



FORMULATION AND STANDARDIZATION OF QUINOA MILLET PAN CAKE MIX INCORPORATED WITH CUCURBITA MAXIMA

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Abstract: Quinoa grain is highly nutritious due to its outstanding protein quality and wide range of minerals and vitamins. Pumpkin is a common vegetable found, pumpkin seed is known for its high protein content and nutritional factors. Hence the pumpkin seed is incorporated in quinoa millet pancake mix with wheat flour, banana flour and palm sugar. Sensory evaluation of the formulated product was done. The selected product was analysed for proximate composition, physio-chemical analysis, organoleptic evaluation, shelf life has been found. Overall it can be concluded that incorporation of pumpkin seed in quinoa millet pancake mix has more health benefits, good sensory attributes, and has high nutritional value.

Index Terms – Pancake mix, Quinoa, Pumpkin seed

I. INTRODUCTION

Pancake mix is an easy to cook food product that can be fortified with any millets to enrich its nutritional composition. Quinoa millet pancake mix is incorporated with pumpkin seed to enrich its nutritional composition. The objectives was to formulate and standardize nutri enriched pancake mix, Organoleptic evaluation and comparison of the formulated product was done, Nutrient content of the formulated product was analysed, label, packaging and cost calculation of the formulated product was done.

Quinoa seed contain bitter-tasting constituents (chiefly water-soluble saponins) located in the outer layers of the seed coat, making it essentially unpalatable. Therefore, most commercial quinoa seeds, have been processed to remove their coating by washing or milling so to eliminate bitter compounds before consumption. There is also several anti-nutritional substances have been found in quinoa, such as saponins, phytic acid, tannins and protease inhibitors; which can have a negative effect on metabolic reactions. Generally development and consumption of such therapeutic bakery products would help to raise the nutritional status of population.

II. METHODOLOGY

Selection and collection of raw material was done from the local market.

PREPARATION:

The purchased raw materials like quinoa and pumpkin seeds are roasted and ground into powder. The purchased banana is cut, sundried and made into flour.

PREPARATION OF PANCAKE MIX

The prepared pan cake mix is mixed with milk and made into batter until a thick consistency occurs. Then the batter is poured into the pan and baked.

Pancake mix



Added milk to the mix



Made into batter



Batter left for about 10 minutes



Batter is poured in to pan and cooked

III. FIGURES AND TABLES

TABLE 1: STANDARDIZATION OF PANCAKE MIX

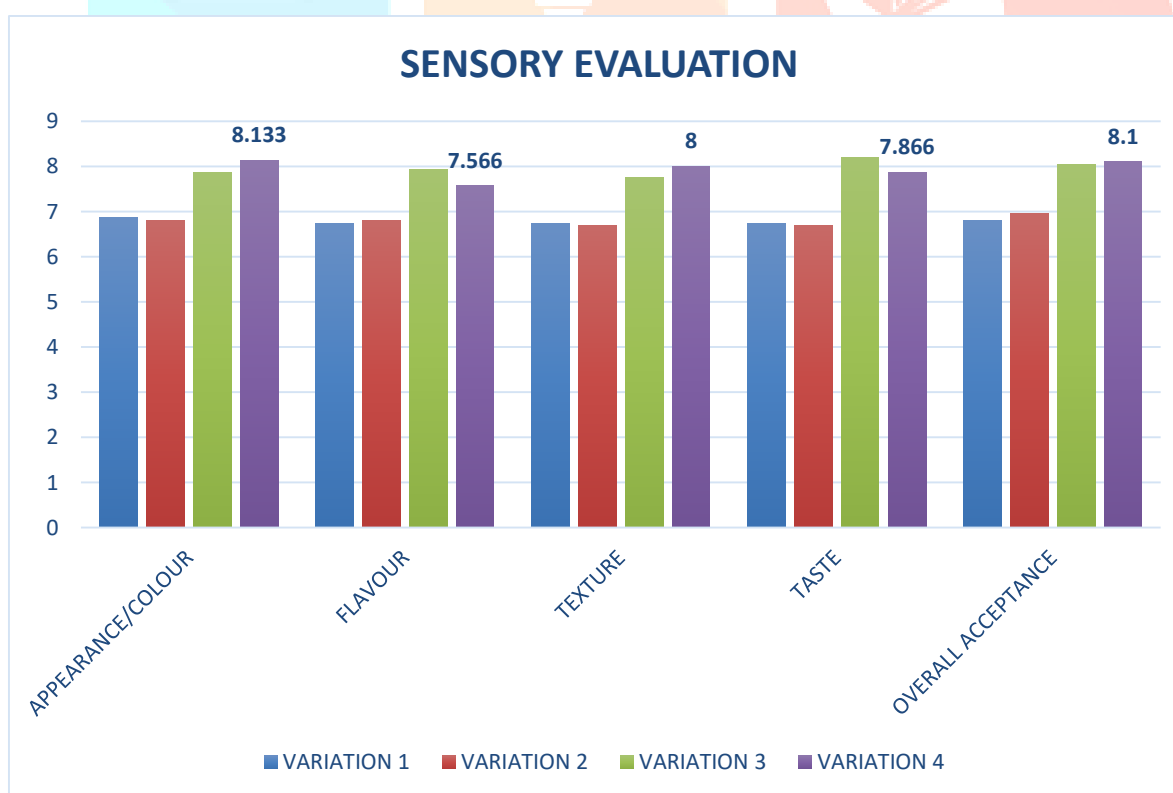
INGREDIENTS	VARIATION 1	VARIATION 2	VARIATION 3	VARIATION 4
QUINOA FLOUR	30	40	50	60
WHEAT FLOUR	15	15	15	15
BANANA FLOUR	20	15	10	5
PUMPKIN SEED	20	15	10	5
PALM SUGAR	15	15	15	15

