ENHANCEMENT OF SOME BAKERY PRODUCTS BY THE PROTEINS AND DIETARY FIBERS OBTAINED FROM SOME CORN STARCH AND GLUCOSE PLANT WASTES

Submitted By

Mohamed Mahmoud Mohamed Shaltout

B.Sc. of Agricultural Sciences, (microbiology)Faculty of Agriculture,

Ain Shams University, 1991

Diploma in Environmental Sciences, Institute of Environmental Studies & Research, Ain Shams University, 2012

A Thesis Submitted in Partial Fulfillment

Of

The Requirement for the Master Degree

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Environmental Sciences

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APPROVAL SHEET

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Department of Environmental Agricultural Sciences
This thesis Towards a Master Degree in Environmental Sciences

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2019

سورة البقرة الآية: ٣٢

To my Father, and Sisters

To my Mother 's soul

To my Wife and Daughters

For their encouragement, help and infinite love which I will never forget

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Abstract

In recent years, health benefits have become a critical marketing factor of food products primarily because of increased consumer awareness of the role of diet in health promotion and disease prevention. Wet-milling of corn produces four major co-products, bran, gluten feed, germ meal, and gluten meal, These co-products together represent about 25 – 30% of the corn processed. Bakery products provide ideal matrix by which functionality can be delivered to the consumer in an acceptable food. In functional bakery products, it is important to meet the consumer's requirements in terms of appearance, taste and texture. Hence, the objective of this study aimed to increase the nutritional and biological value of pan bread by replacing part of wheat flour with levels (0, 5, 10, 15 and 20%) of corn milling by-products especially with high protein or fiber content (i.e. corn and corn gluten meal) were used in replacing part of wheat flour to produce pan bread. The effect of blending level of corn bran, corn gluten meal and mix of them with wheat flour on the physico-chemical properties (protein, crude fiber, fat, ash and total carbohydrates), baking properties of pan bread were investigated. Blending of wheat flour and corn gluten meal and mix of (corn bran, corn gluten meal) significantly increased the protein, dietary fiber, fat and ash contents of pan bread samples, while blending of corn bran increased dietary fiber, fat and ash contents of pan bread. Blending of wheat flour and corn by-products especially corn bran decreased total carbohydrates and energy (Energy cal./100gm). Breads from mix of (corn bran, corn gluten meal) blends had higher loaf volume as compared to corn bran and corn gluten meal pan breads. Acceptable pan bread products could be produced by blending corn byproducts with wheat up to 20% level after more toxicological and human safety studies.

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