREATEMENT TABLE

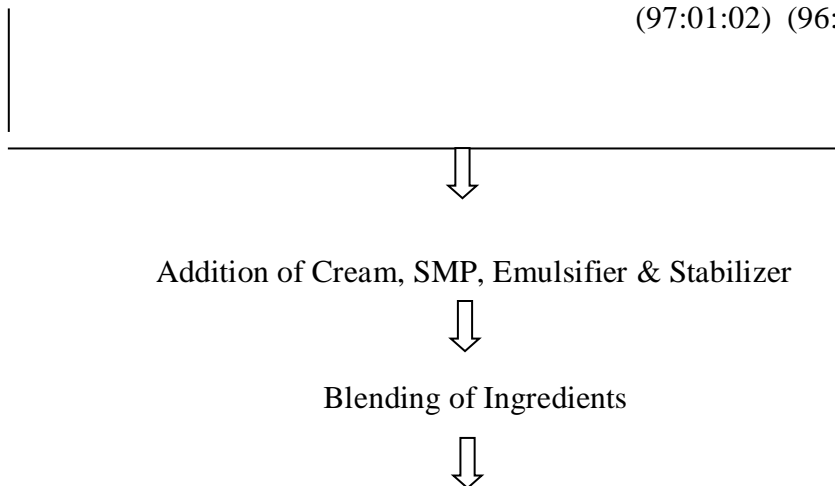
	MILK (%)	ALOE VERA JUICE (%)	SAGO POWDER (%)
T ₀	100	00	00
T ₁	97	01	02
T ₂	96	02	02
T ₃	95	03	02

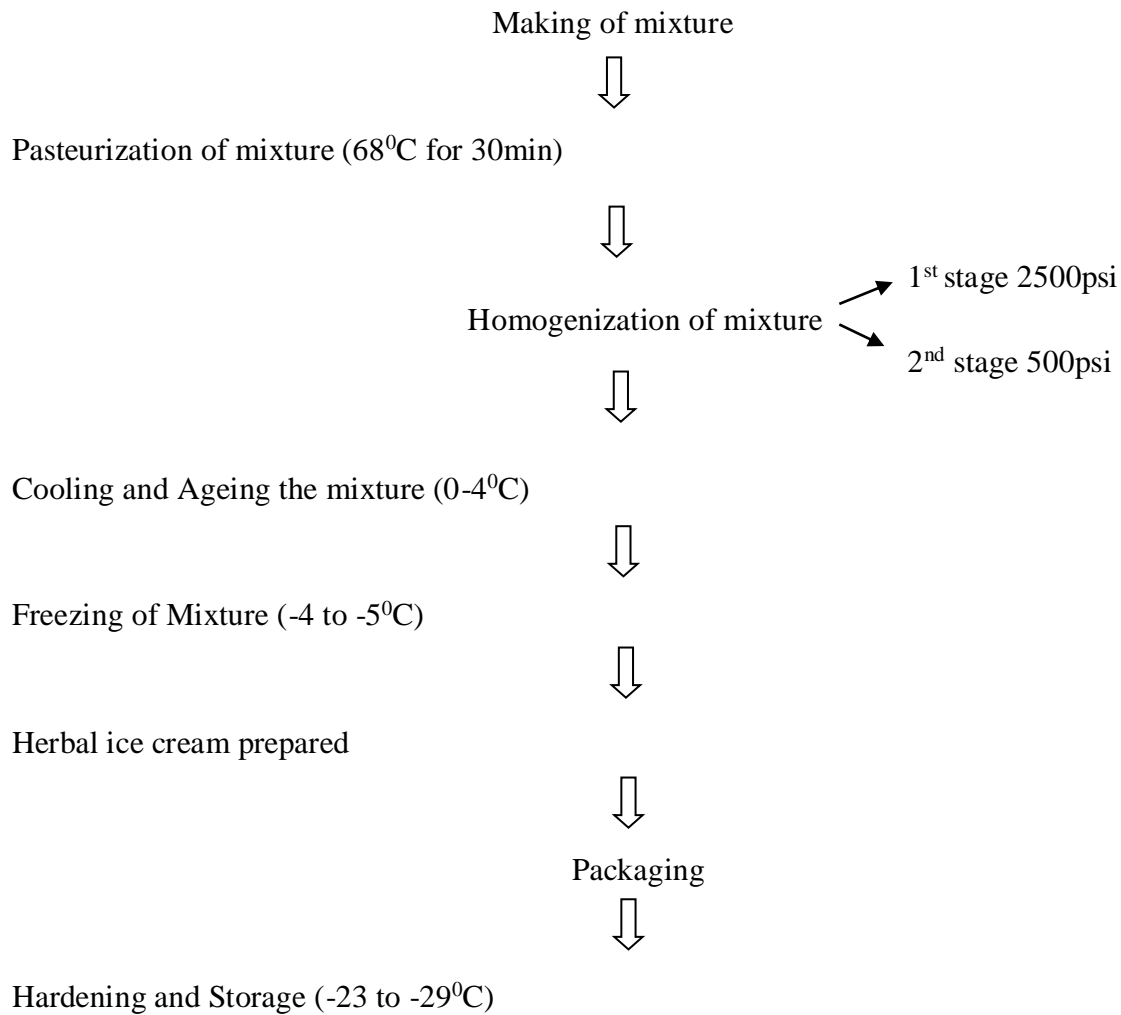
Two types of Treatments were prepared the frst one was T₀ which was the control treatment prepared to compare the texture and appearance, the remaining treatments T₁, T₂ and T₃ were the experimental treatments, these were decided according to the minimum amount required of the ingredient to fulfill the required amount of dedicated nutrient of Such ingredient.