TABLE 1: The pancake mix with the incorporation of pumpkin seed with quinoa flour, banana flour, wheat flour, and palm sugar was done with the formulated four variations. In variation 1 the composition of quinoa flour, wheat flour, banana flour, pumpkin seed and palm sugar is 30g, 15g, 20g, 15g, and 20g, respectively. In variation 2 it is 40g, 15g, 15g, 15g, 15g. In variation 3 50g, 15g, 10g, 15g, 10g. In variation 4 60g, 15g, 5g, 15g, 5g, respectively.

TABLE 2: ORGANOLEPTIC EVALUATION OF PANCAKE MIX

	VARIATION 1	VARIATION 2	VARIATION 3	VARIATION 4
APPEARANCE/ COLOUR	6.86±0.860	6.8±0.691	7.866±0.827	8.133±0.610
FLAVOUR	6.73±1.156	6.8±0.714	7.933±0.794	7.566±0.850
TEXTURE	6.73±0.937	6.7±0.639	7.766±0.846	8±0.718
TASTE	6.733±0.681	6.7±0.673	8.2±0.937	7.866±0.607
OVERALL ACCEPTANCE	6.8±0.772	6.966±0.739	8.033±0.668	8.1±0.546

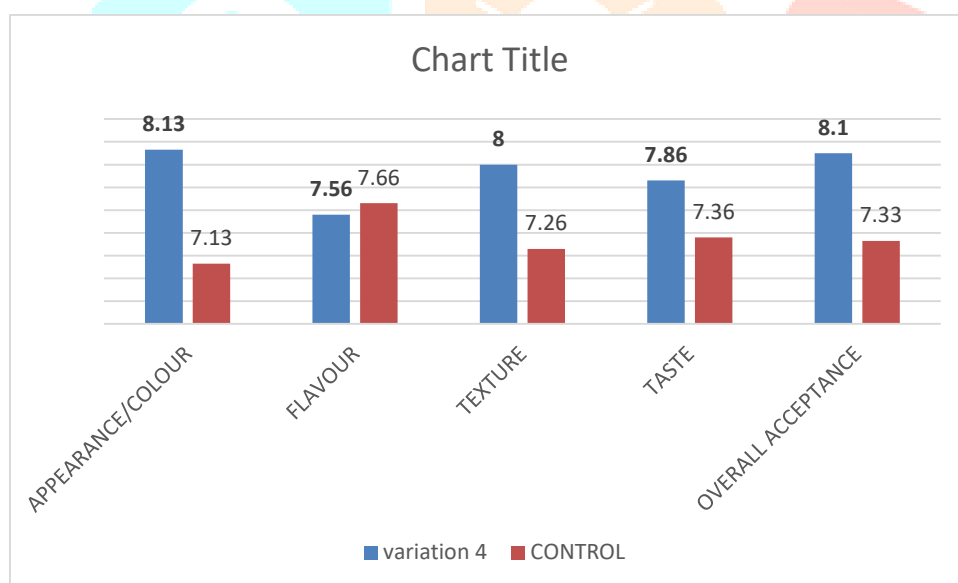
FIGURE 1: FIGURE OF ORGANOLEPTIC EVALUATION OF PANCAKE MIX



The developed pancake from the formulated pancake mix, sample 1, 2, 3, and 4 were evaluated 30 panel members. The products were evaluated based on the preference on appearance/colour, flavour, texture, taste, and overall acceptability using likeability scale. The table indicates the average sensory score of the formulated pancake mix. Among the four variations, fourth variation was highly accepted in all sensory characteristics.

