

STANDARDIZATION AND DEVELOPMENT OF CUCUMBER SQUASH

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ABSTRACT

Cucumber is a vegetable that belongs to cucurbitaceous family. India is considered to be the home of cucumber. It is an important salad crop cultivated both in north and south and lower plain land areas as well as at higher altitude hilly regions in India. The nutritional benefits of cucumber in terms of micronutrient contribution is outstanding. It is a very rich source of potassium (144mg) and vitamin-C (5.3mg) and moderate source of calcium and phosphorus. It offers multiple benefits. Fresh cucumber juice provides relief from heart burn, acid stomach, gastritis and ulcers. It has been found to be useful in the control of eczema, arthritis and gout. In general it is associated with the healing the disorders of the kidney, urinary bladder, liver and pancreas. With rich potassium content its role is evident in the control of blood pressure. The diuretic, cooling and cleaning properties of cucumbers are indicative of its role in maintenance of healthy skin, the micronutrient composition is indicative of health benefits in preserving oral health and hygiene through maintenance of healthy gums and teeth and prevention of pyorrhea. It is winter crop. The vegetable is produced in huge quantities and inadequate storage and transportation facilities result in damage and wastage of the crop. In this backdrop cucumber squash preparation is undertaken. Usually squashes are prepared with fruits. But highly nutritious and abundantly available vegetables are also being made into squashes. The cucumber squash was prepared using the standard squash preparation procedure. Through several trials of sensory evaluation the appropriate proportion ingredients was determined. A trained panel conducted a sensory evaluation of the cucumber squash. The results revealed that the cucumber squash is highly acceptable and it is on par with the standard squash preparations used for comparison.

Keywords: *Cucumber, Squash, Vegetables, Standardization, Sensory Evaluation*

INTRODUCTION

A beverage is composed chiefly of water used as a drink for the purpose of relieving thirst and introducing fluid to the body, nourishing the body and stimulating of the individual. A wide range of fruit beverages are used because they satisfy the thirst promote mental and physical satisfaction, improve health, give refreshment, supplement nutritional requirement promote self-sufficiency and provide quick energy. A fruit juice squash essentially consists of juice containing moderate amount of fruit pulp to which cane sugar is added for sweetening eg: orange squash, lemon squash etc. According to fruit product order-FPO the squashes should have minimum percentage of total soluble solids in the final product on weight basis as 40%, minimum fruit juice in the final product on weight basis is 25%. This is made from strained fruit juice, sugar, citric acid, water and potassium bisulphite (Srilakshmi, 2008).

Cucumber is a member of cucurbitaceae family, like melons, and pumpkins. India is considered to be the home of cucumber. It is an important salad crop cultivated both in north and south and lower as well as in higher hills in India. It is one of the oldest vegetable crop grown widely throughout the country, tropical and subtropical parts of the world. Fruits are eaten raw with salt and pepper at the mature and immature stages. Mostly the small fruits are used for pickling and big fruits are used for salads and for cooking curries.

The fruits are sweet, refrigerant. The health benefits of the cucumber is haemostatic, diuretic and tonic and are useful in vitiated conditions of hyperdypsia, burning sensation, thermoplegia, fever, cephalgia, bronchitis, jaundice, haemorrhages and general debility. The seeds are astringent and sweet. It is useful also for constipation, renal calculus and fevers as well as nutritional benefits. It contains vitamins and

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minerals. In this background, the present study was planned to prepare a beverage with slicing variety of cucumber of squash which possesses both nutritional and medical properties of significance.

MATERIALS AND METHODS

The Basic ingredients required for the development of squash were cucumber, sugar, citric acid, and potassium metabisulphite. Cucumber is procured from local markets, sugar from the local store at Tirupati. Cucumber was purchased from local vegetable market and washed in clean tap water to remove extraneous matter such as dirt, dust, and pesticide residues. Then cucumber was made into juice various steps are involved into preparation of juice such as cleaning, peeling, cutting, blanching, extraction of juice and filtration. Standard procedure was adopted for cucumber squash (FPO 1995). Sugar syrup was prepared by standard procedure. All the remaining ingredients were weighed according to the proportions. The weighed ingredients were mixed with sufficient amount of juice, syrup, and water and preservatives. The prepared squash was cooled at ambient temperature for 30 minutes. Pour in dry sterilized bottle, and close the seal of the bottle. The formulations designed using various proportions of ingredients to standardize the product was presented in table 1.