FLOW CHART FOR PREPARATION OF ICE-CREAM USING ALOE VERA & SAGO POWDER

CONTROL (T₀)
Milk (100:00:00)

EXPERIMENTAL
Milk, Aloe vera Juice & Sago powder
(M:AJ:SP) (M:AJ:SP) (M:AJ:SP)
(97:01:02) (96:02:02) (95:03:02)





The above flowchart shows the processes involved to prepare Ice cream using aloe vera and Sago Flour.

Result and Discussion

The analyzed data is presented in this chapter under the following headings:

1. Physico-chemical analysis
2. Organoleptic analysis
3. Microbial analysis

4. Estimation of Cost of production

<u>Parameter</u>	Treatments			
	T₀	T₁	T₂	T₃
Chemical Analysis				
Fat (%)	4.1	3.98	3.94	3.90
Protein (%)	3.4	3.35	3.33	3.30
Carbohydrate (%)	4.4	6.06	6.05	6.04
Ash (%)	0.70	0.69	0.68	0.67
Moisture (%)	87.4	85.92	86.01	86.09
Titration Acidity (%)	0.16	0.18	0.21	0.23
Vitamin C (%)	0	0.18	0.26	0.34
Total Solid (%)	12.6	14.08	13.99	13.91
Organoleptic Scores				
Color & Appearance	8.6	8.5	8.0	7.7
Body & Texture	7.76	8.34	7.82	7.42
Flavor & Taste	8.2	8.1	7.5	7.1
Overall Acceptability	8.4	8.3	7.8	7.4
Microbial Analysis				
Standard Plate count (x10⁻³ cfu/g)	1.60	2.40	2.20	2.00
Yeast & Mold count (x10⁻³ cfu/g)	0.20	0.60	0.80	1.00
Coliform	NIL	NIL	NIL	NIL
Cost Analysis				
Cost Per 100g	12.97/-	13.36/-	13.51/-	13.67/-

Chemical analysis: -**Fat Content**

From the above data on Fat percentage in samples of different treatments and control, the highest mean Fat percentage was recorded in the sample of T₀ (4.10), followed by T₁ (3.98), T₂ (3.94) and T₃ (3.90).

Protein Content

From the above data on Protein percentage in samples of different treatments and control, the highest mean Protein percentage was recorded in the sample of T₀ (3.40), followed by T₁ (3.35), T₂ (3.33) and T₃ (3.30).

Carbohydrate Content

From the above data on Carbohydrate percentage in samples of different treatments and control, the highest mean Carbohydrate percentage was recorded in the sample of T₁ (6.06), followed by T₂ (6.05), T₃ (6.04) and T₀ (4.40).

Ash Content

From the above data on ash percentage in samples of different treatments and control, the highest mean ash percentage was recorded in the sample of T₀ (0.70), followed by T₁ (0.69), T₂ (0.68) and T₃ (0.67).

Moisture Content

From the above data on Moisture percentage in samples of different treatments and control, the highest mean Moisture percentage was recorded in the sample of T₀ (87.40), followed by T₃ (86.09), T₂ (86.01) and T₁ (85.92).

Titration Acidity

From the above data on Titration Acidity in samples of different treatments and control, the highest mean Titration acidity was recorded in the sample of T₃ (0.23), followed by T₂ (0.21), T₁ (0.18) and T₀ (0.16).

Vitamin C

From the above data on Vitamin C in samples of different treatments and control, the highest mean Vitamin C was recorded in the sample of T₃ (0.34), followed by T₂ (0.26), T₁ (0.18) and T₀ (0).

Sensory evaluation: -**Color and appearance**

The highest mean of color and appearance was recorded in the Ice Cream prepared with different

levels of Aloe vera and sago flour sample of T₀ (8.46), followed by T₁ (8.46), T₂ (8.0) and T₃ (7.66).

