شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

يجب أن

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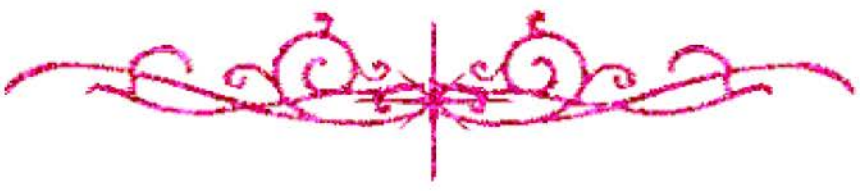
شبكة المعلومات الجامعية

بعض الوثائق الأصلية تالفة



FORTIFICATION OF SOME BAKERY PRODUCTS WITH PROTEIN CONCENTRATES

BY

WAFAA KAMEL BAHGAAT
B.Sc. Agric. Sci. (Food Sci. and Technol.), Ain Shams Univ., 1991

Thesis submitted in partial fulfillment
of
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ABSTRACT

Wafaa Kamel Bahgaat, Fortification of Some Bakery Products with Protein Concentrates. **Unpublished Master of Science, Food Sci. Dept., Fac. of Agric, Ain Shams Univ., 2000.**

Wheat flour (72% extract) was fortified with 5, 10 and 15% of either, legume flours and their protein concentrates (ungerminated and germinated soybean, field pea, sweet lupine) or sweet whey powder (SW) and ultrafiltated-whey protein concentrates (WPC) to produce high protein pan bread and biscuit. Legume flours and their protein concentrates prepared from germinated seeds had higher protein content than the corresponding ungerminated samples. Germination process reduced significantly trypsin inhibitors of the legume products. The functional properties of legumes products showed that legume protein concentrates had significantly higher water absorption corresponding to the legume flours. Germination process reduced significantly the oil absorption of the legume products except for field pea. All legume flours recorded higher nitrogen solubility than protein concentrates at different pH values. Farinograph properties (water absorption, arrival time, dough development time, mixing tolerance index and degree of softening) increased in wheat-legume products blends with increasing the legume ratio with some exception. Substitution of wheat flour with legume products reduced significantly the wet and dry gluten of the blends than the control (100% wheat flour). Generally, pan bread and biscuit fortified with 15% of germinated soy protein concentrate exhibited the maximal protein content, being 19.72% and 14.47%, respectively. The organoleptic properties of pan bread and biscuit fortified with 10% of germinated soybean and lupine protein were highly acceptable.

Ultrafiltrated-whey protein concentrate (WPC) of 78% protein and 4% lactose and sweet whey powder (SW) of 12% protein and 70% lactose were used in this study. WPC had significantly higher water and oil absorption capacities and emulsion capacity and stability than SW. Nitrogen of SW was more soluble in water at different pH values than WPC. Fortification of wheat flour with different levels of WPC decreased water absorption and dough

stability time and increased the arrival time, dough development time mixing tolerance index and degree of softening with increasing the WPC levels in the blends. Replacement of wheat flour with 15% WPC improved the protein content of pan bread from 12.44 to 20.5% and biscuit from 8.03 to 15.4%. The fortification of wheat flour with 5% or 10% WPC generally improved organoleptic properties of the resultant bread and biscuit.

Key words: Legume seeds, soybean, field pea, sweet lupine, legume protein concentrates, germination, whey protein concentrate, chemical composition, Trypsin inhibitor, functional properties, blends, dough, gluten rheological properties, pan bread, biscuit, high-protein bakery products, sensory evaluation.

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