

USING TOFU AND PROCESSED CHEESE IN THE PREPARATION OF SOME FUNCTIONAL FOODS

By

AMIRA SABER ABD EL-SALAM ISMAIL

B.Sc. Agric. Sci. (Food Science), Fac. Agric., Cairo Univ., 1999

M.Sc. Agric. Sci. (Food Science), Fac. Agric., Cairo Univ., 2008

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APPROVAL SHEET

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APPROVAL COMMITTEE

DR. FATMA ELZAHRAA AMEN EL SHERIEF.....
Professor of Home Econ., Fac. Home Econ., Monofya University

DR. MAGDA IBRAHIM HASSAN.....
Ass. Professor of Food & Nutrition, Fac. Agric., Cairo University

DR. SHAFIKA ABD EL-HAMID ZAKI.....
Professor of Food & Nutrition, Fac. Agric., Cairo University

Date: / /2018

SUPERVISION SHEET

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SUPERVISION COMMITTEE

DR. SHAFIKA ABD EL-HAMID ZAKI
Professor of Food & Nutrition, Fac. Agric., Cairo University

DR. HALA MAHMOUD NAGI
Lecturer of Home Economics, Fac. Agric., Cairo University

DR. ABEER FOUAD ZAYAN
Head Research of Dairy Science, Food Technology Institute,
Agricultural Research Center. Ministry of Agriculture

Name of Candidate: Amira Saber Abd El-Salam Ismail **Degree:** Ph.D.
Title of Thesis : Using tofu and processed cheese in the preparation of some functional foods.

Supervisors : Dr. Shafika Abd El-Hamid Zaki
Dr. Hala Mahmoud Nagi
Dr. Abeer Fouad Zayan

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Branch : Home Economics

Approval: / /2018

ABSTRACT

The use of soy as food ingredient has recently grown in food industry as a result of its health benefits, technological and functional properties. The study was carried out to prepare functional products such as spreadable tofu, processed tofu cheese and croissants. A preliminary experiment was carried out and from the organoleptic assessment to select the base components. Six formulated spreadable tofu with different flavors were prepared; control without addition, and with chopped green olives, ground black pepper + chopped green peppers, sugar; guava pulp and peach pulp. To evaluate the effect of tofu on quality of processed cheese, four treatments of processed tofu cheese were formed, control processed ras cheese, T25, T25, T50, and T75 with 25, 50 and 75% tofu, respectively. Moreover seven croissant samples were prepared with spreadable tofu blends and five samples with processed tofu cheese treatments as filling materials.

The prepared samples were evaluated chemically, physiologically, microbiologically and organoleptically to ensure different qualities, as fresh and after storage at $5\pm1^{\circ}\text{C}$ for 3 month except croissant samples stored at room temperature up to 3 days.

The obtained results indicated that the spreadable tofu blends exhibited high antioxidants activities, and acceptable physiological properties. The sensory test of tofu blends proved the superiority of compared to control. Sensory evaluation of tofu blends confirmed that T1 and T4 showed the highest significant total acceptability evaluation scores, followed by T5 and then scores of T3 and T2. While, organoleptic test of processed cheese analogues proved the superiority of T25 (25% tofu), followed by T50 and control. While, there were no significant differences were observed among in total acceptability scores of control and T50. The croissant samples confirmed that the croissant samples with the tofu blends were more acceptable than the control sample. Sensory properties of croissant with processed tofu cheese analogues samples, Cp1 and Cp2 exhibited the best assessed parameters. The microbiological investigation assured the safety of the blends. The recommended daily allowances of protein, fat, calorie and carbohydrate were calculated for children aged 1-3 and 4-8 years old for spreadable tofu blends, processed cheese analogues and croissant pastry samples.

Key words: Function properties , croissant pastry, spreadable tofu, processed cheese analogues , organoleptic test, safety, physiological properties,

DEDICATION

*I dedicate this work to whom my heart felt thanks; to my parents especially to the spirit of my father as well as my husband **Sayed**, my son **Mohanad** and my daughters **Hana** and **Kenzy** for their patience and help, and all friends for all the support they lovely offered along the period of my post graduation.*

