Name of Candidate: Noura Ebrahim Mahmoud **Degree:** M.Sc.
Title of Thesis: The Semi-Modified Diets as Antioxidants, Hypolipidemic and Hypocholesterolemic Agents
Supervisors: Dr. Emam Abdel-Mobdy Abdel-Raheem
Dr. Hossam El-Deen Saad El-Beltagi
Dr. Farouk Abdel-Hamid Gaber
Department: Agriculture Biochemistry
Branch: Biochemistry
Approval: 22/1/2011

ABSTRACT

This study was carried out to evaluate the effects of unpeeled lentil seeds (legume), apple (fruit) and parsley (vegetable) in semi-modified diets on lipid fraction of hyperlipidemic and hypercholesterolemic male albino rats. The investigation was done with semi-modified diets of unpeeled lentil seeds, dried apple and dried parsley as well as their mixtures (1:1:1) to evaluate their effects as hypolipidemic agents which amounted 10% of the diets at the expense of starch. Composition of the apple, parsley and unpeeled lentil seeds was estimated on dry matter. The results observed that three used diets amounted good values of protein (especially unpeeled lentil) crude fiber and phenolic compounds (especially apple and parsley). The HPLC analysis of the three methanolic extracts of unpeeled lentil, apple and parsley for the phenolic compounds showed presence of about 23 compounds varying in their levels in the extracts. The obtained results showed that unpeeled lentil seeds as well as dried apple and parsley semi-modified diets generally improved the clinical blood status. [Blood picture (RBCs, WBCs and Hb), lipid fraction such as total lipid, cholesterol and triglycerides as well as HDL-C, LDL-C and VLDL-C] also the treatment alleviated the risk factor of the hyperlipidemic rats. Liver function (AST, ALT and ALP activity as well as bilirubin) and kidneys function (uric acid, urea and creatinine), total protein and its fractions (albumin and globulin), lipids peroxidation and antioxidative enzymes activity (SOD and catalase) were readjusted around the normal values in hyperlipidemic and hypercholesterolemic rats by the improvements of the present liportopic factors and antioxidative agents of unpeeled lentil, apple and parsley by which hyperlipidemia and hypercholesterolemia were alleviated. In connection, the semi-modified mixture diet gave the best clinical effects concerning biological studies. It means that mixture produced such synergetic effects which used semi-modified diets of unpeeled lentil, apple and parsley alone.

Key words: Parsley, unpeeled lentil, apple, hyperlipidemia, hypercholesterolemia, antioxidant

/استمارة معلومات الرسائل التى تمت مناقشتها

الكلية / المعهد : **القسم**

١ - **الدرجة العلمية :** ماجستير [√] دكتوراه [ ]

٢ - بيانات الرسالة :

عنوان الرسالة باللغة العربية :

دراسات كيميائية حيوية على متبقيات المبيدات والعقاقير في أنسجة اللحوم

عنوان الرسالة باللغة الأجنبية :

BIOCHEMICAL STUDIES ON PESTICIDE AND DRUG RESIDUES IN MEAT TISSUES

التخصص الدقيق : كيمياء حيوية زراعية

تاريخ المناقشة : ١١ / ١ / ٢٠١١

٣ – بيانات الطالب :

الاسم : عماد الدين سيد عبدالله حسن الجنسية : مصري النوع : ذكر

العنوان : ٢١ شارع ابراهيم عثمان – العمرانية – الهرم تليفون: ٠١٠١٣٦٤٤٨٢

جهة العمل : المعمل المركزي للمبيدات رقم الفاكس :37602209

البريد الإلكترونى : cenpesticides@gmail.com

٤ - المشرفون على الرسالة :

الاسم	القسم	الكلية	الجامعة
دكتور أحمد محمود أبو العينين	الكيمياء الحيوية	الزراعة	القاهرة
دكتور فاتن محمد أبو العلا	الكيمياء الحيوية	الزراعة	القاهرة
دكتور إسلام نعمان نصر	بحوث متبقيات المبيدات	المعمل المركزي للمبيدات	مركز البحوث الزراعية

٥ - مستخلص الرسالة (Abstract)

٥ - ١ باللغة العربية : بشرط ألا يزيد عن ٧ أسطر

الهدف الرئيسي لهذا البحث تقدير بعض متبقيات المبيدات والعناصر الثقيلة والعقاقير البيطرية في انسجة اللحوم الحمراء والبيضاء، المحلية والمستوردة. وجدت بعض متبقيات المبيدات الكلورينية والفوسفاتية في بعض عينات اللحوم المحلية والمستوردة .تعدى تركيز بعض العناصر الثقيلة (الكادميوم والرصاص) الحدود المسموح بها للتركيز في الانسجة لبعض العينات المحلية فيما لم يتعدى التركيز الحدود الآمنة في العينات المستوردة. لم يتم اكتشاف متبقيات الكلوروتيتراسيكلين و الكلينبيوتيرول في العينات محل الدراسة.وجدت متبيقات السلفاديازين في ٥ عينات من العينات محل الدراسة.

الكلمات داله (مبيدات فوسفورية، مبيدات كلورينية، عناصر ثقيلة، مضادات حيوية، الكلورو تيتراسيكلين، الكلينبيوتيرول، السلفاديازين)

٥ - ٢ باللغة الأجنبية : بشرط ألا يزيد عن ٧ أسطر

The aim of the study was determining the residues of some pesticides, metals and veterinary drugs in meat tissues. Some residues of both OC and OP pesticides were detected in some samples of the locally raised and imported meat. The concentrations of some metals exceeded the MRL in some samples.The results indicated that no residues for chlortetracycline and clenbuterol were detected in the tested samples. The results revealed that residues of sulphadiazine were detected in 5 samples.