TABLE 3: MEAN SENSORY SCORE OF CONTROL AND FORMULATED PANCAKE MIX

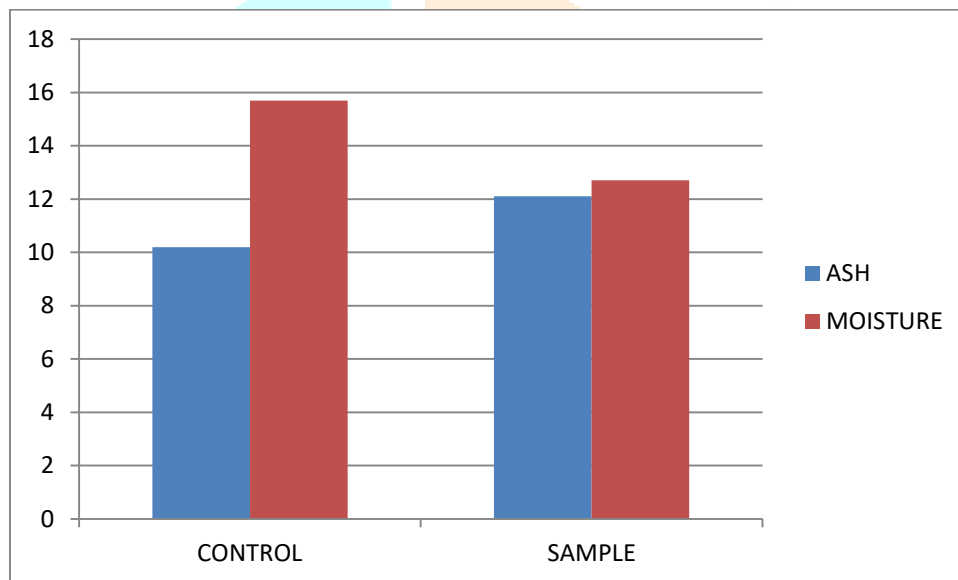
	APPEARANCE/ COLOUR	FLAVOUR	TEXTURE	TASTE	OVERALL ACCEPTANCE
VARIATION 4	8.133	7.566	8	7.866	8.1
CONTROL	7.137	7.666	7.266	7.366	7.33

FIGURE 2: FIGURE OF MEAN SENSORY SCORE OF CONTROL AND FORMULATED PANCAKE MIX

From the above table, it was clear that the formulated pancake mix has better score than the control and based on the organoleptic evaluation the variation IV has the highest score among the other variations. Hence the highest scored overall acceptability variation IV has been used for the further analysis.

