



Physico Chemical and Sensory Characteristics of Wheat Flour Bun Supplemented with Carrot Pomace Powder

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Abstract— This study aimed to find on preparation and quality evaluation of carrot pomace powder using buns different level of carrot pomace powder. The quality of buns was determined on the basis on physico -chemical characteristics: Moisture content, Ash content, Fat content, Protein content, and sensory analysis including sensory attributes as colour, flavour, texture, taste and overall acceptability. The moisture content of buns was found to be increased with increase in proportion of carrot pomace powder. The mean overall sensory acceptability scores of more than 8.60 for bun samples upto 2.5% carrot pomace powder indicated the commercial scope for manufacturing good quality buns with carrot pomace powder. The bun samples prepared by adding Carrot pomace have lead to increase in the water absorption while the arrival time and dough stability were decreased. So fiber as a food industry by product is recommended to be used as food additives to gain nutritional and healthy benefit.

Index Terms- Buns, Carrot pomace powder, Wheat Flour

I. INTRODUCTION

Carrot is seasonal root vegetables utilization in the form of raw, cooked vegetable, sweet meats or as juice and beverages. Carrot is a rich source of β -carotene and contains other vitamins, like thiamine, riboflavin, vitamin B-complex and minerals (Walde et al., 1992). Carrot is also an excellent source of calcium pectate; an extraordinary pectin fiber that has the cholesterol lowering properties. It has a property to reduce the risk of high blood pressure, stroke, heart disease and some type of cancer (Bakhru, 1993) Carrot pomace is a by-product obtained during carrot juice processing. The juice yield in carrots is only 60-70%, and even up to 80% of carotene may be lost with left over carrot pomace (Bohm et al., 1999). Due to the high dietary fibre content, the co-products could be used to change physico chemical properties of diets. Fruits and vegetable by-products such as apple, pear, orange, peach, blackcurrant, cherry, artichoke, asparagus, onion, carrot pomace (Grigelmo-Miguel and Martin-Belloso, 1999; Ng et al., 1999; Nawirska and Kwasnievska, 2005). It also has good residual amount of all the vitamins, minerals and dietary fibre. So far the left over pomace, received after juice extraction of carrots, does not find proper utilization. Moreover, vegetable pomace has become a source of environmental problem. The carrot pomace is quite perishable as it contains about $88 \pm 2\%$ of moisture. Drying or dehydration is the useful means to increase the shelf life of perishable food for further use (Roberts et al., 2008). The effect of pre-treatment conditions on the physico-chemical parameters of carrot juice and the effects of different blanching solutions and blanching times (1-5

min) on the quality of carrot juice have been studied (Bin-Lim and Kyung-Jwa, 1996, Sharma et al., 2007). The present study was carried out to find out the effect of addition of different proportion of carrot pomace powder with 2.5% nutritional composition and sensory characteristics.

II. MATERIAL AND METHOD

A. Procurement of Material

The materials such as carrot, carrot pomace, wheat flour and packaging material will be procured from the local market of Allahabad.

B. Preparation of buns

The materials used in the present study were brought from the local market. These materials were food industry by products, carrot (root vegetables) pomace powder. These ingredients included: wheat flour, compressed baker's yeast, sucrose, salt and shortening the dough was sheeted to a thickness of 3.5 mm with the help of an aluminium platform and frame. The sheeted dough was cut in to a square shape using a moulder. The cut dough was transferred to aluminum tray. The buns were baked in an electric oven maintained at 105°C for 3hour. The baked buns were cooled for about 30 minutes, packed into LDPE bags for further analysis

C. Nutritional composition

Moisture content, Ash content, Fat content in different buns samples were determined as per standard methods (AOAC, 1990).

D. Bun Making

Bread was made ingredients using the 100 g straight dough method. The basic formula included 100 g of flour, 2 g of compressed baker's yeast 1 g of sucrose, 2 g of salt, 1 g of shortening, water as needed, and different concentrations of carrot pomace, which has been added at 0, 2.5, 5, 7.5 and 10 % concentration on a flour replacement basis. The dough was fermented for 60 min. at 30 °C followed proof period for 15 min. Breads were baked at 105 °C for 3hour.

