TO APPRAISE THE SENSORIAL QUALITY OF VALUE ADDED BANANA PRODUCTS

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ABSTRACT: *The present research was conducted at Institute of Food Sciences and Technology, Faculty of Crop Production, Sindh Agriculture University, Tandojam during the year 2015 to study sensorial qualities of banana value added products. In this regard unripe mature fruits of Cavendish variety of Banana were collected from near local banana orchard of Tandojam and processed for making of the banana flour. Banana flour was used to make different types products viz flour, chapatti and banana flour kheer. Chappati was also explored by adding rice and gram flour. Unripe mature banana and its products were analysed for different sensorial attributes like color, taste, flavour, texture and overall acceptability. The results pertaining to sensory evaluation showed maximum score for banana kheer which was prepared by adding banana flour the score ranked for color (7.9), taste (6.9) texture, (8.0), flavor,(7.6) and overall acceptability (8.4) as compared to chappati. Result concluded that processing of banana for value added products alter the sensorial attributes of banana flour.*

Key words: Banana flour, chapati, rice, gram flour and kheer

INTRODUCTION

The banana is very delicious in taste and ranking first with production rate of 25 percent [1]. In the past three years, banana cultivated at large scale, and high yielding fruit crop of Pakistan. Banana has a short life span and has high production rate due to which banana cultivation is popularizing day by day [2]. Ripen banana has 5 to 10 days of shelf life after harvesting. It is a soft and delicate fruit which make it susceptible to diseases and injury when transported to the markets for utilization. Banana always considered as a problem fruit in its handling and transportation process.

In developed countries 40 – 50 % of the annual agricultural produce is converted into value added commodities. So it is more important to convert banana into valuable products that having high nutritional value and fulfill the consumer demand and avoiding its spoilage [1].

The banana is well known fruit in the whole word, so it is most important to utilize the fruit when banana is unripe procedures to make by products (banana flour) like edible cookies [3], bread [4] and eatable films [5]. Conversion of banana into powder in immature stage [6], which possess thickening and culinary properties that is most similar to that of starch [7].

Recently, scientists investigated nutritional properties of banana flour adding to its supplements. [8] added that when banana is not mature fully its conversion into flour has major source of fiber, starch, total starch and minerals (P, Mg, K, and Ca). [3] investigated that UB (unripe banana) when converted to flour it have the potential to be used in bakery products. Pasta base materials made from banana flour show low rate of CHO, enzymatic activity and they help to expand the area for consumption because of low glycemic concentration [9].

Some research has been recently carried out to improve the nutritional properties of unripe banana flour. [9] added that pasta having nutrients contents used as bakery product mostly having banana flour in its composition; they help increase the variety of low-glycemic index foods presented to customers. Keeping in view the importance of unripe banana flour this study was designed to investigate the sensorial quality of value added banana products.

MATERIALS AND METHODS

Present experiment was conducted at IFST laboratory, SAU Tandojam during 2015 in a CRD Design with the following products used as treatments for sensory evaluation purpose, following products were prepared from un-ripened banana flour of cv. Cavendishii;

Treatments

T_1 = Chapatti (Banana flour and gram flour)
T_2 = Chapatti (Banana flour and Rice flour)
T_3 = Kheer (Banana flour and fresh milk)

Preparation of chapatti (Banana flour and gram flour)

The basic constituents used for preparation of chapattis were: 50.0 g flour, oil 3 g, 50.0 g rice flour, 3.0 g salt, 50.0 g gram (gram flour) flour and kneaded with water. After preparation of dough in chapatti was cooked on pre heated flat pan (tawa) and after heating from one side it was turned over and heated from the other side. Chapatti was puffed on open flame for 2 to 4 seconds and remove from pan.