Key Words :- (Organochlorines, organophosphorus, pesticides, residues, heavy metals, clenbuterol, chlortetra-cycline, sulphadiazine)

٦ - **<u>أهم النتائج التطبيقية التى تم التوصل إليها</u> :**

(لا تزيد عن سطرين لكل منها)

٦ - ١ لا زالت اثار بعض المبيدات الممنوع تداولها تظهر في الاختبارات مما يدل اما على استمرار استخدامها بصورة غير قانونية او شدة ثباتها في البيئة حتى مع التوقف عن استعمالها

٦ - ٢ بعض العقاقير البيطرية تستخدم بصورة غير مشروعة لتحقيق زيادة في وزن وحجم الحيوانات مما يؤثر على صحة المستهلك

٦ - ٣ عدد العناصر الثقيلة وصل الى اللحوم بصورة او بأخرى ومنها الى الانسان مما يؤثر سلبا على الصحة العامة للمستهلك

٦ - ٤

٧ - ما هى الجهات التى يمكن أن تستفيد من هذا البحث :

(اذكر هذه الجهات مع شرح أهمية البحث لهذه الجهة بما لا يزيد عن أربعة سطور لكل جهة

٧ -1 هيئة الرقابة على الصادرات و الواردات: حيث ان النتائج تدل على ضرورة فحص الرسائل الواردة الى مصر بدقة فيما يختص متبقيات المبيدات والعقاقير البيطرية والمعادن الثقيلة

٧ -2 وزارة الصحة والمعامل التابعة لها

٧ -3 المعاهد والمراكز البحثية

٨ - هل توجد علاقة قائمة بإحدى هذا الجهات : نعم ☐ **لا** ☑

فى حالة نعم اذكر هذه الجهات :

٨ - ١

٨ - ٢

٨ - ٣

ما هى طبيعة العلاقة :

مشروع بحثى ☐

تعاون أكاديمى ☐

مشروع ممول من جهة ثالثة ☐ (اذكر ما هى :)

أخرى ☐ (تذكر)

٩ - **هل توافق على التعاون مع جهات مستفيدة من خلال الجامعة :**

لا ☐ **(لماذا)**

نعم ☑

(أ) لتطبيق البحث : ☑

(ب) لاستكمال البحث : ☑

(ج) أخرى ☐ **(تذكر)**

١٠ - **هل تم نشر بحوث مستخرجة من الرسالة فى مجلات أو مؤتمرات علمية** **نعم**

(تذكر مع جهة النشر و المكان و التاريخ)

١٠ – ١

Monitoring of some Organochlorines and Organophosphorus residues in imported and locally raised chicken and bovine muscles in Egypt.
Journal of Applied Sciences Research, 6(6): 600 – 608, 2010

١٠ – ٢

١٠ – ٣

١١ - **هل سبق التقدم لتسجيل براءات اختراع** (تذكر مع الجهة و المكان و التاريخ)

لا

١٢ - **هل توافق على إعطاء البيانات المذكورة فى هذه الاستمارة لجهات أخرى**

نعم ☑ لا ☐

توقيع الطالب : توقيع المشرفين :

–

–

–

–

وكيل الكلية (المعهد) للدراسات العليا و البحوث : التاريخ

استمارة معلومات الرسائل التى تمت مناقشتها

الكلية / المعهد : كلية الزراعة **القسم : الكيمياء الحيوية**

١ - **الدرجة العلمية :** ماجستير ☑ دكتوراه ☐

٢ - بيانات الرسالة :

عنوان الرسالة باللغة العربية :

دراسات كيميائية حيوية على بعض مضادات الأكسدة الطبيعية

عنوان الرسالة باللغة الأجنبية :

Biochemical Studies on Some Natural Antioxidants

التخصص الدقيق : كيمياء حيوية

تاريخ المناقشة : 26 /١ / ٢٠١١

٣ - بيانات الطالب :

الاسم : محمود عبدالغني عبدالواحد الجنسية : مصري النوع : ذكر

العنوان: مساكن محطة التنقية بزنين– بولاق الدكرو – الجيزة تليفون : ٠١٠٥١١٧٠١٧

جهة العمل : مركز البحوث الزراعية رقم الفاكس : ٣٥٧٣١٩٨٩

البريد الإلكترونى : mahmoud5000@gmail.com

٤ - المشرفون على الرسالة :

الاسم	القسم	الكلية	الجامعة
أ.د / فؤاد عبدالرحيم أحمد	**الكيمياء الحيوية**	**الزراعة**	**القاهرة**
أ.د / محمد مجدي راشد	**الكيمياء الحيوية**	**الزراعة**	**القاهرة**
د / ناصر شعبان علي	**المركز الإقليمي للأغذية والأعلاف**		**مركزالبحوث الزراعية**

٥ - مستخلص الرسالة (Abstract)

٥ - ١ باللغة العربية : بشرط ألا يزيد عن ٧ أسطر

الهدف من هذه الدراسة هو تحديد أي التركيزات والمخاليط من بين مضادات الأكسدة الطبيعية من فيتامين ج وحامض الجاليك وحامض التانيك من مصادر نباتية ،أكثر قدرة على إنتاج تأثيرات تآزرية مضادة للأكسدة ،ودلت النتائج أن المخلوط الثنائي المحتوى على فيتامين ج (تركيز ٥ ميكرومول /لتر) وحامض التانيك (تركيز ٥ ميكرومول /لتر) سجل اعلى نشاط تآزري مضاد للأكسدة . والنتائج المتحصل عليها يمكن أن تساهم في تنمية مواصفات المنتجات الغذائية لتكون أعلى تأثيراً في مضاداتها للأكسدة .

