IOSR Journal of Agriculture and Veterinary Science (IOSR-JAVS)
e-ISSN: 2319-2380, p-ISSN: 2319-2372. Volume 8, Issue 4 Ver. III (Apr. 2015), PP 01-03
www.iosrjournals.org

Effect of Different Acidity levels of Snap Melon Syrup on Chemical and Sensory Properties

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Abstract: *Cucurbits form an important and big group of vegetable crops cultivated extensively in the country. The manufacture of value added products by using vegetable like snap melon. The present investigation shows that, the overall acceptability of the snap melon syrup prepared from 1.2 per cent acidity level contains S_3 (71.33) was highest and superior. 1 percent acidity level was more acceptable than another acidity level in concerns with colour, flavour, and overall acceptability. The chemical composition of snap melon syrup was affected due to different acidity levels in concerns with TSS, Acidity, Reducing Sugars and Total Sugars.*
Keyword: *Syrup, Acidity levels, Snap melon, Chemical parameters, Sensory parameters*

I. Introduction

Vegetables play a vital role in balancing human diet bearing both the nutritious and protective. It is highly essential to take vitamins and minerals in required quantities for sound health of human body to create resistance against diseases and constitute hardly 8 to 10 per cent of total food in India that is very low as compared to 45 per cent in Japan and U.S.A., which is 5 times more than the Indian average (Yawalkar, 1992). Despite, India is a second largest producer of vegetables in the world; it is not able to fulfil our daily requirement (285-300 g/capita/day).

The ripe snap melon fruits are used to prepare rayta. Ripe fruits are used as dessert or as salad. Seed kernels are extracted and are extensively used in sweets and bakery products. The seeds are used as cooling medicine. It has been found to have resistance to downy mildew (More, 1999; Sambandam et al., 1979).Fruits of snap melon are rich in nutrient components. It contains 79.93 g moisture, 0.369 g crude protein, 1.12 g Fat, 15.6 g carbohydrate, 1.34 g crude fibre, 1.64 g total ash, 0.76 mg calcium, 0.088 mg phosphorus, 0.843 mg iron and 0.2023 zinc per 100 g of fruit of fruit sample (Samadia, 2003).

The snap melon fruits are highly perishable in nature and they have poor storage life, to prolong its utilization, the snap melon can be processed into value added product. However, the research work on processing of snap melon is limited. Hence, it is necessary to explore the possibility of utilizing the snap melon type for the preparation of processed product such as syrup

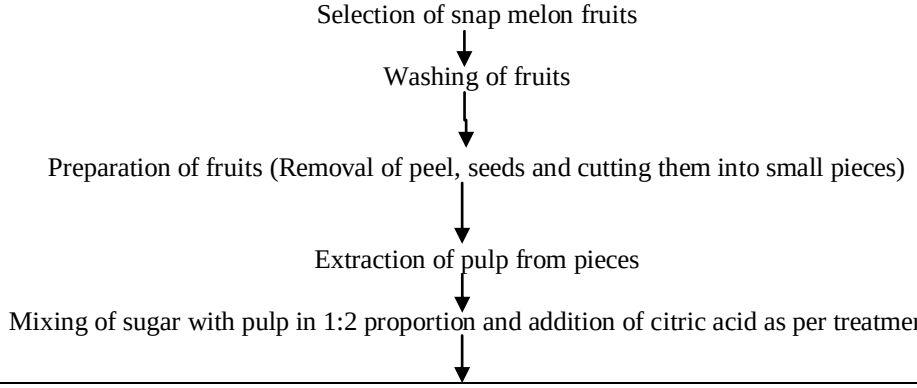
II. Materials And Methods

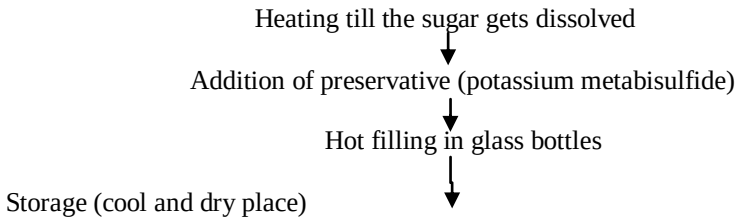
2.1 Experimental Material

The fruits required for conducting research were procured from the farm of Vegetable Improvement Scheme, Central Experiment Station, Wakawali of Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli. The fresh, ripe, mature fruits were selected and brought to laboratory for conducting the research.

2.2 Preparation of snap melon syrup

Snap melon syrup was prepared by adding sugar (1:2), citric acid as per the treatment and potassium metabisulphate @ 700 ppm.





2.3 Treatment details

The different acidity levels comprise of syrup recipes as follows.

A: Acidity levels

Three	Acidity level
S-1	0.8 percent
S-2	1.0 percent
S-3	1.2 percent

2.4 Chemical analyis

2.4.1 Total soluble solids (T.S.S.)

Total soluble solids were determined using Hand refractrometer (Make Erma Japan, 0-32^0 Brix) and the values were corrected at 20^0 C with the help of temperature correction chart (A.O.A.C., 1975).

