

INSTANT NOODLES WITH PARTIAL SUBSTITUTION OF WHEAT FLOUR BY ROOTS AND TUBERS WHOLEMEAL

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Abstract

This work intended to the development of instant noodles through partial replacement of wheat flour (WF) by 5 and 10% of wholemeal of purple sweet potato (SP5 and SP10), beet (B5 and B10) and carrot (C5 and C10) and 1 and 2% of turmeric wholemeal (T1 and T2). The work was divided in two parts. First, the carrot (C), sweet potato (SP) and beet (B) flours were processed. The turmeric flour (T) was obtained in the local market. The flours were analyzed regarding their chemical composition. Second, the instant noodles were processed twice and assessed regarding their contents of post-fried fat and after the rehydration they were assessed the loss of fat, increase in weight, loss of soluble solids and firmness (instrumental texture).

Key words: instant noodles, cooking test, fat content.

Introduction

The consumption of instant noodles (IN) has showed a significant increase among the pasta category. IN are a deep-fried product and contain a high level of residual fat. Due to the great concern about health and consumption of high fat content products, once they are related regarding cardiac diseases and obesity, there is a need to include nutritional components to promote healthy IN. The aim of this work was the increase of nutritional and functional components in the instant noodles production through the partial replacement of wheat flour by 5 and 10% purple sweet potato, beet or carrot wholemeal or 1 and 2% turmeric flour.

Results and Discussion

The results demonstrated in Chart 1 for the chemical composition shows that the samples have higher contents of ash and dietary fiber and lower total starch content than the WF.

Chart 1. Chemical composition of the raw materials of tree replicates of each analysis (% dry basis).

Sample	WF	B	C	SP	T
Fat	1.37 ^b	0.4 ^d	2.7 ^a	0.58 ^{cd}	0.94 ^{bc}
Ash	0.62 ^e	8.53 ^a	6.18 ^b	2.55 ^d	5.36 ^c
Protein	12.67 ^b	16.74 ^a	5.51 ^d	7.28 ^c	5.75 ^d
Dietary fiber	3.80 ^e	27.85 ^b	30.8 ^a	12.40 ^d	23.71 ^c
Total starch	65.12 ^a	0.72 ^d	5.97 ^d	47.62 ^b	36.42 ^c

The results in the Chart 2 shows the contents of post-fried and the characteristics after rehydration, loss of fat, increase in weight, loss of soluble solids and firmness.

Chart 2. Results of post-fried fat and technologic characteristics after rehydration.

Sample	Fat (%)	Fat Loss(%)	Increase in weight (%)	SS Loss (%)	Firmness (N)
WF	23.52 ^{cd}	28.33 ^d	148.36 ^{ab}	11.21 ^{cd}	1.28 ^a
SP5	23.00 ^{def}	41.21 ^{ab}	133.68 ^{cd}	11.45 ^{cd}	1.19 ^a
SP10	23.43 ^{cd}	44.08 ^a	129.86 ^{cd}	10.58 ^d	0.48 ^c
B5	27.74 ^a	40.22 ^{ab}	159.75 ^a	13.35 ^{ab}	1.27 ^a
B10	26.06 ^b	35.48 ^{bc}	154.16 ^a	14.61 ^a	1.19 ^a
C5	24.87 ^{bc}	30.96 ^{cd}	121.53 ^d	12.32 ^{bc}	1.18 ^a
C10	24.31 ^{cd}	39.95 ^{ab}	138.96 ^{bc}	13.30 ^{ab}	1.20 ^a
T1	22.25 ^{ef}	42.90 ^a	151.11 ^{ab}	12.48 ^{bc}	1.00 ^b
T2	21.76 ^f	41.53 ^{ab}	153.67 ^a	11.52 ^{cd}	1.31 ^a

It was observed that the addition of roots and tubercles flours caused a higher loss of fat during the rehydration and there was not any difference in the texture of the samples when compared with WF IN, unless SP10 and S1. For the other parameters analyzed, there were not any significant differences.

Conclusions

The samples with higher substitution levels showed a greater nutritional and technological viability, once they showed better results in relation to the same wholemeal replacement, and when they are compared with the WF IN.

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