وتوصي نتائج الدراسة الحالية بإستخدام وتناول مضادات الأكسدة الطبيعية (فيتامين ج ، و حامض الجاليك ،و حامض التانيك) لتأثيراتها الوقائية ضد التسمم الكبدي.

٥ - ٢ باللغة الأجنبية : بشرط ألا يزيد عن ٧ أسطر

This study aimed to determine which concentrations and combinations of antioxidants (vitamin C, gallic acid and tannic acid) were capable to produce synergistic antioxidant effects. The results showed that the binary mixture that contained vitamin C (5.0 μM) and tannic acid (5.0 μM) had the highest SEs. The results obviously demonstrated that the antioxidant property of this combination was substantially superior to the sum of the individual antioxidant effects, and these interactions can enhance the antioxidant effectiveness of these natural antioxidants. The results could guide in the formulation and development of functional food products that have high antioxidant.

(Key words: Antioxidant; vitamin C; CCl_4; DPPH; scavenging capacity; synergistic effect)

٦ – **<u>أهم النتائج التطبيقية التى تم التوصل إليها</u> :**

(لا تزيد عن سطرين لكل منها)

٦ – ١ تناول فيتامين ج مع حامض التانيك أو حامض الجاليك تؤدي دور فعال ومؤثر بدرجة عالية جداً ضد الشقوق الحرة التي تهاجم خلايا أجسامنا .

٦ – ٢ تناول فيتامين ج مع حامض التانيك أو حامض الجاليك تؤدي دور فعال ومؤثر بدرجة عالية جداً في الحفاظ على خلايا الكبد من التلف .

٦ – ٣ إضافة فيتامين ج مع حامض التانيك أو حامض الجاليك الموجودة في الفواكه والخضر الطازجة يمكن أن تساهم في تنمية مواصفات المنتجات الغذائية لتكون أعلى تأثيرا في مضاداتها للأكسدة.

٦ – ٤ وتوصي الدراسة الحالية بإستخدام وتناول مضادات الأكسدة الطبيعية (فيتامين ج ، و حامض الجاليك ،و حامض التانيك) في صورة مخاليط ثنائية أو ثلاثية وذلك لتأثيراتها الوقائية ضد التسمم الكبدي.

٧ – ما هى الجهات التى يمكن أن تستفيد من هذا البحث :

(اذكر هذه الجهات مع شرح أهمية البحث لهذه الجهة بما لا يزيد عن أربعة سطور لكل جهة)

٧ -1 المعهد القومي للتغذية : (عند وضع برامج تغذية علاجية ،وكذلك في تركيب الوجبات الغذائية ، وتوصيات بتناول الفاكهة أو العصائر المختلفة في صورة خليط ، كذلك أيضاً في حالات إضافة المواد المضادة للأكسدة في صناعة الأغذية المحفوظة)

2-7 جامعة القاهرة

3-7 المركز الإقليمي للأغذية والأعلاف

٨ – هل توجد علاقة قائمة بإحدى هذا الجهات : **نعم** ☑ **لا** ☐

فى حالة نعم اذكر هذه الجهات :

٨ – ١ استكمال البحث بجامعة القاهرة

٨ – ٢ استكمال البحث بالمركز الإقليمي للأغذية والأعلاف

٨ – ٣

ما هى طبيعة العلاقة :

مشروع بحثى ☑

تعاون أكاديمى ☑

مشروع ممول من جهة ثالثة ☐ (اذكر ما هى :)

أخرى ☐ (تذكر)

٩ – هل توافق على التعاون مع جهات مستفيدة من خلال الجامعة :

لا ☐ **(لماذا ----------)**

نعم ☑

(أ) لتطبيق البحث : ☑

(ب) لاستكمال البحث : ☑

(ج) أخرى ☐

١٠ – هل تم نشر بحوث مستخرجة من الرسالة فى مجلات أو مؤتمرات علمية

نعم ☑ (تذكر مع جهة النشر و المكان و التاريخ)

١٠ – ١ مجلة المنوفية للبحوث الزراعية مجلد ٣٥ العدد ٤ (الجزء الأول) أغسطس ٢٠١٠
(الرقم الدولي ٠٢٦٥- ١١١٠)

١٠ – ٢ PARLAR SCIENTIFIC PUBLICATIONS (PSP) GERMANY
Has been accepted for publication in *Advances in Food Sciences (AFS)*
(AFS/ Vol. 33/ No 2/ 2011 – pages, Reference-No.: A-2010-060)

١١ – هل سبق التقدم لتسجيل براءات اختراع (تذكر مع الجهة و المكان و التاريخ)

☑ لا

١٢ – هل توافق على إعطاء البيانات المذكورة فى هذه الاستمارة لجهات أخرى

☑ نعم

توقيع الطالب : توقيع المشرفين :

–

–

–

وكيل الكلية (المعهد) للدراسات العليا و البحوث : التاريخ : / / ٢٠١١

Name of Candidate: Afify Dardeir Gaber Dardeir **Degree:** Ph.D.
Title of Thesis: Biochemical and Ecological Studies on El-Serw Fish Farm
Supervisors: Dr. Mohy El-Din Ali Osman
Dr. Mahmoud Abd El-Halim Mahmoud
Dr. Mohamed Hamdy Hassan Ali
Department: Agricultural Biochemistry **Approval:** / /

ABSTRACT

Water is the most important resource of a country, and of the entire society as a whole, since no life is possible without water. It has this unique position among other natural resources, like minerals, fuels, forests, live-stock *etc.*

In fact, water in Egypt has become a scarce commodity and its use should be optimized. This necessitates the allocation of water resources among economic sectors besides the efficient use of water within sectors. Nowadays, the maintenance of these fish cultures out of pollution is of greatest concern. Moreover, the toxic effects of heavy metals and pesticides on farmed fish have imposed serious influences on human health. The agricultural drainage water is considered as one of the most important water sources to El-Serw fish farm. Consequently, the chemical analysis of the water supply, pond water and effluent water of the farm as well as the determination of some heavy metals and pesticides, are of great importance to pond managers and consumers of aquatic products. Therefore, the aim of this work was to assess if the agriculture drainage water quality could meet the fish farm standards as well as its effect on fish quality.

