بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

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

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تحفظ هذه الأقراص المدمجة بعيدا عن الغبار

MONA MAGHRABY

NUTRITIONAL AND BIOLOGICAL EVALUATION OF PASTA FORTIFIED WITH QUINOA AND BARLEY FRACTION D AS FUNCTIONAL FOOD

By

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B.Sc. Home Economics,Fac. Home Eco.HelwanUniv., 1999
M.Sc.Nutr .Food.Sci.,Fac. Home Eco. MinufiyaUniv., 2013

THESIS

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Title of Thesis: Nutritional and Biological Evaluation of Pasta Fortified with Quinoa and Barley Fraction D as Functional Food.
Supervisors: Prof. Dr. Enayat Mahmoud Hassan.
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ABSTRACT

This study aimed to improve the nutritional value of pasta, and study the effect of the prepared pasta supplemented with barley fraction D (F.D) (high β-glucan) and quinoa added to pasta products, on lipid profile, liver and kidney functions in rats fed on hypercholesterolemic diet and also producefunctional food for patients with gluten sensitivity (celiac disease). Semolina and maize flour, used to make pasta, were replaced by different ratios of (F.D) and quinoa flours (10, 20, and 30% of F.D or quinoa). Moreover,quinoa flour used to make pasta was replaced by different ratios of (F.D)(10, 20 and 30%).The chemical composition of raw materials and prepared pasta,cooking loss, texture, color values (L*, a*, b*) were evaluated,the most acceptable samples were used for determining of the sensory evaluation and consumer acceptance as well,of amino acids, minerals content, total phenols and biological experiment. Blood samples of all experimental rats were taken at the beginning, after induction (4 weeks) and at final of the experiment (10 weeks). Results indicated that cooking loss was decreased for semolinaand maize pasta containing F.D. Also, cooking loss was decreased for quinoapasta containing F.D compared to control.The pasta of semolina, maize and quinoa fortified by F.Dwere found to be significantly ($p<0.01$) more firm than those made with quinoa flour, especially S_4,M_4 and Q_4,which contain 30% F.D. The controlof semolina and maize pasta were significantly ($p<0.01$) lighter than the pasta containing F.D and quinoa flour. The addition of F.D flour remarkably increased the protein, fat, fiber, ash, and amino acids content of pasta. Quinoa pasta (Q1, Q2, Q3 and Q4) had high nutritional value than semolina and maize pasta. In the biological evaluation, the results showed that positive group (C 2) was the major risk factor for induce hypercholesterolemia. Diet fortified by barley F.D and quinoa flour at different percentages improved the lipid profile, liver and kidney functions, and body weight, compared with positive group (C2). Histopathological changes were improved.The last group (G8) which was fed on 80% quinoa + 20 % F.D is similar to a negative control in most parameters and outperformed it in high density lipoprotein (HDL).Data concluded the possibility of producing pasta relatively higher in fiber, β-glucan and protein without considerable bad effects on its cooking quality and sensory properties, and also has many benefits for health of celiac disease, high cholesterol patients and heart diseases.

Key words:β-glucan, quinoa, maize, hypercholesterolemic, lipid profile, liver and kidney functions, histological examinations

DEDICATION

I dedicate this work to my ***Father*** *and to spirit of my* ***Mother*** *as well as to my****Husband*** *and* ***my Kids*** *for their contribution and their patience in the practical part for this study.*

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