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الدكتور: هالة محمود ناجي

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المستخلص العربي

وقد ازداد مؤخرًا استخدام الصويا في صناعة الأغذية وذلك لفوائده الصحية وخصائصه التكنولوجية والوظيفية. الهدف من الدراسة هو إعداد منتجات وظيفية من التوفو قابلة للفرد، ومسابهات الجبن المطبوخ و أضافه كلا منهما الى الكرواسون كحشو لرفع قيمته الغذائية. أجريت تجربة أولية بناءً على التقييم الحسي لتحديد المكونات الأساسية للدراسة. تم تحضير ستة معاملات من التوفو مع نكهات مختلفة: الكنترول دون إضافات ، و مع الزيتون الأخضر المفروم والفلفل الأسود المطحون + الفلفل الأخضر المفروم والسكر و لب الجوافة ولب الخوخ . ولتقييم تأثير التوفو على جودة الجبن المطبوخ ، تم تشكيل أربعة معاملات من الجبن المطبوخ: الكنترول جبن راس مطبوخ ، T25 ، T25 ، T50 ، و T75 وذلك بإضافه ٢٥ و ٥٠ و ٧٥٪ من التوفو على التوالي. وعلاوة على ذلك ، تم إعداد سبع عينات من الكرواسون مع التوفو القابلة للفرد وخمس عينات مع مشابهات الجبن المطبوخ كحشو للكرواسون. وتم تقييم جميع العينات كيميائياً وفسولوجياً و ميكروبيولوجياً وحسباً وهى طازجه و بعد التخزين فى الثلاجه 5 ± 1 درجة مئوية لمدة أكثر من ثلاث شهور باستثناء عينات الكرواسون كانت مخزنة في درجة حرارة الغرفة لمدة تصل إلى ٣ أيام لضمان صفات الجودة المختلفه. وأشارت النتائج إلى أن عينات التوفو القابل للفرد أظهرت نشاط مرتفع في مضادات الأكسدة ، وخصائصها الفسيولوجية مقبولة. كما أثبت الاختبار الحسي لمعاملات التوفو القابلة للفرد ارتفاع في درجات التقييم الكلية و الخواص الحسيه مقارنة بالكنترول. كما ان المعاملتين T1 و T4 أظهرتا أعلى درجات التقييم الكلي ، تليها T5 ثم T3 و T2. في حين حصلت مشابهات الجبن المطبوخ خاصتا T25 (٢٥% توفو) تفوقا في الخواص الحسيه و درجات التقييم الكلية ، تليها T50 (٥٠% توفو) والكنترول. بينما لم تكن هناك فروق معنويه بين مجموع الدرجات الكلية للكنترول و T50. كما أظهرت عينات الكرواسون المحشو بالتوفو القابل للفرد تفوقا في الخواص الحسيه ودرجات التقييم الكلية مقارنة بالكنترول. كذلك أظهرت عينات الكرواسون المحشو بمشابهات الجبن المطبوخ خاصتا Cp1 و Cp2 أفضل الدرجات الكلية معنويه مقارنة بالمعاملات الأخرى. تم حساب الاحتياجات اليومية الموصى بها RDA من البروتين والدهون والسعرات الحرارية والكريبيدرات للأطفال الذين تتراوح أعمارهم بين ١-٣ و ٤-٨ سنوات لخطات التوفو القابلة للفرد ، ومسابهات الجبن المطبوخ وعينات الكرواسون. أكد التحليل الميكروبيولوجي سلامة العينات جميعها من أي تلوث ميكروبي.

الكلمات الدالة: الخواص الوظيفية، التوفو القابل للفرد، مشابهات الجبن المطبوخ، الكرواسون، المواد المضادة للاكسدة، الخصائص الفسيولوجية. التحليل الميكروبيولوجي. الاحتياجات اليومية الموصى بها.

أستخدام التوفو و الجبن المطبوخ فى اعداد بعض الأغذية الوظيفية

رسالة دكتوراه
فى العلوم الزراعية
(صناعات غذائية)

مقدمة من

أميرة صابر عبد السلام اسماعيل

بكالوريوس فى العلوم الزراعية (اقتصاد منزلى), كلية زراعة, جامعة القاهرة , ١٩٩٩
ماجستير فى العلوم الزراعيه (صناعات غذائية) , كليه الزراعه , جامعه القاهرة , ٢٠٠٨

لجنة الإشراف

الدكتورة/ شفيقة عبد الحميد زكي
أستاذ التغذية, كلية الزراعة, جامعة القاهرة

الدكتورة/ هاله محمود ناجى
مدرس الاقتصاد المنزلى, كلية الزراعة, جامعة القاهرة

الدكتورة/ عبير فؤاد زيان
رئيس بحوث تكنولوجيا الألبان, معهد بحوث تكنولوجيا الأغذية, مركز البحوث الزراعية, الجيزة

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أميرة صابر عبدالسلام اسماعيل

بكالوريوس فى العلوم الزراعية (اقتصاد منزلى), كلية زراعة, جامعة القاهرة , ١٩٩٩
ماجستير فى العلوم الزراعية (صناعات غذائية) , كلية الزراعة , جامعه القاهرة , ٢٠٠٨

لجنة الحكم

د. فاطمه الزهراء أمين الشريف.....
أستاذ الاقتصاد المنزلى – كلية الاقتصاد المنزلى – جامعه المنوفيه

د. ماجده ابراهيم حسن.....
أستاذ مساعد التغذية, كلية الزراعة, جامعة القاهرة

د. شفيقة عبد الحميد زكي.....
أستاذ التغذية , كلية الزراعة , جامعة القاهرة

التاريخ / / ٢٠١٨

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بكالوريوس فى العلوم الزراعية (اقتصاد منزلى), كلية زراعة, جامعة القاهرة , ١٩٩٩
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للحصول على درجة

دكتوراه الفلسفه

في

العلوم الزراعية

(اقتصاد منزلى)

قسم الصناعات الغذائية

كلية الزراعة

جامعة القاهرة

مصر

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