



SUITABLE INGREDIENTS FOR PREPARATION OF CHATS SUPPLEMENTED WITH JACKFRUIT SEED PASTE

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ABSTRACT

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Jackfruit is potential source of starch and has very good water and oil absorption properties which has potential applications in food industry. Every year huge quantity of jackfruit produce wasted because of its perishable nature and seasonal glut. To reduce the post harvest losses of nutritive fruit and seed, a study was conducted in ICAR-KVK, Uttara Kannada to develop different chat items with the jackfruit seed paste supplemented with different ingredients at home. The seed paste prepared after pressure cooking for 15 mins and removing seed coats. This paste mixed with different combinations of flours like rice, roasted bengalgram, maida, suji (Samolina) etc. in different ratios to prepare chats like chakli. After analysis, the best ratio for preparing chats was 1 : 1 : 1 jackfruit seed paste, rice flour and roasted Bengal gram powder respectively. Chats prepared by this ratio found most acceptable in terms of organoleptic studies done during trainings, method demonstrations and Jackfruit Melas at Sirsi.

KEYWORDS: jackfruit seed, organoleptic, chakli, value addition

INTRODUCTION

India is the second largest producer of jackfruit (*Artocarpus heterophyllus*) in the world and is considered as mother land of jackfruit. It has a wide distribution in Assam, Tripura, Uttar Pradesh, foothills of Himalaya and in South Indian states of Kerala, Tamil Nadu and Karnataka (APAARI, 2012). Jackfruit is a nutritious fruit, rich in proteins, carbohydrates, Vitamins A, B and C and minerals like calcium, potassium, iron (Azad, 2000). Besides the nutritional benefits of jackfruit pulp, the interest towards the utilization of jackfruit seed as an alternative source of starch in food and industrial applications is being increased. Jackfruit seed flour is used a large number of recipes namely biryani, tarte tatin, idli, dumplings, appam, dosa etc. The jackfruit seeds are rich source of starch, high protein and fibre (Ocloo *et al.*, 2010). The seeds are also marketed in canned as in boiled form like the beans, in brine and in tomato sauce (Morton, 1987). Jackfruit seed contains lignans, isoflavones, saponins, all phytonutrients and their health benefits are wide ranging from anticancer to antihypertensive, antiaging, antioxidant, antiulcer, and so on (Omale and Friday, 2010). Seeds contain two lectins namely jacalin and artocarpin. jacalin has been proved to be useful for the evaluation of the immune status of patients infected with human immunodeficiency virus 1 (Hussain and Haq, 2006). In recent years, researchers paid attention on

jackfruit seed as a potent source of starch because of its water and oil absorption properties and the stability of seed starch granules against thermal and mechanical shear enabling its application in food industry as an alternative source for wheat and rice (Mahanta and Kalita, 2015). Jackfruit seed flour is used a large number of recipes namely biryani, tarte tatin, idli, dumplings, appam, dosa etc. Keeping in view of the dietary benefits of jackfruit seed, the present study was conducted to find out the suitability and acceptability of jackfruit seed for preparing chakli.

MATERIAL AND METHODS

The experimental study was carried out in ICAR-Krishi Vigyan Kendra Uttarakannada, Sirsi Karnataka (India) during 2014 to find out the acceptability of jackfruit seed paste for preparing chakli.

Preparation of jackfruit seed paste

The jackfruit seeds were cleaned and put in pressure cooker along with water. After pressure cooking for 15-20 minutes, seeds were allowed to cool down and then seed coats were removed manually. These seeds were made into paste in grinder with little water. chakli was prepared with different combinations of jackfruit seed paste according to the treatments. The different treatments are T₀ : control (without jack fruit seed paste), T₁ : ¼

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cup, T₂ : ½ cup, T₃ : 0.75 cup, T₄ : 1 cup, T₅ : 1¼ cup, T₆ : 1½ cup, T₇ : 1¾ cup.

Preparation of chakli

Jackfruit chakli was prepared by mixing 1 bowl rice flour, 1 bowl roasted Bengal gram flour, jackfruit seed paste, 1 table spoon chilli powder, ½ table spoon sesame, ½ table spoon ajwain, ½ table spoon jeera and coriander seed powder, salt according to taste and ¼ table spoon butter. The above ingredients were dry mixed thoroughly (except oil) and then half cup of hot water was added to the mix. The ingredients were kneaded with water (little quantity of water used so that dough is hard) into dough. The dough was put into chakli maker and pressed to make chaklis. These chaklis were deep fried until it gets light brown colour.