Table 1: Composition of various samples for standardization of the product

S.No.	ingredients	Sample 1	Sample 2	Sample 3
1.	Cucumber juice(ml)	28	33	25
2.	Sugar(g)	44	33	50
3.	Water(ml)	28	34	25
4.	Citric juice(g)	2.5	2.5	2.5
5.	Potassium metabisulphite(g)	0.3	0.3	0.3

Three different samples were worked out to the develop cucumber squash in laboratory. In sample-1 cucumber juice, sugar, water and citric acid were taken in the ratio 28:44:28:25 and 0.3(g), potassium metabisulphite was added. In sample-2 cucumber juice, sugar, and water are added in the same proportion as sample-1. The ratio of sample-3 proportions 25:50:25 and preservatives were added in the same proportions as sample-1 respectively. All the samples were the subjected to sensory evaluation with trained panel. Sample -3 got highest score for overall acceptability hence that formula was standardized in terms of ingredients and procedure. Cucumber squash was prepared in the laboratory and subjected to sensory evaluation with different age groups i.e. children, adults to assess the acceptability of the product. Nutrient composition of the product was calculated using nutritive value of Indian foods (Wang et al. 1999).

RESULTS AND DISCUSSION

The formulation interms of ingredients used to develop cucumber squash is presented in table no.2

Table 2: Composition and yield of cucumber squash

S.No	Ingredients	Quantity
1.	Cucumber juice(ml)	25
2.	Sugar(g)	50
3.	Water(ml)	25
4.	Citric acid(g)	2.5
5.	Potassium metabisulphite(g)	0.3

Yield of the Juices from whole Vegetable

Initial weight (g) - 750

After peeling(g) - 670

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Final weight(g) - 490

Juice yield(%) - 65.34

After preprocessing and processing operations carried out as per the procedure, 65% of juice was obtained. The final product was packed using appropriate packaging materials, labeled and kept for further study. Sensory evaluation can be defined as quality of product which is assessed by means of human sensory organs. The evaluation is said to be sensory or subjective or organoleptic. The cucumber squash was diluted and prepared a beverage and subjected to sensory evaluation by different groups i.e. adults, adolescents and children to test the acceptability (Table 3). The results reveal that the color and taste of the product was more acceptable by the adolescents when compared to children and adults whereas the appearance and flavor is more acceptable by the adults. The difference in sensory scores was not observed for overall acceptability of the product among all three age groups. All three age groups were given maximum score for overall acceptability of the product.

Table 3: Sensory evaluation of cucumber squash

.No	Sensory attributes	Panel members		
		Adults	Adolescents	Children
1.	Appearance	3.4	4.1	3.6
2.	Color	3.8	4.0	3.7
3.	Flavor	3.9	3.9	3.2
4.	Taste	3.8	4.0	3.8
5.	Overall acceptability	3.7	4.0	3.5

The nutrient composition of the cucumber squash was calculated using the nutritive value of Indian foods (Gopalan *et al.*, 2004).

Table 4: Nutrient composition of cucumber squash

S.No	Nutrient	Amount
1.	Energy	106 k.cal
2.	Carbohydrates	26.1(g)
3.	Calcium	9(mg)
4.	Potassium	25(g)
5.	Vitamin-c	5.25(mg)

The essential nutrients like energy, carbohydrates, calcium, potassium, and vitamin-c were calculated and presented in table 4. Squash (100g) contain 106k.cal energy, 26.1(g) of carbohydrates, 8(mg) of calcium, 25(mg) of potassium, 5.25(mg) of vitamin-c. Preparation of fruit beverages on commercial scale was practically unknown in the country till about 1930. New products such as squashes and cordials are now being produced pure fruit juices. Amongst the cool drink fruit juices have an important place. The nutritive value of real fruit beverage is far greater than that of synthetic beverage.

Conclusion

Fruit juices are valuable from the nutritional point of view. They are rich in minerals, vitamins and other nutritive factors. Fruits are generally used for making juices. The popular juices are pineapple, mango, grape etc., fruit juices are good in taste, aroma, and color and the preserved fruit beverages have great global market with the industrialization and adding convenience to the consumer. Squashes are prepared by the addition of sugar and preservatives to freshly expressed fruit juices; they are usually diluted with water before consumption. Cucumber squash is one of the relieving thirst beverages in many parts of the globe. Value addition in terms of various ingredients enriches the product quality. The cucumber squash is refreshing beverage with cucumber product. Cucumber is seasonal crop but not available through the year.

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