Preparation of chapatti (Banana flour and Rice flour)

The basic constituents used for preparation of chapattis were: 50.0 g banana flour, oil 3 g, 50.0 g rice flour, 3.0 g salt, 50.0 g gram (rice flour) flour and kneaded with water. After preparation of dough chapatti was cooked on pre heated flat pan and cooked both sides Chapatti was puffed on open flame for 2 to 4 seconds and remove from pan.

Preparation of banana flour kheer

Kheer was prepared in the laboratory by taking 250g of banana flour and 250 g of rice flour were boiled in one litter of milk then mixed with 300 g of sugar. After condensing, kheer was removed from gas stove for analysis.

Sensory evaluation

Sensory evaluation of Banana products were performed by the staff members of Institute Food Sciences &Technology Sindh Agriculture University, Tandojam banana products sample were served to panel of Judges to score sensory attributes such as color, flavor, taste, appearance and palatability of the product developed [7]

Statistical analysis

The collected data will be subjected to statistical analysis using Statistix 8.1 computer software [10].

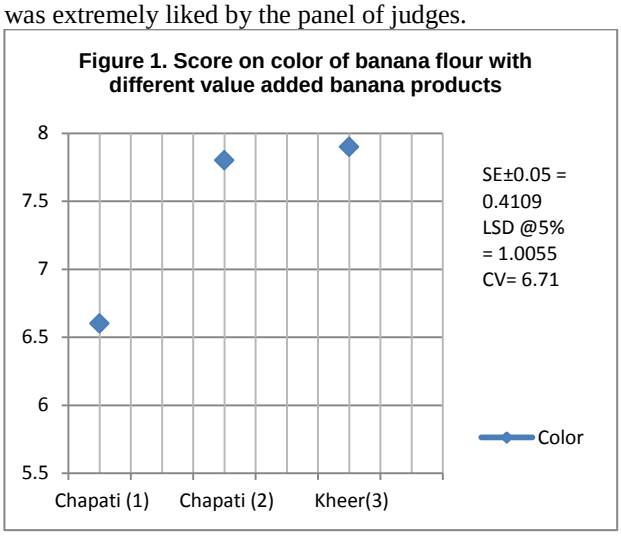
RESULTS

Sensory analysis of the products prepared from banana flour

The color, taste, flavor, texture and overall acceptability of banana chapatti prepared from different flour such as rice flour ,basin flour, wheat flour and banana kheer were determined by using 9- point hedonic scale (9= (like extremely: to 1= dislike extremely) to measure the degree of preference of the sample by panelists.

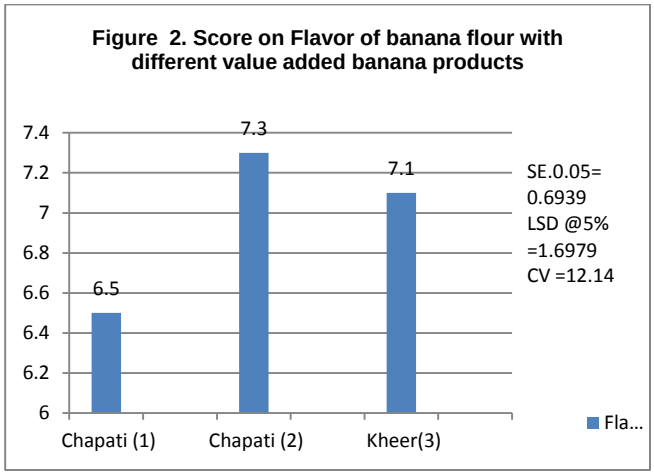
Color

The mean value for color of different banana products is presents in Table-7 and its Analysis variance as Appendix-VII. Results showed significant (P<0.05) effect on the color of chapatti made from banana flour and gram flour and rice flour and banana kheer . The color of banana kheer ranked with maximum score of 7.9and minimum 7.5.The chapatti color ranked 1st with maximum score of 8.4 prepared from banana flour and rice flour. Lower scores were recorded by the judges to the product (chapatti) prepared from banana flour and gram flour,i;e (6.6). Chapatti made from banana flour and rice flour showed statistically (P>0.05) in color (as perceived by the panel of judges). The study suggested that color of banana flour and rice flour made from banana kheer was extremely liked by the panel of judges.