El-Serw fish farm is situated on the southern west shore of Lake Manzalah near El-Serw navigation canal about 200 km Northeast Cairo. Agriculture drainage water quality, heavy metals, inorganic anions and pesticides distributions in water, sediment and fish were assessed in El-Serw fish farm seasonally during 2007.

The obtained results indicated that the concentrations of the most chemical parameters increased at the outlet and decreased at the inlet. Heavy metal and inorganic anions varied significantly ($P < 0.05$) depending upon the type of fish and location within the farm. Also, the order of occurrence of heavy metals, and inorganic anions in water were ranked in the following order: Fe > Mn > Zn > Pb > Cu > Cd, while those in the sediment were: Fe > Mn > Zn > Cu > Pb > Cd. Rank in fish muscles of the two studied species for heavy metals concentrations (*Tilapia zillii* and *Oreochromis niloticus*) were found in the order: Fe > Mn > Zn > Pb > Cu > Cd. The relative order of abundance of these elements can be summarized as follows: sediment > fish > water. One chlorinated hydrocarbon pesticide (P,P-DDE) was only detected in one sediment sample out of thirteen.

Data analysis indicated that most the concentration levels of different determined parameters of the agricultural drainage water were found in the permissible limits for fish farms according to different standards such as (Meade, 1989), (OMOE, 1993) and (FAO, 1992). So, this water may be used as a feeding source for rearing fish.

Key words: Agriculture drainage water quality, pollution, water resources, heavy metals, sediment, fish farm, pesticides

Name of Candidate: Khadiga Ibrahim Mohammed **Degree:** Ph.D.
Title of Thesis: Biochemical and Microbiological Studies on Olive Industrial Liquid Wastes
Supervisors: Dr. Adel Sayed Afify
Dr. Mahmoud Abdel-Haleem Mahmoud
Dr. Hamdy Ali Emara
Department: Agricultural Biochemistry

Approval: 16/11/2011

ABSTRACT

This study was conducted to test biological and chemical treatments applied to olive oil mill wastewater (OMW) to reduce its phenolic compounds, biological oxygen demand (BOD) and chemical oxygen demand (COD) contents and its toxicity. The biological treatments were carried out using two fungal species (*Aspergillus wentii* and *Aspergillus niger*) isolated from OMW and compared with *Pleurotus ostreatus*. *A. wentii* was more efficient than *A. niger* in removing of BOD (74.3%) and phenolic compounds reduction (81.0%) from OMW after two weeks of incubation. On the other hand, the optimum OMW dilution used was 10%, in which the maximum BOD removal (62.0%) and maximum phenolic compounds reduction (81.0%) were seen by *A. wentii*.

Different chemical treatments applied used UV radiation alone or combined with different H_2O_2 concentrations, four Fenton system at three pH values (5, 7 and 9) and photo-catalysis by different amount of titanium dioxide at three pH values (5, 7 and 9). The degradation of tannic acid obtained was 47.85% at 0.05 M H_2O_2 and pH 5 under UV radiation. The maximum tannic acid degradation obtained by Fenton system was 95.33% at 2.4×10^{-3} M Fe^{2+} and 0.11 M H_2O_2 with UV radiation at pH 5. The maximum degradation obtained by photo-catalysis using titanium dioxide (50 mg/l) was 35.07% at pH 5. The maximum phenolic compounds degradation percentage in chemically treated OMW (2.00 M H_2O_2/UV, 150 min) reached 84.45%. The ethylacetate extracts of crude OMW, chemically treated (0.55 M H_2O_2/UV, 150 min) and biologically treated OMW were analyzed by GC/MS.

Finally, the effect of treated OMWs on growing tomato plants was tested with different NPK rates as fertilizer. The best result was achieved by chemically treated OMW + 100% NPK (349.5 g fruit/plant).

Key words: biological and chemical treatments, olive oil wastewater (OMW), phenolic compounds and chemical oxygen demand (COD)

Name of Candidate: Zahrat El-Ola Mahmoud Mohamed **Degree**: Ph. D.
Title of Thesis: Biochemical Studies on *Plantago major* and *Cyamopsis tetragonoloba*
Supervisors: Dr. Osama Mohamed Abdel-Fatah
Dr. Mohamed Ibrahim Kobeasy
Dr. Samiha Mohamed Abdel-Salam
Department: Agricultural Biochemistry **Approval:** / / 2011

ABSTRACT

The objectives of this study were to determine chemical components of *Plantago major* (seeds and leaves) and *Cyamopsis tetragonoloba* including, fatty acids, amino acids, mucilage and mineral. Also, studying their antioxidant components, its anticancer and antiulcer activities. In addition to their usage in food industry. The results showed that *C. tetragonoloba* beans had high contents of protein, fat and total hydrolysable carbohydrate. *Plantago* leaves oil contained high percentage of linolenic acid (56.19 %). While, *P. major* seed and *C. tetragonoloba* beans oils had high percentages of linoleic acid (25.41 and 48.99 %, respectively). Essential and non-essential amino acids were present in all samples and *C. tetragonoloba* beans had high amounts of glutamic and aspartic acids, arginine, and leucine.