Sensory Evaluation

The deep fried chakli were kept for organoleptic evaluation. The ingredients and method for preparation of chaklis was evaluated by KVK staff, students of Forestry College and Horticulture college, Sirsi and the visitors of State Level Jackfruit Mela held at Sirsi on 14.06.2014. The organoleptic characters namely colour and appearance, texture, taste and overall acceptability of chaklis was evaluated on nine-point hedonic scale graded as 9 = like extremely, 8 = like very much, 7 = like moderately, 6 = like slightly, 5 = neither like or dislike, 4 = dislike slightly, 3 = dislike moderately, 2 = dislike very much and 1 = dislike extremely as described by Ndife *et al.* (2011).

Statistical Analysis

Data obtained from sensory analysis were subjected in terms of average scores for different attributes and analyzed statistically by one way analysis of variance (ANOVA) and analysis is carried out by using Microsoft excel.

RESULTS AND DISCUSSION

Taste

Treatment T₁ recorded the highest value of 7.9 for taste followed by T₄ (7.8), T₃ (7.4), T₂ (7.3), T₁ (7.2), T₅ (7.0), T₆ (7.0) and T₇ (6.8) which were significantly not different from each other. However, the statistical test revealed that, there was no impact of substitution of jack seed paste up to 35 per cent at 5 per cent level of significance.

Color

The color of T₄ treatment 4 (T₄) chakli recorded the highest value of 7.9 for its very good color. T₆ and T₇ treatment chakli scored the lower values (7.1 and 6.9, respectively) with dull look. However, the statistical test revealed that, there were no impact of substitution of jack seed paste upto 35 per cent and all the proportions of chaklis are not significant with each other at 5 per cent level of significance.

Flavor

The flavor of treatment (T₄) chakli recorded the highest value of 8.0 for its very good color. T₆ and T₇

Table 1. Organoleptic characteristics on the effect of incorporation of jackfruit seed paste at different ratio in chakli

Treatments	Taste	Color	Flavor	Appearance	Texture	Overall Acceptability
T ₀	7.9	7.8	8.0	8.0	7.6	7.86
T ₁	7.2	7.4	7.2	7.1	6.9	7.16
T ₂	7.3	7.5	7.4	7.6	7.0	7.36
T ₃	7.4	7.6	7.7	7.7	7.1	7.50
T ₄	7.8	7.9	7.9	8.1	7.8	7.89
T ₅	7.0	7.4	6.9	7.1	6.8	7.04
T ₆	7.0	7.1	6.8	7.0	6.9	6.96
T ₇	6.8	6.9	6.8	7.1	6.8	6.88
F-test	NS	NS	S	S	NS	S
CD at 5%	-	-	1.00	0.85	-	0.79

treatment chakli scored the lower values (7.1 and 6.9, respectively) with dull look. However, the statistical test revealed that, there were no impact of substitution of jack seed paste upto 35 per cent and all the proportions of chaklis are not significant with each other at 5 per cent level of significance.

Appearance

Appearance was significantly differed among the treatments with varying ratios of ingredients used in making chakli. Treatment T₄ recorded the highest value of 8.1 for appearance followed by T₀ (8.0), T₃ (7.7), T₂ (7.6), T₁, T₅ and T₇ (7.1) and T₆ (7.0) and which were significantly different from each other.

Texture

According to the texture scores of chakli with the ratio of 1:1:1 rice flour, roasted bengal gram, jackfruit seed paste respectively recorded highest score i.e. 7.8 and least was observed in ratio of 1 : 1 : 1¼ and 1 : 1 : 1¾. The statistical test revealed that, there no significant difference among the treatments with each other at 5 per cent level of significance.

Overall acceptability

The data presented in the Table 1 shows the average sensory scores for different parameters in control and treated sample of jackfruit seed paste chakli, clearly indicates that treatments T₄ (7.89) had the highest score followed by T₀ (7.86), T₁ (7.16), T₂ (7.36), T₃ (7.5), T₅ (7.04), T₆ (6.96) and T₇ (6.88). The calculated value of F is greater than the tabulated value of F at 5% probability level. Therefore, it can be concluded that there was significant difference between treatments regarding the overall acceptability of jackfruit seed paste chakli.

The study indicated that, jackfruit seed paste supplementation with rice flour and roasted bengal gram flour has a great potential in developing chat products like chakli. In spite of affecting sensory qualities, the flavour, appearance and overall acceptability increased as the ratio of jack seed paste increased from ¼ to 1 where as it decreased when the ratio was increased. The best ratio for preparing spicy chats was 1:1:1 jackfruit seed paste, rice flour and roasted Bengal gram powder, respectively which resulted in overall acceptability in terms of organoleptic parameters and it can be concluded that, it is feasible to produce nutritionally value added chats from jackfruit seed paste supplementation.

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