Flavor

The results of the flavor score of chapatti and banana products is present in Table-8 and its Analysis variance as Appendix-VIII. Results indicated significant (P<0.05) variation in flavor of banana kheer made from banana flour and rice flour and Chapatti made from banana flour and rice flour score 7.1, and 7.3 respectively. Lower scores were ranked by the judges to chapatti prepared from banana flour and gram flour. (6.5). Results indicated that chapatti flavor improved to a maximum extent when it was developed with banana flour and rice flour. Statistically, the differences in flavor of chapatti were non-significant (P>0.05) when prepared from banana flour and rice flour.



Taste

The results of the taste score of chapatti and banana products is present in Table-9 and its Analysis variance as Appendix-IX. Significant (P<0.05) difference was found in the taste of chapatti made from banana flour and gram flour with maximum score of 7.5 whereas Chapatti made from banana flour and rice flour with average scores of 7.0, 6.5 and 6.0, respectively. Lower scores were awarded by the judges to the taste of chapatti prepared from banana flour and gram flour (6.5) as compared to Kheer (Banana flour).. Hence, the mixing of banana flour and rice flour combination for producing chapatti of highest taste quality. The differences in taste of chapatti were statistically non-significant (P>0.05)

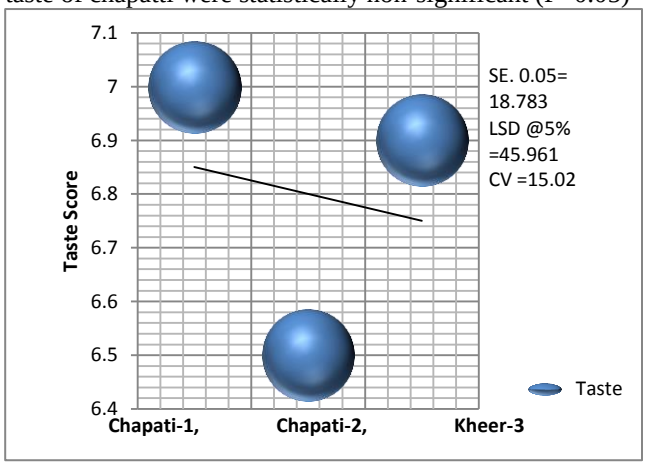
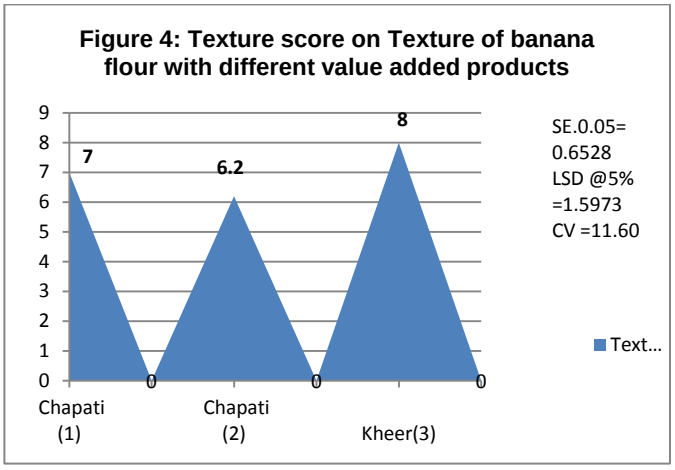


Figure 3: Taste score of banana flour with different value added products

Texture

The texture score of banana chapatti and its products is present in Table-10 and its Analysis variance as Appendix-X. The texture score of chapatti made from banana flour and rice flour and gram flour received 7.0 and 6.5. Whereas the texture score of Kheer (Banana flour) received 6.9. Relatively, lower scores were awarded by the judges to chapatti on its texture when it was prepared from banana flour and rice flour (6.0) and minimum score on chapatti texture was awarded when it was prepared from banana flour and gram flour (6.5). The differences in texture of chapatti were statistically non-significant (P>0.05).