Total phenols, total flavonoids and tannins contents were the highest in *Plantago* leaves . Antioxidant activity of ethanolic, hot and cold water extracts of *Plantago* leave and seeds and *C. tetragonoloba* beans were evaluated. *Plantago* leave extracts exhibited higher antioxidant activity than *P. major* seeds and *C. tetragonoloba* beans extracts.

The ethanolic, hot and cold extracts of the plants under study induced anticancer activity with various degrees. Ethanolic extract of *P. major* leaves possessed the greatest effect on tumor cell growth (Dead 74.00 %) followed by hot water extract of *P. major* leaves

Concerning the antiulcer effects, ethanolic extract of *P. major* leaves significantly had highest reduction of the ulcer index with increment of protection ratio. The highest reduction in the total acidity of gastric fluid was observed in rats orally administrated with ethanolic extract of *P. major* leaves followed by ethanolic and water extracts of *P. major* seeds.

The incorporation of *P. major* (seeds and leaves) and guar beans in cookies manufacturing at different levels (5, 10 and 20 %) was concerned. Sensory properties of produced cookies were also considered. Cookies at plants replacement levels of 5 % of *Plantago* seeds and guar beans had significantly higher overall acceptability when compared to the other samples.

Key words:*Plantago major*, *Cyamopsis tetragonoloba* beans, chemical composition, antioxidant activity, anticancer, antiulcer

Name of Candidate: Asmaa Ahmed Mahmoud Aly **Degree:** Ph.D.
Title of Thesis: Chemical Treatments for Reusing Frying Oils
Supervisors: Dr. Hassan Mohammed Salem
Dr. Mohammed Saad Abdel-Lateef
Dr. Akila Saleh Hamza
Department: Agricultural Biochemistry
Branch: **Approval: / /2011**

ABSTRACT

This study was conducted to purify the used oils by different activated adsorbents for reusing in nutrition. The used oils were treated by 5% activated charcoal, 5% activated clay, 10% rice hull ash (RHA) or 10% the mixture of 2% charcoal, 3% clay and 5% RHA. The quality of used and treated oils was evaluated by determination of physical and chemical properties.

The best treatment to obtain high quality of used oils was 10% mixture of 2% charcoal, 3% clay and 5% RHA, which decreased the percent of conjugated dienes from 0.271-0.461% to 0.243-0.386% and trienes from 0.128-0.199% to 0.115-0.189%, Lovibond colour from 6.6 red/0.0 blue -20.0red/40.0blue to 3.9red/0.0blue-13.6red/15.2blue, viscosity from 54.8-83.9cP to 53.0-68.9cP, free fatty acids from 0.49-2.33% to 0.27-1.29%, peroxide value from 15.23-30.47 m.eq peroxide/kg oil to 9.53-20.60 m.eq peroxide/kg oil, anisidine value from 48.20-86.50 to 29.50- 62.33, total polar material from 17.7-36.8% to 12.5-30.1% and polymers from 1.07-1.98% to 0.79-1. 42% comparing to the untreated used oils and the treated used oils with the other treatments. Then, the influence of untreated and treated used oils in nutrition, except that of low quality (fish frying samples) was studied. Sixty male albino rats (70-80g wt) were divided into 10 groups were fed on 10% fresh oil (corn oil or palm olein as control groups), untreated used oil or treated used oil samples for 80 days. The blood glucose, liver enzymes activity, urea, creatinine, α-fetoprotein and TBA-RS were lower as well as improving the reduction of body weight, hematology parameters and blood lipids in treated used oils-fed groups compared to untreated used oils-fed groups and control groups. Moreover, the treated used oils-fed groups showed less pathological lesions comparing to the other groups.

Key words: Used frying oil, treatment, activated rice hull ash, activated clay, activated charcoal, physical and chemical properties, nutrition

Name of Candidate: Radwa Adel Younis El Baz **Degree:** Ph.D.
Title of Thesis: Biochemical and Molecular Studies on Some Synthetic Food Additives
Supervisors: Dr. Ahmed Mahmoud Moustafa Aboul-Enein
Dr.Ebtesam Abdel-Moneim Mahmoud Hassanien
Department: Agricultural Biochemistry **Approval: 24 / 3/ 2011**

ABSTRACT

In the present study haematological, biochemical, histological, molecular and in vitro studies were carried out to evaluate the effect of synthetic and natural food additives in either their single or two fold treatment dose to prove their effect on the biological and physiological behavior in experimental rats. Na saccharin was used as synthetic sweetener in comparison to sorbitol. Tartrazine was examined as synthetic colorant in comparison with carmine as natural one .BHT which was tested as synthetic preservative and vanillin was examined as synthetic flavor in comparison with clove oil tested as natural preservative and flavor. Results showed a pronounced increase in RBCs count and Hb levels under the influence of synthetic food additives while , no significant changes occur when natural food additives were examined . A significant decrease occurred on WBCs count when tars fed on synthetic additives in comparison with their natural ones.

Synthetic food additives leads to a severe increase in AST, ALT activities when compared to their controls while no observed increase were noticed by using natural ones. Synthetic food additives affect the enzymatic symphony in the body, causing a lot of disturbances and unbalance in the enzymatic reactions which act as an indicator for several diseases. Significant increase in creatinine, uric acid and bilirubin levels were detected. In addition, severe increase occurred on gamma-glutamyl transferase and alkaline phosphatase activities which recorded great increase on male rats when administered synthetic food additives in either its single or 2-fold dose administration in comparison with their natural ones.

