Development And Quality Assessment of Fasting Pringoes Incorporated with Barnyard Millet Flour, Tapioca Flour and Amaranth Flour

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Abstract- The present study was undertaken to develop a healthy snack product named Fasting Pringoes, prepared using Tapioca, Amaranth, and Barnyard floursand Potatoes. The product was designed to meet the requirements of traditional Indian fasting practices while providing a nutritious and baked alternative to fried potato chips. The Pringoes were formulated by mixing the composite flour with boiled potatoes, shaping, and baking. Nutritional analysis showed that the product was rich in carbohydrates and provided moderate amounts of protein, fiber, and fat, making it a suitable energy source during fasting. Sensory evaluation confirmed consumer acceptability in terms of taste, texture, aroma, and overall appeal. Microbial analysis indicated the product was safe for consumption within its storage period. The results suggest that baked Fasting Pringoes are a promising functional snack option for both fasting and health-conscious consumers.

Keywords- Fasting Pringoes, Tapioca, Amaranth, and Barnyard flours Baked snacks, Nutritional analysis, Microbial analysis, Sensory evaluation

1.INTRODUCTION

Snack foods play a significant role in modern diets, but most commercial snacks such as fried chips are high in oil, sodium, and unhealthy fats. This creates a demand for healthier alternatives. In India, fasting (vrat or upwas) is a common practice observed during religious occasions, where the consumption of grains and pulses is restricted. Instead, ingredients like Tapioca, Amaranth, and Barnyard floursare traditionally consumed.

- Sabudana (Tapioca) is rich in carbohydrates and provides quick energy.
- Rajgira (Amaranth grain) is a pseudo-cereal, gluten-free, and a good source of protein, calcium, and iron.
- Bhagar (Barnyard millet) is rich in dietary fiber, minerals, and is easily digestible.
- Potatoes provide starch, improve texture, and enhance palatability.

The innovation of baking instead of frying reduces the fat content, making the product healthier. Therefore, this study aims to develop baked *Fasting Pringoes* and evaluate their nutritional composition, microbial quality, and consumer acceptability.

2.MATERIALS AND METHODS

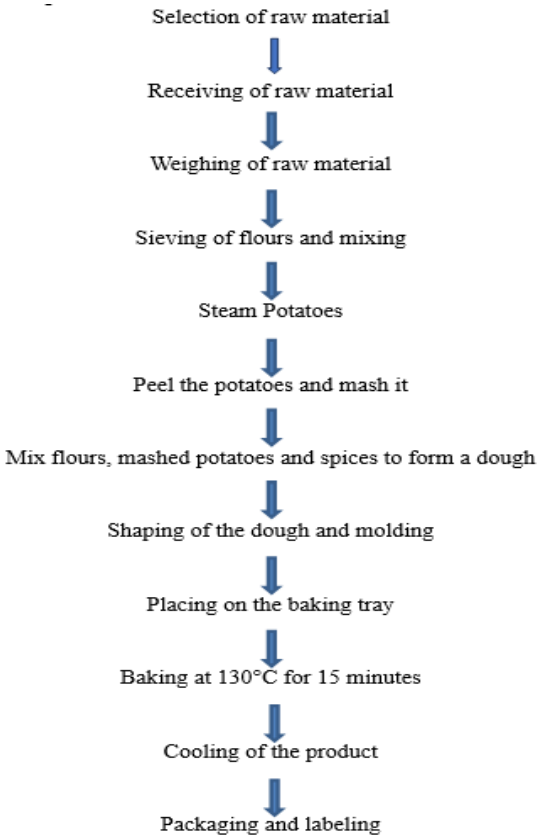
The details of material used, equipments used to carry out analysis, chemicals and glassware's, packaging material suitable for Fasting Pringoesand various methodology used are given below under appropriately labeled headlines and sub-headlines.

2.1 Materials

2.1.1Raw material

Potato, Tapioca flour, Barnyard flour, Amaranth flour, Salt and Green Chilliwere purchased from local market.

2.2 Flow Chart of Preparation



2.3 Process explanation:

The preparation process starts with selecting quality raw materials, including tapioca, amaranth, and barnyard flours, along with potato, green chilli, and salt. After inspection and weighing, the flours are sieved and mixed, while potatoes are steamed, peeled, and mashed uniformly. The mashed potatoes are blended with flours, chilli paste, and salt to form dough, kneaded for 5 minutes, then rolled into thin sheets and cut into uniform circular shapes. The shaped pieces are baked at 130°C for 15 minutes, cooled for 10–15 minutes, and then packaged. Finally, 25 g portions are packed, labeled, and stored at room temperature.

2.4 Product formulation:

Table No. 5.8: Sensory Analysis Data

Sr. No	Ingredients	T_1	T_2	T_3	T_4
1	Potato	45	50	60	55
2	Barnyard Flour	20	20	18	20
3	TapiocaFlour	12	12	11	12
4	Amaranth Flour	22	17	10	12
5	Salt	0.5	0.5	0.5	0.5
6	Green chilli	0.5	0.5	0.5	0.5

*Each value represents the average of three determinations.

Result: Treatment T_3 was accepted on the basis of Sensory Analysis.

