

Summary

Two different dietary sources were used in this study. i.e, corn cobs and carrot roots powders. The dietary sources were mixed with wheat flour (72% extraction) at different ratios (90 : 10 , 85 : 15 , 80 : 20 , and 75 : 25) the chemical properties , rheological characteristics and the organoleptic properties for both the raw materials and different mixtures were studied. The results can be summerize in the following points :-

1.The chemical analysis :-

The chemical analysis of corn cobs , carrot roots powders, wheat flour (72% ext.) and shorts showed that :

Ash content of carrot roots powder were higher (11.4 %) than of corn cobs powder (2.45%) while, it was about 0.46% in wheat flour (72% ext.) and 3.85% in shorts. Carrot roots powder have altitude ash content (11.4%) which may be attributed to its high contents of potassium (2.1%), sodium (1.6%) calcium (0.42) , phosphorus (0.34%) and magnesium (0.17%) .

Crude protein of carrot roots powder and corn cobs powder were 6.7% and 4.62% respectively compared to wheat flour (72% ext.) 9.84% and shorts which have 15% .

The starch contents of both corn cobs powder and carrot roots powder were the some (8.12% and 8.25%) while wheat flour (72%ext.) and shorts contain 83.5% and 21.15% respectively .

The phytate phosphorous was absent in both corn cobs and carrot roots powders while wheat flour (72% ext.) had 0.08% and shorts had 1.4% .

The beta carotene in carrot roots powder and corn cobs powder were 36.66 ppm and 7.3 ppm respectively while wheat flour 72% ext. had 2.8 ppm .

The total dietary fiber contents in corn cobs and carrot roots powder were 81.32% and 46.55% respectively while it was 2.8% in wheat flour (72% ext.) and 51% in shorts .

Soluble dietary fiber were 39.38% and 38.03% for corn cobs powder and carrot roots powder respectively .

Insoluble dietary fiber was high in corn cobs powder (41.94%) and low in carrot roots powder (8.52) .

Results demonstrate that both corn cobs powder and carrot roots powder have high contents of total pectic substances 35.38% and 34.53% respectively. It could be concluded that carrot roots powder can use in high soluble dietary fiber bread making while corn cobs powder can be use in the manufacture of high insoluble and soluble dietary fiber bread .

Concerning some choice minerals contents ; Fe , Cu , Zn , Mn and Pb found to be 280 , 32 , 85 , 178 and zero (ppm) for corn cobs powder ., 423 , 37 , 54 , 29 and zero (ppm) for carrot roots powder , 18 , 21, 20 , 25 and zero (ppm) for wheat flour (72% ext.) respectively .

2. Chemical analysis of balady bread manufactured from corn cobs and carrot roots powders :-

Results showed that addition of corn cobs or carrot roots powders in replacement rates 10 , 15 , 20, and 25% of wheat flour (72% ext.) increased the dietary fiber contents ash and reduced sugars in all rates while decreased starch, crude protein, ether extract and phytate content.

3. The rheological properties :-

3.1. Farinogram properties :-

The results showed that addition of corn cobs powder at replacement ratios 10 , 15 , 20 and 25% to wheat flour (72% ext.) increased water absorption which may be due to the strong water binding ability of fiber . Also the arrival time increased at all levels except at level of 10% .

The results showed that addition of carrot roots powder increased water absorption while the arrival time decreased at 10% and 15% replacement and increased gradually at levels 20% and 25% also dough development time increased and dough stability increased at all ratios of addition .

3.2. Extensogram properties :-

The addition of corn cobs powder at rates 10 ,15 ,20 and 25% replacement of flour (72% ext.) decreased dough extensibility and dough energy while resistance to extension increased it could be

concluded that corn cobs powder addition weakened the dough properties .

The addition of carrot roots powder at the abovementioned ratios gradually decreased dough extensibility and dough energy. Addition of carrot roots powder showed increase in resistance to extension .

4. Organoleptic evaluation :-

The results showed that balady bread supplemented with 10% corn cobs powder showed no difference in crust color, aroma, Taste , Texture and overall acceptability compared with control. Gradual reduction was noticed in all the parameters as the ratios of corn cobs powder increase .

About balady bread supplemented with 15, 20 , and 25% carrot roots powder showed lowest values in all parameters compared with control.

The organoleptic properties of toast bread producing by mixing wheat flour (72%ext.) with different ratio of corn cobs and carrot roots powder showed gradual reduction in its volume by increasing replacing ratios.

5. Improvement of high fiber bread:-

L-ascorbic acid was added with different ratios 50, 75, 100, 125 and 150 p.p.m. to high fiber bread mixture containing 15% corn cobs powder or carrot roots powder and 85% wheat flour (72% ext.).

The results showed an improvement in both rheological and organoleptic properties especially at 100 p.p.m of ascorbic acid in balady bread and Toast bread.

From the results it could be concluded that corn cobs powder and carrot roots powder could use in manufacture of high fiber bread with less phytate with higher iron contents than shorts bread.