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Organoleptic evaluation of *Aloe vera* Jam

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Abstract

Aloe vera (*Aloe barbadensis* Miller.) is perennial, succulent and drought resistant plant. It is also known as "Ghrit-kumari" and "ghee-Kunwar" in Hindi and other vernacular names are: Aloe, *Aloe vera*, Indian Alces, Kumari, Ghirita, Gawarpaltra, Barbados aloe and Lu hui. It is originated in South Africa and belongs to the Liliaceae family. Leaves are cut with the help of sharp edged knife. Cleaning of leaves in a flow of water with the help of scrubber by hand. The base and tip are removed carefully with the help of knife and the leaves are then cut into small section. Pulp is taken out with the help of spoon and put in the beaker and weighing. Mean while all the other ingredients are collected and weighed. Boil the washed apple for 5-10 min. in bowl, pulp is taken out. The Apple pulp is heated to 85 °C for 5 min. Addition of *Aloe vera* pulp at same flame for 10 min. Addition of sugar in pulp and stir till mixed well also adding of citric acid about a pinch and addition of edible colour. The mass is hot filled at 90 °C in pre sterilized glass bottles. Sealing with lid. Allow setting for overnight before storage. It is a stem less or very short-stemmed plant growing to 80-100 cm tall, spreading by offsets and root sprouts. The leaves are lanceolate, thick and fleshy, green to gray-green, with a serrated margin. The flowers are produced on spike up to 0 cm tall, each flower pendulous, with a yellow tubular corolla 2-3 cm long. The tissue in the centre of the aloe leaf contains a gel which yields aloe gel or *Aloe vera* gel. Jam is an intermediate food prepared by boiling fruit pulp with sugar, acid, pectin and other ingredients for colouring and flavouring with preservatives to a thick consistency and firmness to the hold the fruit tissues. The standards for the quality of jam are given by different agencies. The Bureau of Indian Standards (BIS) and Prevention of Food Adulteration (PFA) specify that jam should contain more than 68.5% total soluble solids (TSS) and at least 45% fruit. According to the specification of the Codex Alimentarius Commission the finished jam should contain more than 65% TSS. Sugar constitutes more than 40% of total weight and 80% of total solids in jam.

Keywords: Scrubber, Adulteration, Ingredients, Preservatives

Introduction

Aloe vera appeared first in Sudan over 6,000 years ago. The popularity of *Aloe vera* in the medical world has emerged and been amplified for thousands of years. Each year, the value of *Aloe vera* is around \$13 billion in the market.

In this day and age, one of the most important uses of *Aloe vera* is in the industry of cosmetics. Besides uses in cosmetic industries, *Aloe vera* is also use in medical field (health benefit) widely now days.

A health product containing *Aloe vera* gel was examined for its effects on gastric mucosal lesions induced by cold-restraint or by oral administration of 70% v/v ethanol (2 mL/kg), and on plasma glucose levels in alloxan-induced diabetic rats.

The plasma glucose level of alloxan-injected rats (120 mg/kg, s.c.) was about twice as high as that of their controls. It was further elevated by a single oral dose of the preparation. Chronic treatment with the preparation, given twice daily for 10 days, produced a sustained increase in the plasma glucose levels. The findings do not support the claimed efficacy of the preparation in treating gastric ulceration and diabetes mellitus.

The objective of the work is to produce jam using *Aloe vera*. The study focuses on the production of jam using *Aloe vera*. The quality of the jam depends on the proportion of the mixture which can be tested by sensory analysis.

In product development and optimisation, Response surface methodology (RSM) is used to model and optimise the response affected by levels of one or more quantitative factors [11]. This method has been successfully applied by several authors to determine the optimum formulation for a food product.

Pectin is a type of fiber that is found in all plant cell walls and tissues. While all may contain pectin, the amount and concentration of pectin varies among plants. Pectin is an important polysaccharide with applications in foods, Pharmaceuticals, and a number of other industries. In the food industry, pectin is used in jams, jellies, frozen foods, and more recently in low-calorie foods as a fat and/or sugar replacer. In the pharmaceutical industry, it is used to reduce blood cholesterol levels and gastrointestinal disorders.

Apple contain a particularly high amount of pectin, according to dietaryfiberfood.com, and the highly concentrated apple pectin delivers many health benefits. Apple pectin is available in the skin and pulp of fresh apples or as a dietary supplement.

Apple pectin, a soluble fiber found in apples, also is found in other fruits.

Materials and methods

This study deals with description of research procedure and techniques based on literature reviewed. The present investigation entitled “Organoleptic evaluation of *Aloe vera* jam” was carried out in the “Department of Nutrition Science” at Institute of Bioscience and Biotechnology department of Chhatrapati Shahu ji Maharaj University, Kanpur. The material for the present investigation was procured from C.S.A. University of Agriculture & Technology, Kanpur from the Department of Forestry. *Aloe vera* (*L.*) selected on the basis of higher yield and better quality was used for the investigation.