Histological examinations was carried out for different organs. Liver, kidneys and spleen of tested male adult rats were taken after decapitation at the end of the experiment and fixed in 10%neutral buffered formalin for 24h.The tissues washed and prepared for subsequent examination.

Molecular analysis occurred at the end of experiment and two rats of each group were injected intraperitoneal by colchicine 2h prior to sacrifice by decapitation. The bone marrow cells were collected from the femora and the different types of chromosomal aberrations were studied. Additionally, the effect of food additives either natural or synthetic were tested *in vitro* on the viability of tumor cells (EACC) and the results were recorded. Results proved that natural food additives have antitumor activity against tumor cells.

Key words: Synthetic food additives, natural food additives, health hazard effect, blood count, histological examination, molecular analysis.

Name of Candidate : Hend Mostafa Abdel-Alim El-Egami **Degree:** Ph.D.
Title of Thesis : Biochemical and Microbiological Changes During Composting Process as Affected by Bioactivators
Supervisors: Dr. Fouad Abdel-Rehim Ahmed
Dr. Mohamed Ibrahim Kobeasy
Dr. Atef Fathalla Mohamed Abdel-Wahab
Department: Agricultural Biochemistry **Approval :** 25 / 6 /2011

ABSTRACT

The aim of the present study was to evaluate the biochemical and microbiological changes during composting process. To achieve this aim of study three piles of compost were made from rice straw and maize stalk with different ratio. First pile made from 100% rice straw, second pile made from 75%rice straw +25% maize stalk and third pile made from 50% rice straw +50% maize stalk in the presence of some bio-activating fungi (*Trichoderma virdi and Trichoderma harizianum*), elemental (bentonite, rock phosphate, urea and sulfur) and organic (farmyard manure) additives. These additives with the same percentage in all three compost pile. At maturity stage some bio-activating bacteria namely, *Bacillus polymyxa* and *serratia sp*. were incorporated into composting materials as a liquid form.

Composting process take 90 days until maturity stage. Representative samples had been taken after 30, 45, 60, 7 and 90 days.

The obtained results illustrated a rise in a temperature after three days of composting to reach the maximum degree after 30 days, which represented the active bio-oxidative stage. Furthermore, acidity, electrical conductivity, nitrate, total nitrogen and total phosphorus values of the three piles were gradually increased. While total organic carbon, carbon nitrogen ratio, ammonium ion, cellulose and hemicellulose ratio showed gradually decrease. Total mesophilic bacteria and actinomycetes recorded slightly increase in early stage then they increased in the end of composting process. On the other hand, counts of thermophilic bacteria, actinomycetes and fungi gave a sharp increase during the early periods of composting process, then decrease at the end of composting. Germination index (GI) of the three tested piles increased by progress the composting process for different seed size (cress, tomato, cucumber and barely). Humification index (HI) values increased while extinction co-efficient in both aqueous and alkaline, potential metabolic index and NH^{+}_{4}/NO^{-}_{3} ratio were decreased during the composting process.

The obtained results from the first pot experiment showed, significant differences among three compost type on basil growth. The responsible of basil plants to three types of compost recorded responsible results for growth, uptake of nitrogen and phosphorus and yield parameters. Also, the results of second pot experiment on pea plants in the presence of *Rhizobium* inoculum and activation dose of nitrogen pointed to significant increase in most parameters. Addition of compost led to improvement chemical characteristics of sandy soil.

Key words: Biochemical, microbiological, compost process, bioactivators, pea, basil

Name of candidate: Ahmed El-Sayed Abd El-Gawad **Degree:** Ph.D.
Title of Thesis: Biochemical studies on some food contaminants

Supervisors: Dr. Radwan Sedkey Farag,
Dr. Mohamed Saad Abdel Latif
Dr. Salwa Mohamed Ali Dogheim
Department: Agricultural Biochemistry **Approval:** / /

ABSTRACT

One hundred fifty five samples of fruits, vegetables, herbs and spices collected from Egyptian local markets were analysed for pesticide residues. The multiresidue method (S19) normally used in European laboratories was adopted after being validated. Two hundred forty one pesticides were tested with high accuracy and sensitivity using the GC, HPLC/MS/MS and GC/MS instruments with a reliable quality control system.

Contamination with pesticide residues reached 48 % while samples free from contamination reached 52%. Only one sample from 155 analysed samples violated the Maximum Residue Limits (MRLs) of the Codex Committee which is adopted by the Egyptian Standardization Organization (EOS). Violation to the EU MRLs was observed in 12 samples which might cause problem in exports. From the 155 analysed samples, 74 samples (48 %) were contaminated, from which 38 % contaminated with residues from one pesticide residue, 5.2 % with 2 residues and 4.5 % with more than 2 residues. In addition, 2 caraway and one fennel samples contained 4 pesticide residues, one sample of marjoram contained 5 pesticide residues and one mint sample contained 6 pesticide residues.

From the 241 pesticides tested, 17 were detected in the food samples from which, 4 pesticides were rated as having potentials for endocrine disruption and one had evidence of endocrine disruption in an intact organism. Carcinogenicity is another risk that might result from exposure to pesticides residues through diets. Six of the pesticides detected as residues in the analysed food items were considered to be carcinogens at different levels of assurance.

Key words: Fruits, vegetables, herbs, pesticide residues, monitoring program.