2.4.2 Titratable acidity

A known quantity of sample was titrated against 0.1 N NaOH solution using phenolphthalein as an indicator. The sample of known quantity with 20 ml distilled water was transferred to 100 ml volumetric flask, made up the volume and filtered. A known volume of aliquot (10 ml) was titrated against 0.1 N sodium hydroxide (NaOH) solution using phenolphthalein as an indicator (Ranganna, 1997).The results were expressed as per cent anhydrous malic acid.

$$\textbf{Titratable acidity}\,(\%) = \frac{\text{Normality of alkali X Titre reading X Volume made X Equivalent weight of acid}}{\text{Weight of sample taken X Volume of sample taken for estimation X 1000}} X100$$

2.4.3 Reducing sugars

The reducing and total sugars were estimated by using Lane and Eynon method with modifications suggested by Ranganna (1997). A known weight of sample was blended with distilled water using lead acetate (45%) for precipitation of extraneous material and potassium oxalate (22%) to de-lead the solution. This lead free extract was used to estimate reducing sugars by titrating against standard Fehling's mixture (Fehling A and B in equal proportion) using methylene blue as an indicator to a brick red end point.

$$\textbf{Reducing sugars}\ (\%) = \frac{\text{Factor X Dilution X 100}}{\text{Titre reading X Weight of sample}}$$

2.4.4 Total sugars

Total sugars were estimated by the same method after acid hydrolysis of an aliquot of deleaded sample with 50 per cent hydrochloric acid followed by neutralization with 40 per cent sodium hydroxide.

$$\textbf{Total sugars}\ (\%) = \frac{\text{Factor X Dilution}}{\text{Titre reading X Weight of sample}} \text{X100}$$

2.5 Sensory evaluation

Sensory analysis carried out by panel of Judges in respect of colour, Flavour and overall acceptability by **9** hedonic scale developed by Amerine et al.(1965).

2.5 Statistical method

The data were analyzed statistically by using by Panse and Sukhatme (1985) using Factorial Completely Randomized Design and valid conclusions were drawn only on significant differences between treatment mean at 0.05 per cent level of significance.

III. Results And Discussion

3.1 Chemical composition

The chemical quality of finished product is presented in Table 1. The total soluble solid content in the finished product of different acidity levels combination were in the range of 69.00 to 71.00 per cent. The increasing TSS content was noted in the 90 days of storage period, might be due to hydrolysis of polysaccharide

like starch, cellulose and pectin substance into simpler substances. The different acidity levels of content of snap melon syrup is decreased from 1.04 (0 days) to 0.97 (90 days). This might be due to increasing trends of TSS. The results obtained in the finished products were similar to those reported by Pal and Sethi (1992) reported the increasing trend in T.S.S. and a decreasing trend in acidity during 3 months of storage of kagzi lime syrup.Whereas reducing sugars and total sugars was incresing trend found during different storage periods.

3.2 Sensory evaluation

The sensory scores given for various samples are presented in Table 2. Snap melon syrup samples in which acidity level 1.0 per cent (S_2) contains highest score (7.16). It was observed that increasing storage days decreased the score of colour and flavour of syrup. The score in respect of colour ranged between 7.30 to 6.91 for 30 days and 60 days storage period. The acidity level 1.0 per cent is superior over the rest of acidity levels. In case of flavour, the score recorded was highest in S_2 and mean score ranged from 7.06 to 6.85. It was noticed that storage period increases the flavour score decreases.

Table 1 Chemical composition of snap melon syrup (per cent)

Treatments	TSS				Acidity				Reducing sugars				Total sugars			
	0	30	60	90	0	30	60	90	0	30	60	90	0	30	60	90
S_1	68.93	69.59	70.15	70.65	0.83	0.80	0.79	0.78	10.91	11.15	11.41	11.68	40.79	41.73	42.39	42.97
S_2	68.91	69.64	70.39	70.91	1.04	1.00	0.98	0.96	10.63	10.86	11.11	11.36	40.65	41.32	41.92	42.43
S_3	69.55	70.13	70.85	71.33	1.24	1.22	1.19	1.18	10.90	11.15	11.40	11.68	41.20	41.81	42.67	43.16
Mean	69.13	69.78	70.46	70.96	1.04	1.01	0.98	0.97	10.81	11.05	11.31	11.57	40.88	41.62	42.32	42.85

Table 2 Overall acceptability score of snap melon syrup

Treatments	Colour				Flavour				Overall acceptability			
	0	30	60	90	0	30	60	90	0	30	60	90
S_1	7.26	7.26	6.90	7.03	7.03	6.90	6.96	6.96	7.10	7.06	6.91	6.98
S_2	7.26	7.33	6.90	7.10	7.09	6.93	7.10	7.30	7.16	7.10	6.94	7.15
S_3	7.23	7.30	6.93	7.16	6.89	6.73	6.86	6.93	7.05	6.99	6.83	6.99
Mean	7.25	7.30	6.91	7.10	7.00	6.85	6.97	7.06	7.10	7.05	6.89	7.04

IV. Conclusion

It may be concluded all the recipes of snap melon syrup were found to be organoleptically acceptable not only at the time of preparation but also throughout the storage period of 3 months at ambient conditions. The snap melon syrup prepared from different acidity levels by adding sugar with citric acid to maintain acidity of syrup was significantly superior in respect of overall acceptability of the product to that of prepared by traditional method.

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