Body and Texture

The highest mean of body & texture was recorded in the Ice Cream prepared with different levels Aloe vera and sago flour sample of T₁ (8.34), followed by T₂ (7.82), T₀ (7.76) and T₃ (7.42).

Taste and flavor

The highest mean of flavor and taste was recorded in the Ice Cream prepared with different levels of Aloe vera and sago flour sample of T₁ (8.1), followed by T₀ (7.56), T₂ (7.54) and T₃ (7.06).

Overall Acceptability

The highest mean of overall acceptability was recorded in the Ice Cream prepared with different levels of Aloe vera and sago flour sample of T₁ (8.3), followed by T₀ (7.94), T₂ (7.76) and T₃ (7.4).

Microbiological analysis: -

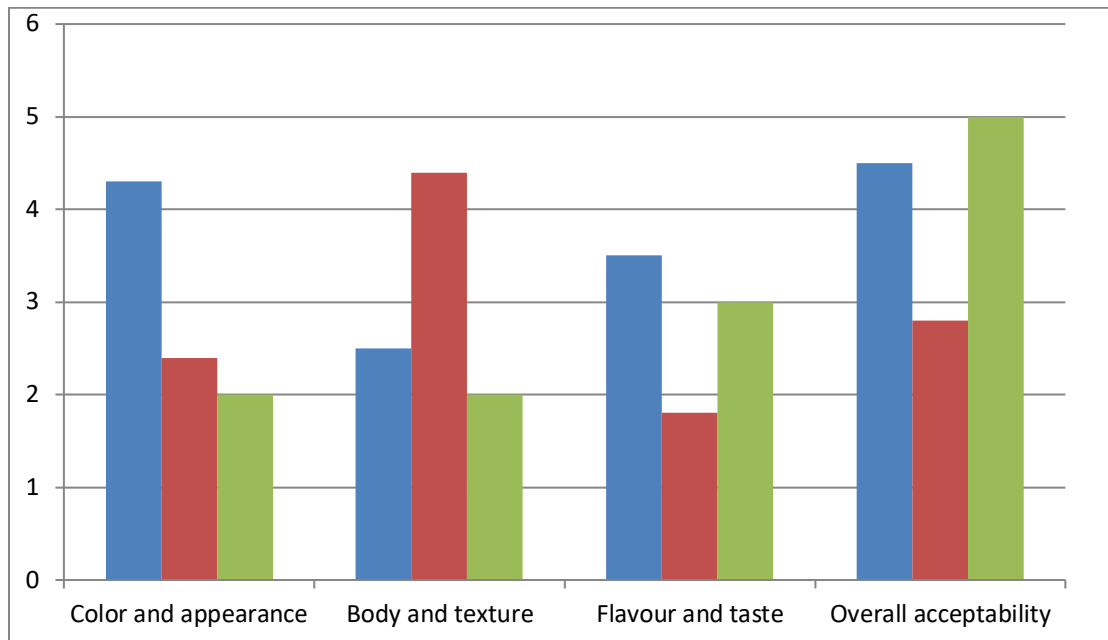
Standard Plate Count

The highest mean SPC was recorded in the sample of Ice Cream T₁ (2.40), followed by T₂ (2.20), T₃ (2.00) and T₀ (1.60).

Yeast and Mold Count

The highest mean Y&M was recorded in the sample of Ice cream T₃ (1.00), followed by T₂ (0.80), T₁ (0.60) and T₀ (0.20).

Effect of ratio of milk, aloe vera juice, sago powder on sensory and physico-chemical analysis of ice cream samples.



Conclusion

- The basic aim of study was to do the preparation of Ice cream from milk, sago powder and aloe vera at different levels of concentration (T₀, T₁, T₂, T₃). The concentration of milk, sago powder and aloe vera experimental samples were (T₀-100:00:00), (T₁-97:01:02), (T₂-96:02:02), (T₃-95:03:02).
- The data collected on different aspects were tabulated and analysed statistically using the methods of analysis (Fat, Protein, Carbohydrates, Ash, Moisture, Titrable Acidity, Vitamin C, Total Solid) was done for estimating its nutritional content and organoleptic characteristics (Colour and Appearance, Body and Texture, Flavor and Taste & Overall acceptability) were judged by panel on 9 hedonic scales.
- Overall acceptability scores for treatments (T₀-8.4), (T₁-8.3), (T₂-7.8), (T₃-7.4), respectively.
- The cost of production of final product for treatment T₀, T₁, T₂, and T₃ were 12.97 Rs/,13.36 Rs/,13.51 Rs/ and 13.67 Rs /100g respectivel

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