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Study the sensory attributes of osmo-dried papaya slices

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Abstract

The experiment was conducted to determine the sensory attributes of osmotically papaya samples. Papaya slices were treated with different pre-treatments namely control, T₁ = Control, T₂ = Potassium Metabisulphate, T₃ = Sodium bisulphate and T₄ = Blanching at 95°C for 4 minute. The treated sample were osmosed in syrup solution of 55 °Brix & 65 °Brix for period of 180 minutes, than wiped and dried in tray dryer and hot air oven dryer at 60°C. Overall acceptability for osmo-dried papaya slices was awarded highest score for T₄, T₃ and T₂ as compared to control sample. All samples coincided in the range of 'like moderately' to 'like very much' for control samples.

Keywords: papaya, pre-treatments, sensory attributes, dryers and sugar solution

Introduction

Osmotic dehydration of fresh produce can also be used as a pre-treatment to additional supplementary drying processing to improve sensory, functional and even nutritional properties. Osmotic dehydration results in increased shelf-life, little bit loss of aroma in dried and semidried food stuffs, lessening the load of freezing and to freeze the food without causing unnecessary changes in texture (Petrotos and Lazarides, 2001) [3]. Fruit dehydration by immersion in osmotic solutions has been of rising interest during the last decades since it can improve food quality when combined with other type of dehydration method. Color is one of the most important properties of food products. The first quality assessment of a product is based on its color, it is the first thing a consumer notices and it can determine the acceptability of a product. Exposing fruits to high temperatures during drying may have detrimental effects on their quality. The inclusion of osmotic process in conventional dehydration has two major objectives i) quality improvement and ii) energy savings. Osmosed products fall under the group of intermediate moisture foods. The present investigation was undertaken with the objectives of evaluating sensory quality parameters of osmotically dehydrated product.

Materials and Methods

Experimental plan

Papaya slices were pretreatment with treatments (T₁ = Control, T₂ = Potassium Metabisulphate, T₃ = Sodium bisulphate and T₄ = Blanching at 95°C for 4 min.) in osmotic solution at temperature of 50°C. Then the samples were dried under Hot Air Oven drier at 60°C temperature. During the process, osmosis was carried out in sucrose solution at a varying concentration of 55°Brix and 65°Brix. At each experimental condition, osmotic dehydration was carried out for 180 minutes and data are observed at each 30 min intervals.

Experimental procedure

The papaya was procured from the local market of Meerut (UP) in 2018. The papaya was then washed, and decides into 2.5x2.5x2.5 cm Size. The papaya slices were treated above decided treatments for 30 minutes and then the sample were removed from treated solution and placed at room temperature for 15 minutes and then weighted by electrical balance. After that the samples were osmosed with sugar solution (55°Brix and 65°Brix) for 180 minutes at 50°C temperature and then the osmo-dried papaya slices were dried in Tray dryer and Hot Air Oven drying at 60°C.

Sensory Evaluation

Sensory quality is evaluated on parameters i.e. taste, color, flavor and overall acceptability. The score ranged from 1 to 9 which represented "Like extremely" to "dislike extremely", the dried samples were tasted by 8 judges. The Samples with osmotic pretreatment were more appreciable in comparison to samples without osmotic treatment. The mean sensory score of osmosed and untreated dried papaya slices has been shown in Table 1 to 4 the finding has been in agreement with an earlier study (Raoult-Wack *et al.*, 1991) [5] which reported that osmotic pretreatment was able to improve quality of dried product. The analysis shows that, the osmotic pretreatment and drying air temperature have significant effect on sensory evaluation.

Results and Discussion

Sensory quality of osmo-dried papaya slices was evaluated for fresh samples. The samples were served to panelists color taste flavor and overall acceptability was selected as sensory attributes on 09 points hedonic scale were shown in figure 1 to 4.

Table 1: Mean sensory score for cabinet tray dried papaya slices at 60°C for 55°B

S. No.	Treatments	Color	Taste	Flavor	Overall Acceptability
1	T ₁	5	5	5	6
2	T ₂	7	6	6	7
3	T ₃	7	7	7	8
4	T ₄	8	8	8	9

Table 2: Mean sensory score for cabinet tray dried papaya slices at 60°C for 65°B

S. No.	Treatments	Color	Taste	Flavor	Overall Acceptability
1	T ₁	5	5	5	5
2	T ₂	6	7	7	7
3	T ₃	7	8	8	8
4	T ₄	8	9	9	9

Table 3: Mean sensory score for Hot air oven dried papaya slices at 60°C for 55°B.