Name of Candidate: Ferhad Mohammed Syrag **Degree:** Ph.D.
Title of Thesis: Biochemical and Biotechnological Studies on Cinnamon
Supervisors: Dr. Hassan Mohamed Salem
Dr. Omar Abd-Elaziz Shaban
Dr. Hoda Gharib El-Amry
Department: Agricultural Biochemistry **Approval: / /2011**

ABSTRACT

Cinnamon bark (*Cinnamomum zeylanicum*) is widely used as a spice and flavoring agent. Chemical composition of cinnamon powder was ash 3.4%, crude protein 4.12%, ether extract2.21%, crude fiber 22.81% and hydrolysable carbohydrate 67.46%%, respectively. Cinnamaldehyde 75.59%, cinnamic acid 11.92% and cinnamyl acetate 2.84% were highest component in cinnamon essential oil. Chemical composition of Marie biscuits was affected by increased levels of cinnamon powder (5, 10, 15 and 20%). There was a slight decrease in protein. On the other hand, there was a slight increase in fiber and ash. Marie biscuit containing 15% cinnamon powder showed the highest scour values. The effect of cinnamon aqueous extract (CAE 10g/100ml water) at two doses (5 and 10ml/day/kg body weight) and cinnamon biscuit (CB) which made by replacement 15% of wheat flour with cinnamon powder which administered to different groups of Streptozotocin induced diabetic rats (STZD) type I diabetes mellitus for 8 weeks was studied. The results showed that, the serum glucose concentration significantly decreased in groups which administrated with Cinnamon Biscuit (CB) or cinnamon aqueous extract (CAE) compared with the diabetic control. Also, the concentrations of serum nitric oxide, serum triglyceride (TG), total cholesterol (TC), low-density lipoprotein cholesterol (LDL-C), urea and creatinine, activity of alanine amino transferase (ALT) and activity of aspartate amino transferase (AST) were significantly decreased after 8 weeks of administration. On the other hand, serum high density lipoprotein cholesterol (HDL–C) level was significantly increased. While the serum insulin was slightly increased.

Also, in the second experiment, the anti-diabetic effect of cinnamon aqueous extract (CAE) at two doses (5 and 10ml/day/kg body weight) which administered to different groups of high fructose diet induced diabetic rats (HFD) type II diabetes mellitus for 8 weeks were studied. These results indicated that the HFD elevated serum glucose and serum insulin, twice. Cinnamon aqueous extract significantly decreased the elevated levels of glucose, nitric oxide, total cholesterol, triglycerides, LDL-C and insulin in serum of type II diabetic rats. Therefore, using cinnamon may play an important role in decrease hyperglycemia, hyperlipidemia and atherosclerosis diseases.

These results suggested that cinnamon has a regulatory role in blood glucose level and serum lipids of the two types of diabetes mellitus and the best significant effect showed in the group administrated CAE (10%) (10ml/day/kg body weight) and it was closed to the group administrated chemical drug (glibenclamide) and normal control.

Key words: Cinnamon, cinnamon biscuit, chemical composition, Type I Diabetes, Type II Diabetes

Name of Candidate: Eman Ahmed Ibrahim **Degree:** Ph.D.

Title of Thesis: Chemical and Biochemical Studies on Some Marine Algae As a Source of Bioactive Substances.

Supervisors: Dr. Gamal Sayed Ali El- Baroty
Dr. Ebtesam Abdel Moneim Mahmoud
Dr. Farouk Kamal El-Baz
Department: Agricultural Biochemistry

Approval: / /

ABSTRACT

The aim of the current work was to evaluate the lipid groups of five Egyptian marine algae species, two from the Red Sea Rhodophyta, (*Laurencia popillose* and *Galaxoura cylindriea)*, and three from the Mediterranean sea (Chlorophyta, *Ulva fasciata;* and Phaeophyta, *Dilophys fasciola and Taonia atomaria*) for their antiviral, anticancer, antioxidant and antimicrobial in vitro activities. Crude lipids were extracted by chloroform: methanol and major fractions were separated by thin layer, column chromatography and gas-liquid chromatography and their chemical compositions were characterized by spectroscopic methods (GC-MS, ESI- MS and IR). Among all alga species, total lipids were ranged from 0.66 to 2.20%. Of which, glycolipids group was ranged from 10.9 to 28.7 %, sulfolipids from 1.25 to 11.80 and phospholipids from 3.18 to 8.20 % of the total lipids. The major fatty acids among all algal lipids were 16:0, 20:3, whilst the algal phospholipids, glycolipids and sulfolipids had high contents of $C_{22:5}$ and $C_{17:0.}$ Sulfolipids of *G. cylindriea* contained highest levels of $C_{22:4}$ than the other two lipid fractions. LC/Ms/Ms showed that the molecular ion peak at m/z 956 was mainly found in all alga species (mainly in *L. papillose* and *G. cylinder* species). Its spectral data, suggested the presence of digalactosyl diacylglycerol (DGDG). Moreover, the main constituents of algal sulfolipid fraction were identified as sulfoquinovosyl-di-acylglycerol and sulfoquinovosyl acylglycerol, whereas phosphatidyl serine (*m/z*= 793.42), phosphatidic acid (m/z = 618.33), Lysophosphatidyl choline (m/z = 694.55), phosphatidyl ethanol amine (m/z = 714.72) and phosphatidyl glycerol (m/z = 694) were present in all phospholipid fraction of algae species. On the other hand, *D. fasciola* phospholipids had major peak at m/z =1395 was tentatively identified as diphosphatidyl-glycerol.