The name *Aloe vera* derives from the Arabic word “Alloeh” meaning “shining bitter substance,” while “Vera” in Latin means “true.” 2000 years ago. The Greek scientists regarded *Aloe vera* as the universal panacea. *Aloe vera* has been used for medicinal purposes in several cultures for millennia: Greece, Egypt, India, Mexico, Japan and China. The botanical name of *Aloe vera* is *Aloe barbadensis* Miller. It belongs to Asphodelaceae (Liliaceae) family, and is a shrubby or arborescent, perennial, xerophytic, succulent, pea-green colour plant. It grows mainly in the dry regions of Africa, Asia, Europe and America. In India, it is found in Rajasthan, Andhra Pradesh, Gujarat, Maharashtra and Tamil Nadu. Apples (*Malus domestica* Borkh.) have been identified as one of the main dietary sources of antioxidants, mainly phenolic compounds. Apple contains a particularly high amount of pectin and delivers many health benefits. Apple pectin available in the skin and pulp of fresh apples. Its main use is as a gelling agent, a thickening agent, and as a stabilizer in food. It is also in jams, jellies, fillings, medicine, laxatives, throat lozenges, fruit juices, and many more.

Antioxidants in *Aloe vera* are polyphenols which have powerful influence on the prevention against infections.

Result and discussion

According to Kerlinger, “Analysis is the categorizing, ordering, manipulation and summarising of data to obtain answer to the research question”.

The study deals with chemical analysis of *Aloe vera* pulp and also chemical analysis and sensory evaluation of *Aloe vera* jam. The results obtained from the present investigation are

presented discussed under the following heading and sub-heading:

Table 1: Mean score of Organoleptic Acceptability of *Aloe vera* jam.

S. No.	Parameters	Study group days			Mean± S.D.
		D ₁	D ₂	D ₃	
1.	Taste and Flavour	7.5	7.2	6.9	7.3±0.3
2.	Spreadability	7.6	6.8	6.3	6.9±0.7
3.	Colour and appearance	7.9	7.1	6.5	7.2±0.7
4.	Overall acceptance	7.6	7.0	6.6	7.1±0.5

Taste and flavour profile

Table 1: reveals that the mean score of *Aloe vera* jam was 7.5, 7.2 and 6.9 on D₁, D₂ and D₃ respectively for the sensory quality (taste and flavour).

The above table shows that the samples were non significant at the level of 5% in critical differences. *Aloe vera* jam was rated as “liked moderately” by panel of judges.

Spreadability: Result of Organoleptic evaluation of sensory characteristic (Spreadability) are presented in Table 1: *Aloe vera* Jam received a score of 7.6, 6.8 and 6.3 on D₁, D₂ and D₃ respectively. The *Aloe vera* jam was rated as “liked moderately” by the panel of judge.

Colour and Appearance

Organoleptic scores of *Aloe vera* jam were 7.9, 7.1 and 6.5 for colour and appearance on D₁, D₂ and D₃ respectively is summarized in table 1.

The above table shows that the samples were significant at the level of 5% in critical difference. The overall scores revealed that the jam was rated as liked moderately for colour and appearance on hedonic scale.

Overall acceptability Profile

Table 1 shows that the mean score of overall acceptability obtained by Organoleptic evaluation of *Aloe vera* jam. The mean score of samples on D₁ were 7.6, 7.0 and 6.6 respectively.

The mean scores of overall acceptability revealed that the jam received a rating of “liked moderately” on 9- point hedonic scale for overall acceptability.

On the whole jam was acceptable and fell in the category of “liked slightly” to “liked moderately” in the 9- point hedonic scale.

Summary and Conclusion

Considering the above facts, the present investigation entitled “Organoleptic Evaluation of *Aloe vera* jam” was carried out with the following specific objectives:

- To study the Organoleptic acceptability of *Aloe vera* jam.
- To assess the chemical attributes of *Aloe vera* jam.
- To produce *Aloe vera* jam using *Aloe vera* pulp, sugar, apple pulp and citric acid.
- To analyze the shelf life of the *Aloe vera* jam.

The data so obtained on different aspects stated above were subjected to statistical analysis for testing the significance of various factors and are summarized below:

Organoleptic evaluation of prepared *Aloe vera* jam

Organoleptic evaluation of *Aloe vera* jam was done in terms of all sensory characteristics like colour, flavour, Spreadability, taste and overall acceptability on a 9- point hedonic scale.

- It was revealed from the Organoleptic acceptability of *Aloe vera* jam on 3rd day jam was liked very much while on 6th day it was liked moderately and on 9th day jam was liked slightly by the panel members.

Analytical results for prepared *Aloe vera* jam

Nutritional/ chemical analysis of *Aloe vera* jam was done in term of nutrients like moisture, protein, fat, total ash, and pH.

- It is evident that *Aloe vera* jam contains 45.95%, 45.93% and 45.98% moisture on D1, D2 and D3 respectively.
- Protein content of jam was 5.09%, 5.03% and 5.06 on D1, D2 and D3 respectively. There were slightly differences in protein content.
- Fat content of *Aloe vera* jam was 3.2% on D1, D2 and D3 respectively.

The fat content remained same on different days.

- Total ash content in *Aloe vera* was 5.35%, 5.32% and 5.27% on D1, D2 and D3 respectively.

The total ash content of *Aloe vera* jam was decreased after different days.

- The pH content of *Aloe vera* jam was 4.26%, 4.27% and 4.37% on D1, D2 and D3 respectively.

Conclusion

From the study it can be concluded that *Aloe vera* is a nutritious plant with various therapeutic uses. Since the intake of Aloe in its raw form is not very desirable, therefore it can be use by incorporating into various food products. Inclusion of jam in the diet of an individual can help in providing nourishment as well as the therapeutic benefits of *Aloe vera*, especially for its laxative and hypoglycaemic effect. Further work can be carried out on product development as well as on studying the clinical effect of *Aloe vera* on various medical problems.

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