TABLE 1: Treatment combinations used for the preparation of bun

S.No	Treatments	Refined flour(g)	Carrot Pomace powder (%)
1	control	100	0
2	T1	97.5	2.5
3	T2	95.0	5.0
4	T3	92.5	7.5
5	T4	90	10



T0 – The product was prepared without supplementing CP to the flour.

T1– The product was prepared by supplementing the wheat flour with 2.5% CP.

T2 – The product was prepared by supplementing the wheat flour with 5% CP.

T3– The product was prepared by supplementing the wheat flour with 7.5% CP.

T4- The product was prepared by supplementing the wheat flour with 10% CP.

3. Result and Discussion

The analysis included the contents of moisture, protein, ash, fat was determined. The carrot pomace powder contained 8.99% moisture, 6.68% protein, 0.71% ash, 15.51% fat. As shown in table 2. The moisture, protein, ash, fat were determined for the control bun (100% wheat flour) and the bun supplemented with different levels (0, 2.5, 5.0, 7.5 and 10%) of carrot pomace as indicated. supplementation of bun with carrot pomace powder associated with the increasing of moisture, protein, ash, fat. This increase in moisture, protein ash and fat due to relative increase of these nutrients in carrot pomace powder. The protein content increase in carrot pomace powder resulted in increased levels of ash. Protein content contributes to the ability of dough to rise and maintain its shape as it baked. Increases in the proportion of glutenin in the blend generally increased mixing time. Ash content is an indication of the level of minerals present in a food material. This suggests that carrot pomace can help in boosting the mineral content of wheat bread. Fiber has been reported to have a high water binding capacity, therefore increase in fiber content

TABLE 2: Effect of Carrot pomace powder on Physico- chemical characteristics of buns

	Moisture Content	Ash	Fat	Protein
S0	8.72	0.60	15.09	6.57
S1	8.99	0.71	15.51	6.68
S2	9.37	0.98	15.94	6.92
S3	9.84	1.08	16.52	7.29
S4	10.28	1.18	16.78	7.56

TABLE3: Effect of Carrot pomace powder on Sensory characteristics of buns.

	Colour	Taste	Texture	Flavour	Overall Acceptability
S0	8.23	8.43	8.13	8.10	8.22
S1	8.57	8.83	8.50	8.50	8.60
S2	7.40	7.60	7.27	7.17	7.36
S3	7.10	6.70	6.90	6.57	6.82
S4	6.23	6.20	6.70	6.20	6.33

III. SENSORY ANALYSIS

Data indicated that the score of bun containing 2.5% carrot pomace flour were found to be most

acceptable. At 2.5% level of incorporation, all the attributes scored highest score level. The colour scores of bun with 2.5% carrot pomace flour reached maximum than to rest of the proportions. Thus, incorporation of carrot pomace flour 2.5% level improved the sensory attributes namely texture, flavor, color, and over all acceptability. The nutritional quality of the developed bun was enhanced due to the addition of carrot pomace flour. Thus, the sensory evaluation depicts that highest amount of carrot pomace powder that can be incorporated to develop acceptable bun was 2.5% i.e., sample T1 was the best regarding all sensory attributes. Sensory attributes of bun samples packed in LDPE were evaluated in fresh condition. Hedonic scale rating was used for evaluation of bun samples. The result of sensory characteristics of bun samples from wheat flour, carrot pomace powder and other ingredient and packed in LDPE were evaluated in terms of condition at ambient temperature. Hedonic scale rating was used for evaluation of bun samples different attributes namely: colour, flavour, taste, texture and overall acceptability. The mean overall acceptability scores of more than 8.6 for bun sample upto 2.5% carrot pomace powder indicated the commercial scope for manufacturing good quality.

IV. CONCLUSION

It is concluded that highly nutrition formulated from different combination of wheat flour, carrot pomace powder. Bun may be prepared by incorporating a level of 2.5% carrot pomace powder without adversely affecting the overall acceptability of the product. Among five treatments the first treatment i.e., 100:2.5 sample was found to be the best depending upon different sensory attributes. The colour of the biscuits varied due to variation in level of CPP incorporation and chemical changes like color, texture, flavor, and over all acceptability. This was so because the values for all sensory attribute were maximum. The texture parameters are having acceptable results at 2.5% incorporation of carrot pomace powder.

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