2.5 Chemical analysis:

Table No. 2.5: Nutritional Values of Fasting Pringoes

Nutritional Values of Fasting Pringoes (per 100g approx)	
Carbohydrates	80.68 %
Protein	6.5 %
Total Fat	4.26%
Ash	6.8 %
Moisture	1.75%

(per 100g approx)

*Each value represents the average of three determinations.

2.6 Proximate composition:

Nutritional analysis confirmed that Fasting Pringoes are high in carbohydrates (80.68%), moderate in protein (6.5%), and low in fat (4.26%), with a fair amount of fiber and minerals. Sensory evaluation showed that the product was well accepted, with

Treatment scoring the highest in terms of taste, texture, and overall preference. Shelf-life studies indicated stability for 45 days at room temperature, after which a slight bitterness was observed, likely due to oxidative changes in the flour components.

2.7Sensory analysis:

The color-appearance, structure-texture, taste-odor, and overall acceptability of Fasting Pringoes produced withPotato, Tapioca flour, Barnyard flour, Amaranth flour, Salt and Green Chilliwere evaluated by scoring test (9-point hedonic scale). TreatmentT_3 scored the highest overall, "Like Extremely" remark. T1 also performed well, especially in colour and taste, earning a "Like Very Much" response. T2, while still acceptable, scored slightly lower in taste and flavour, leading to a "Like Moderately" remark. Overall, T3 was the most preferred sample among the three.

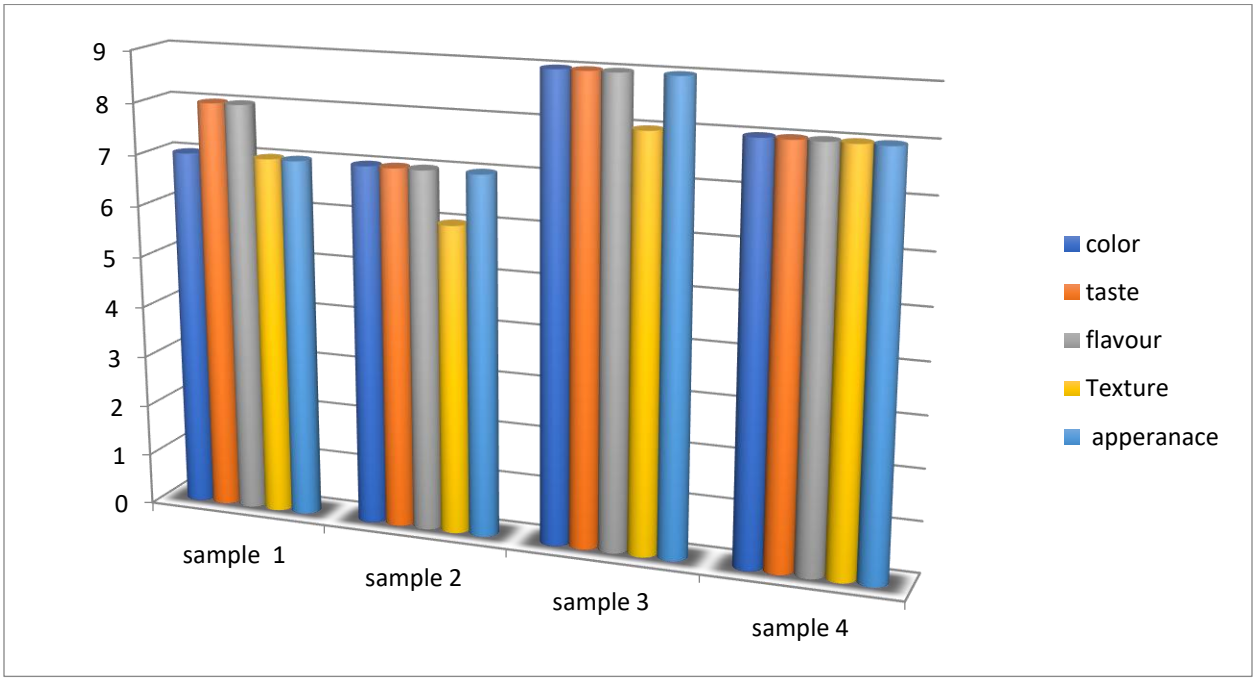


Table No. 2.7 : Graphical presentation of sensory analysis

2.8 Microbial Analysis

The microbial study using the Total Plate count (TPC) method showed that pringoes made from Tapioca, Amaranth and Barnyard Flours remained free of microbial growth until 45 days at ambient temperature25-30°C Relative humidity 60-65%.

3. RESULT AND DISCUSSION

The fasting pringoes developed using flours showed a balanced nutritional profile with 1.75 % moisture, 6.5% Protein, 80.68% Carbohydrates, 4.26% Fat, 6.8% Ash. Among the 4 formulation T3 was most preferred by sensory panelties, receiving high score for taste, texture and overall acceptability. Microbiological analysis confirmed that the Fasting Pringoes remained safe for consumption up to 45 days. Overall, the product proved to be a nutritious, tasty, and microbiologically safe, best enjoyed within 45 days of preparation. With proper packaging, cold chain logistics, and shelf-life extension techniques, the product can be introduced to retail markets, offering a healthyalternative to a wider consumer base.

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