S. No.	Treatments	Color	Taste	Flavor	Overall Acceptability
1	T ₁	5	6	5	5.5
2	T ₂	7	7	7	7
3	T ₃	8	8	8	8
4	T ₄	9	9	9	9

Table 4: Mean sensory score Hot air oven dried papaya slices at 60°C for 65°B.

S. No.	Treatments	Color	Taste	Flavor	Overall Acceptability
1	T ₁	5	5	5	5
2	T ₂	6	7	6	7
3	T ₃	7	8	8	8
4	T ₄	8	9	9	9

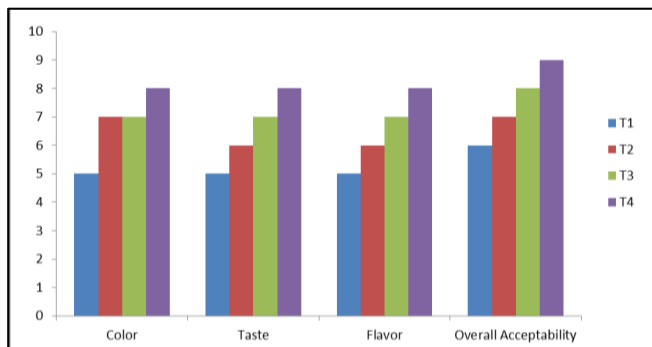


Fig 1: Mean sensory score for cabinet tray dried papaya slices at 60°C for 55°Brix.

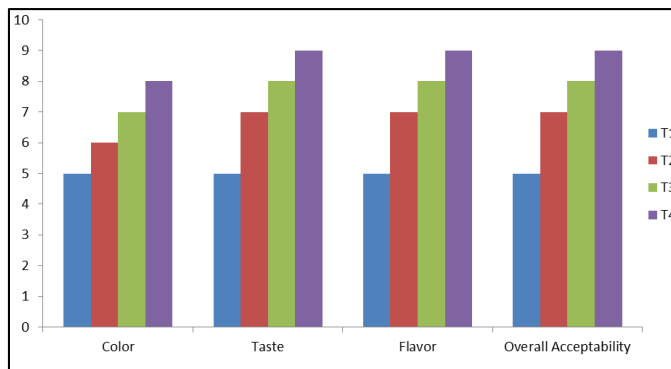


Fig 2: Mean sensory score cabinet tray dried papaya slices at 60°C for 65°Brix.

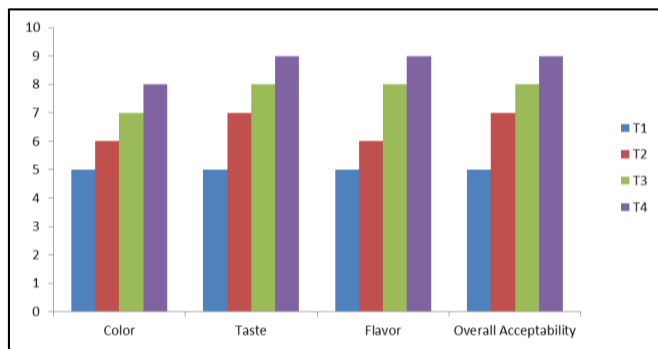


Fig 3: Mean sensory score for Hot air oven dried papaya slices at 60°C for 55°Brix.

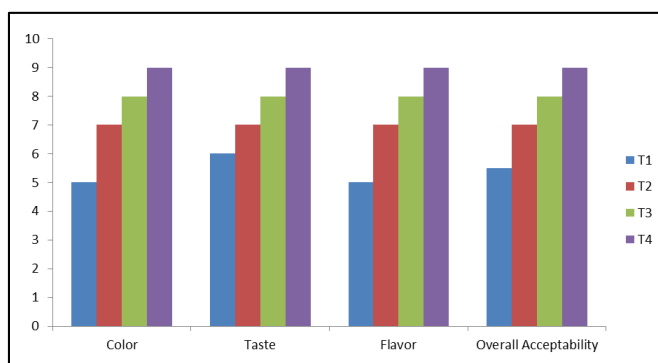


Fig 4: Mean sensory score for Hot air oven dried papaya slices at 60°C for 65°Brix.

Conclusion

Sensorial data revealed that overall acceptability of osmo-dried papaya slices with highest in T₄ Sample. Osmotically dehydrated slices showed better colour, flavour, texture, and overall acceptability at initial stage. It was concluded that the osmotic dehydration process effectively improve the quality and yield of dehydrated papaya slices.

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