TABLE 4: PHYSIO-CHEMICAL ANALYSIS OF PANCAKE MIX

Criteria	Control	Sample
ASH	10.2	12.1
MOISTURE	15.7	12.7

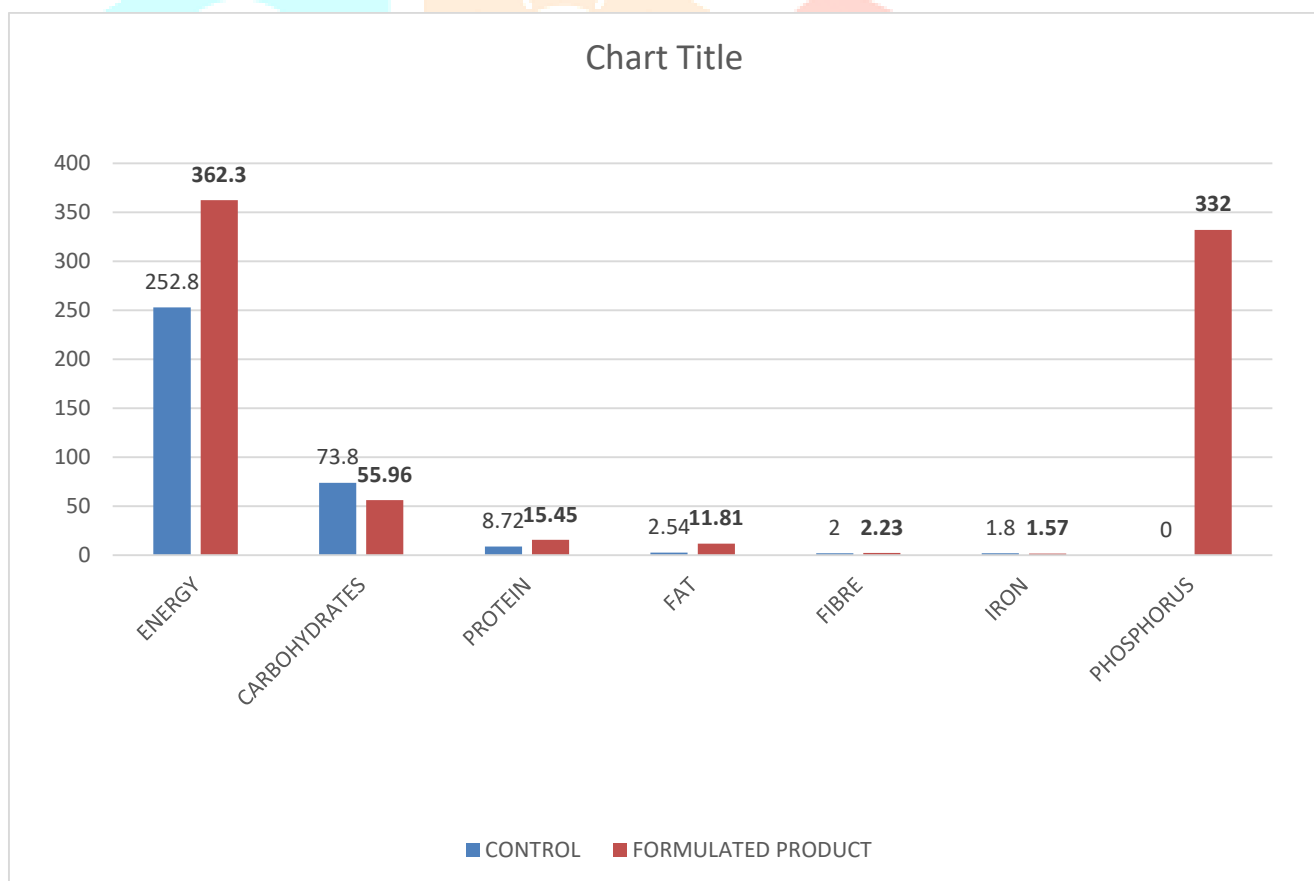
FIGURE 3: FIGURE OF PHYSIO-CHEMICAL ANALYSIS OF PANCAKE MIX

The experimental pan cake mix (Variation IV) has got the higher score of ash value when compared with control. The ash content of the control and sample was (10.2 & 12.1). The moisture content of sample was lesser than control, lower the moisture content helps to minimize the growth of microorganism and food spoilage. The moisture content of the control and sample was (15.7 & 12.7) respectively.

**TABLE 5: NUTRITIONAL ANALYSIS OF PANCAKE MIX
CONTROL AND SELECTED VARIATION**

S.NO	PARAMETERS	CONTROL	SELECTED VARIATION
1	ENERGY	252.80	362.3
2	CARBOHYDRATES	73.80	55.96
3	PROTEIN	8.72	15.45
4	FAT	2.54	11.81
5	FIBRE	2	2.23
6	IRON	1.8	1.57
7	PHOSPHORUS	-	332

FIGURE 4: NUTRIENT ANALYSIS OF PANCAKE MIX



The nutrient analysis of the selected variation was done to check the nutritional composition of the formulated product. From the graph the formulated product has secured high score than the control.

TABLE 6: COST CALCULATION OF PANCAKE MIX

S.NO	INGREDIENTS	COST OF INGREDIENTS PER (Kg) (rupees)	VARIATION 4 (g)	COST (rupees)
1	Quinoa	300	60	18
2	Wheat flour	55	15	0.825
3	Banana	78	5	0.39
4	Pumpkin seed	650	5	3.25
5	Palm sugar	250	15	3.75

Raw material count = 26.215

Overhead charges (40%) = 15

Processing & packaging = 15

Total cost = 56/-

The price for 100g of the formulated pancake mix is 56/- including all the overhead charges.

IV. DISCUSSION

The study was carried out to develop pancake mix with the incorporation of pumpkin seed with quinoa flour, wheat flour, banana flour and palm sugar. The developments of pumpkin seed incorporated pancake mix possess major nutrients such as energy, carbohydrates, protein, fat, fibre, iron and phosphorous. And also the sensory character of the pancake mix were most acceptable according to the consumer preference which authenticates it could be a best choice of a breakfast meal or snacks.

The selected variation 4 was taken for nutrient analysis. The proximate analysis includes nutrients like energy content was Energy 362.3kcal, carbohydrates 55.96g, protein 15.45g, fat 11.81g, fibre 2.23g, iron 1.57mg and phosphorus 332mg. The analysis was done by using standard procedures.

CONCLUSION

The study was carried out to develop pancake mix with the incorporation of pumpkin seed with quinoa flour, wheat flour, banana flour and palm sugar. The developments of pumpkin seed incorporated pancake mix possess major nutrients such as energy, carbohydrates, protein, fat, fibre, iron and phosphorous. And also the sensory character of the pancake mix were most acceptable according to the consumer preference which authenticates it could be a best choice of a breakfast meal or snacks.

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