The *in vitro* antioxidant, antimicrobial, antiviral and anticancer activities of algal lipid fractions (phospholipids, sulfolipids, glycolipids) were evaluated. The results revealed that the *D. fasciola* glycolipids and *U. fasciata* and *L. popillose* phospholipids exhibited a remarkable activity against HSV-1 with an IC_{50} value of 10, 10, 29 µg/ml, which was compared to that of acyclovir (50 µg/ml). On the other hand, total lipids and lipid classes of five algae exhibited a remarkable activity HepG2 and MCF-7 cells with IC_{50} values ranging from 0.34 to 7.18 µg/ml, which compared to that of Novatron. However, most algal lipids and lipid classes possessed antimicrobial activity against *B. subtilis*, *E. coli*, *A. niger* and *C. albicans*e with MIC value ranging from 40 to 80 µg/ml, except sulfolipid had only antibacterial activity with MIC values ranging from 40 to 60 µg/ml. Algal lipids exhibited moderate radical activity towards $DPPH^{\cdot}$ radical, and high activity was found in total lipids of *D. fasciola*.

Key words: marine algae, lipids, sulfolipids, glycolipids, phospholipids, biological activity.

Name of Candidate: Azza Abd El-Moneam Abd El-Aziz Omran **Degree:** Ph.D.
Title of Thesis: Biochemical Studies on Sorghum
Supervisors: Dr. Abd El-Moneim Mohamed Radwan Affify
Dr. Hossam El-Din Saad El- Beltagi
Dr. Samiha Mohamed Abd El-Salam
Department: Agricultural Biochemistry **Approval:** 27 /8/ 2011

ABSTRACT

The present research work was carried out to eliminate the anti-nutritional factors (ANFs) associated with sorghum grains and to improve iron and zinc bioavailability and protein digestibility by different treatment. In order to achieve the previous aims, the three sorghum varieties named; Dorado, Shandaweel-6 and Giza-15 were subjected to physical, chemical, *in vitro* biological and technological evaluation.

Regarding the physical evaluation, Giza-15 variety was the highest variety in 1000 kernel weight, hectoliter and extraction of whole flour. Regarding the chemical evaluation and ANFs. Shandaweel-6 was the highest variety in crude protein content and crude fiber. Dorado was the highest variety in fat and ash. After treatments, the different proximate analysis were decreased related to the untreated sorghum. Dorado, Shandaweel-6 and Giza-15 had the highest amount of vanillic acid, ferulic acid, and protocatechuic acid respectively. Shandaweel-6, Dorado and Giza-15 had the highest amount of luteolin, kaempferol and catechin, respectively. After treatments, phenolic acids, flavonoids, tannins, antioxidant activity and phytate were decreased. After soaking and germination, the phyt/Fe molar ratios were increased while the phyt/Zn molar ratios were decreased.

After soaking and germination protein solubility was significantly increased while, after cooking and fermentation protein solubility was significantly decreased. Regarding protein fractions, there was an increase in albumin and kafirins proteins after soaking. After cooking, there was a decrease in albumin and kafirins proteins. While, after germination and fermentation there was an increase in albumin, globulin and kafirin proteins. Shandaweel-6 was the highest variety in protein solubility. Shandaweel-6 and Giza-15 were the highest variety in water holding capacity (WHC) and oil holding capacity (OHC), respectively. After cooking and fermentation, there was a significant increase in WHC. After germination, there was a significant increase in OHC. Regarding to the *in vitro* biological evaluation, protein digestibility was significantly improved as a result of soaking and germination treatments especially for Giza-15. Also, iron and zinc bioavailability was significantly improved because of soaking, germination and fermentation treatments. Giza-15 was the highest variety in iron bioavailability after germination and fermentation treatments. While, Shandaweel-6 was the highest variety in zinc bioavailability after germination treatment. Regarding, technological evaluation, sorghum biscuits had the acceptable color. After treatments, there were non significant differences between treatments in taste comparing to wheat biscuit. Hardness of sorghum biscuits was lower than wheat biscuit except for germination treatment.

Key words: Sorghum, soaking, cooking, germination, fermentation, phytate, phenols, protein digestibility, bioavailability of iron and zinc.

Name of Candidate: Amany Mohamed Mahdi **Degree:** Ph.D.

Title of Thesis: Biochemical and Molecular Studies on the Toxicity of Some Pesticides on Experimental Animals

Supervisors: Dr. Ahmed Mahmoud Aboul-Enein
Dr. Hanaa Fawzy Mohamed
Dr. Zeinab Yosef Ali

Department: Agricultural Biochemistry **Approval:** / /2011

ABSTRACT

The present investigation aimed to clarify some data about the subchronic concentration of two compounds; spinosad as insecticide and diclofenac sodium as anti-inflammatory drug, also the protective effect of a mixture of antioxidants (silymarin, vitamin C and vitamin E). These include the determination of biochemical, molecular and histopathological parameters of the toxicity of these compounds in albino rats for 28 days of treatment.

Results showed 50 % mortality of male rats after 24 hours of treatment with different doses of spinosad was found to be 6949.8 mg/kg (LD_{50}).

Diclofenac sodium caused high significant elevation in plasma glucose levels more than spinosad at all periods of exposure. Also, diclofenac caused a significant increase in the level of hemoglobin. While, spinosad caused a significant decrease in hemoglobin levels. The results showed a significant increase in AST, ALT and ALP activities caused by spinosad and diclofenac sodium. The results showed a significant increase in urea and creatinine levels caused by spinosad and diclofenac. Moreover, there was a significant increase in the level of plasma T.L and T.C caused by spinosad. While, diclofenac caused a significant increase in plasma T.L and T.G level.

The results showed a significant decrease in GSH content in erythrocyte, kidney, heart and brain caused by spinosad and diclofenac. In addition, there was a great significant decrease in liver GSH content caused by spinosad compared with control. