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## Nutritive value and chemical attributes of *Aloe vera* jam

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### Abstract

The present investigation entitled “Nutritive value and Chemical attributes of *Aloe vera* jam” was carried out for the organoleptic acceptability of *Aloe vera* jam and to assess the chemical attributes of *Aloe vera* jam. A panel of judges on the basis of 9 point hedonic scale judged the sensory evaluation or the organoleptic qualities of four samples. The scales of different judges were compiled and average score was estimated for each attributes of samples. The acceptability of *Aloe vera* jam was evaluated by a panel of 5 judges using 9- point hedonic Scale (Ranganna, 1986) to test the liking or disliking of jam. Semi – Trained panel did the evaluation. The panel list asked to record the level of liking or disliking by giving marks for various characteristics of the products. The samples were rated on 9 point Hedonic scale for quality attributes according to the following grade description and scoring. In order to study “Preparation and Organoleptic Evaluation of *Aloe vera* jam” a laboratory experiment was conducted and required data were collected. Analysis of Variance of these data was worked out on the basis of Factorial Completely Randomized Design (Chandel, 1995).

**Keywords:** Organoleptic, disliking, factorial, evaluation, judges

### 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.

### Side effects of *Aloe vera*

**Topical:** It may cause redness, burning, stinging sensation and rarely generalized dermatitis in sensitive individuals. Allergic reactions are mostly due to anthraquinones, such as aloin and Barba loin. It is best to apply it to a small area first to test for possible allergic reaction.

**Oral:** Abdominal cramps, diarrhea, red urine, hepatitis, dependency or worsening of constipation. Prolonged use has been reported to increase the risk of colorectal cancer. Laxative effect may cause electrolyte imbalances (low potassium levels).

**Contraindication:** Contraindicated in cases of known allergy to plants in the Liliaceae family.

**Pregnancy and breastfeeding:** Oral aloe is not recommended during pregnancy due to theoretical stimulation of uterine contractions, and in breastfeeding mothers, it may sometime causes gastrointestinal distress in the nursing infant.

**Interactions:** Application of aloe to skin may increase the absorption of steroid creams such as hydrocortisone. It reduces the effectiveness and may increases the adverse effects of digoxin

and digitoxin, due to its potassium lowering effect. Combined use of *Aloe vera* and furosemide may increase the risk of potassium depletion. It decreases the blood sugar levels and thus may interact with oral hypoglycemic drugs and insulin. *Aloe vera* products have long been used in health foods for medical and preservative purposes. There is growing interest in the use of natural antioxidant for extending the shelf life of food without the need of synthetic antioxidant such as, butylated hydroxy anisole (BHA), butylated hydroxy toluene (BHT) and tertiary butylhydroquinone (TBHQ).

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.

### Materials and methods

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. 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. The leaves of *Aloe vera* contain a certain amount of water, which brings to this plant a wonderful soothing quality. In *Aloe vera* gel, we can also find a lot of vitamins and essential minerals that are beneficial for human health, such as vitamins A, C, E, B1, and B6, potassium, calcium and magnesium. There are about 18 amino acids found in *Aloe vera* and these amino acids work closely with other essential compounds to constitute many health benefits of *Aloe vera*. Antioxidants in *Aloe vera* are polyphenols which have powerful influence on the prevention against infections.

In sucrose, the components glucose and fructose are linked via an ether bond between C1 on the glucosyl submit and C2 on the fructosyl unit. The bond is called a glycosidic linkage.

Glucose exists predominantly as two isomeric “pyranoses” ( $\alpha$  and  $\beta$ ), but only one of these forms the links to the fructose. Fructose itself exists as a mixture of “furanose”, each of which having  $\alpha$  and  $\beta$  isomers, but only one particular isomer links to the glucosyl unit. What is notable about sucrose is that, unlike most disaccharides, the glycosidic bond is formed between the reducing end of one and the non reducing end of the other. This linkage inhibits further bonding to other saccharide units. Since it contains no anomeric hydroxyl groups, it is classified as a non reducing sugar.

Citric acid is a weak organic acid. It is a natural preservatives/conservative and is also used to add an acidic, or sour, taste to food and soft drinks. In biochemistry, the conjugate base of citric acid, citrate, is important as an intermediate in the citric acid cycle, and therefore occurs in the metabolism of virtually all living things.

Citric acid is a commodity chemical, and more than a million tones are produced every year by fermentation. It is used mainly as an acidifier, as flavoring, and as a chelating agent.

Citric acid is a naturally occurring acid found primarily in several varieties of fruits and vegetables, with citrus fruits such as lemons and limes containing the highest amounts. This organic acid has many uses including as a food additives/preservative, ingredients in cosmetic products and as a powerful cleaning agent. Citric acid can be purchased as a white crystalline powder.

### Result and discussion

**Development of product:** Different ingredients are used to make fresh *Aloe vera* jam.

*Aloe vera* jam was developed and standardizes using Apple pulp, *Aloe vera* pulp.

- Number of sample = 4
- Number of replication= 12

Each sample was in different ratio for better result and acceptances.

**Table 1:** The ration was between the *Aloe vera* pulp an Apple pulp.

No. Of Samples (Ratio) ↓ Al: Ap	Sugar conc. 1%	Sugar conc. 1.5%	Sugar conc. 2%
80:20(100gm)	100gm	150gm	200gm
60:40(200gm)	200gm	250gm	400gm
40:60(200gm)	200gm	250gm	400gm
20:80(100gm)	100gm	150gm	200gm

### Sensory evaluation of *Aloe vera* jam

A panel of judges on the basis of 9 point hedonic scale judged the sensory evaluation or the organoleptic qualities of four samples. The scales of different judges were compiled and average score was estimated for each attributes of samples.

### Score Evaluation

The acceptability of *Aloe vera* jam was evaluated by a panel of 5 judges using 9- point hedonic Scale (Ranganna, 1986) to test the linking or disliking of jam. Semi –Trained panel did the evaluation. The panellist asked to record the level of liking or disliking by giving marks for various characteristics of the products. The samples were rated on 9 point Hedonic scale for quality attributes according to the following grade

description and scoring.

**Table 2:** Quality Grade Description.

Quality	Scores
Excellent	More than 8(7-8)
Very Good	More than 7(6-7)
Good	More than6(5-6)
Fair	More than5(4-5)
Poor	Less than 5

### Mean score of nutritive value of *Aloe vera* jam

The data of mean score were tabulated and analyzed statistically; results and discussion has been presented in table:

**Table 3:** Mean score of Nutritive Value of *Aloe vera* jam (In per 100g).

S. No.	Study Group Days	Nutrients					
		M%	P%	Fat%	CHO%	Ash%	pH%
1.	D1	45.95	5.09	3.2	25.89	5.35	4.26
2.	D2	45.93	5.03	3.2	27.83	5.32	4.27
3.	D3	45.98	5.06	3.2	27.87	5.27	4.34
Mean	45.93		5.03	3.2	27.20	5.32	4.27

### Moisture Profile

It is evident from the table 3 that *Aloe vera* jam contains 45.95%, 45.93% and 45.98% moisture on D1, D2 and D3 respectively. Moisture content is important for the shelf life study.

### Protein Profile

The mean score of protein content in sample of jam were 5.09%, 5.03% and 5.06% on D1, D2 and D3 respectively as shown in table 3. Table 3 shows that the protein content of the product was increased slightly as the storage days were increased.

### Fat Profile

Table 3 reveals that the mean score of *Aloe vera* jam was 3.2% on D1, D2 and D3. A perusal data presented in the table indicates that the fat content of Jam had no change after different days.

### Total Ash Profile

Table 3 estimates that mean score of total ash content in *Aloe vera* jam were 5.35%, 5.32% and 5.27% on D1, D2 and D3 respectively. Table indicates that there were slightly differences in total ash after different storage days.

Edrige and Sheehan (1994) evaluate the use of *Aloe vera* as a food supplement in 502 community college students from Arizona. The most popular supplement was *Aloe vera* along with Vit. C, Vit. E and minerals.

### Summary and Conclusion

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 3<sup>rd</sup> day jam was liked very much while on 6<sup>th</sup> day it was liked moderately and on 9<sup>th</sup> day jam was liked slightly by the panel members. 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

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.

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