Overall acceptability

The overall acceptability score of banana chapatti and its products is present in Table-11 and its Analysis variance as Appendix- X1. Results demonstrated significant ($P<0.05$) difference in perception of quality evaluators for overall acceptability of chapatti made from unripe banana flour, and rice flour, and gram flour. The overall acceptability score of chapatti made from banana flour and rice flour and gram flour showed 7.2 and 5.5. lowest overall acceptability score was recorded in Banana flour and Rice flour (Chapatti) as compared to the Banana flour and Gram flour (Chapatti). Highest score of overall acceptability was obtained in Kheer (Banana flour) 8.4 relatively, lower scores were awarded by the judges to chapatti on its overall acceptability when it was prepared from banana flour and rice flour (5.3) Significant differences were found in scores for overall acceptability. The differences in overall acceptability of chapatti were statistically non-significant ($P>0.05$) when prepared from banana flour and rice flour.

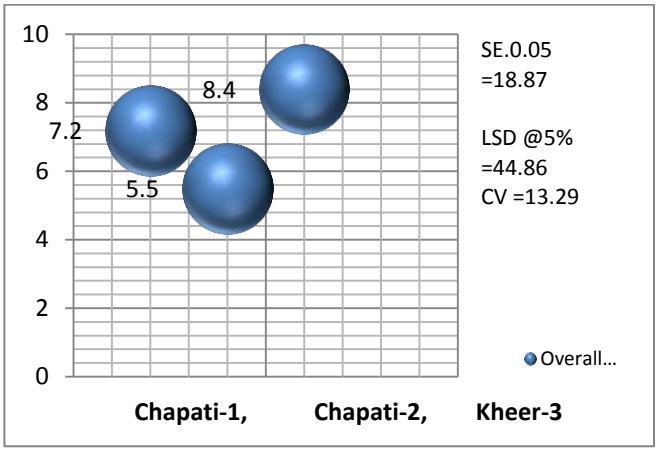


Figure 5: Score on Overall acceptability of banana flour with different value added products.

DISCUSSION

The study on the sensorial evaluation of banana chapatti with different flour rice flour, Gram flour and banana kheer were presented to a panel of judges for organoleptic attributed to be evaluated. For this, 9 points structured hedonic scale was used to evaluate the sample described by [11]. The five trained panelist were selected on the basis of their familiarity with various parameters such as color, taste, palatability, texture and overall acceptability for the consumers. Before, presentation of the coded banana chapatti rice flour and basin flour and banana kheer to the panel of judges. The samples were coded and served to the panelists. The judges were provided with prescribed score card sheet to record their observation. The panelists expectorated the taste and rinsed mouth using water between samples. The experiment was repeated twice after each analysis. The overall flavor impression is the result of the taste perceived by the taste buds in the mouth [12] and the aromatic compounds detected by the epithelium in the olfactory organ in the nose the biochemical changes were slower and conversion of complex organic compound into esters, aldehydes, acids, alcohols, ketones and ethers that contribute significantly to the aroma flavor [9] and [6]. It was observed that the different time had some of significant effect on the color, flavor, taste, texture and palatability of banana chapatti with rice flour and basin flour and wheat flour and banana kheer. [11] and [2] reported that overall acceptability score of chapatti was also significantly with increasing rice flour. The variation in the results might be associated with the human assessment, because the sensorial assessment is done by the judge's panel and their liking and liking may differ among different communities, the same report was confirmed by [12] and [8].

CONCLUSION

Mixing of banana flour to prepare value added products had greatly influenced sensory appraisal for the products, however future research might be done to explore more value added products with the inclusion of banana flour, so poor people health can be improved.

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