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Effect of bioactive compounds of defatted flaxseed meal on rheological and sensorial properties of toast and cake

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Abstract

This study was conducted to investigate the chemical composition and the storage stability of flaxseeds defatted meal fractions as food ingredients, phenolic contents and antioxidant activity of flaxseed meal extracts. Effect of substitution of wheat flour with different concentrations of defatted flaxseeds meal on rheological and sensory properties of toast bread, and cake was also investigated.

The results indicated that flaxseed defatted meal is rich in protein, fiber and minerals and poor in its carbohydrate content comparing with whole wheat flour and wheat flour (72%). it contains 34.65 protein, 37.08 % crude fibers, 5.53% ash, 2.35 % fats and 5.972% moisture. While it had carbohydrate content of 14.408%.The results indicated that there were no significant ($P \leq 0.05$) changes in the peroxide values over the 105 day of storage. The results also showed that free fatty acid value was slightly increased during the storage time. Polyphenolic contents were varied from 360.14 to 595.76 mg/100g-1 DW according to the extraction solvent used. The results indicated that the flaxseed meal extracts showed a strong antioxidant activity against 1,1-diphenyl-2-picrylhydrazyl (DPPH) .The effective concentration 50 % (EC50) was 1.323 and 1.981mg/mg DPPH and antiradical efficiency values were 0.756 and 0.505 for methanol + water and ethanol +water respectively.

Rheological properties of the dough's were found to be affected with flaxseed meal addition. The results showed that replacement 5% of wheat flour by flaxseed meal flour increases the water absorption and development time of the dough. While the stability and the energy of the dough was decreased by addition of flaxseed meal. The results of sensory evaluation proved that toast and cake enriched with defatted flaxseed flour up to 10% was acceptable to the consumer. The results of the sensory evaluation showed that the samples produced by replacement 5% of the wheat flour

with defatted flaxseed meal had no significant differences for most of the sensory characteristics.

Keywords: *Flaxseed meal, toast bread, cake, Phenolic compounds, antioxidant activity, sensory evaluation*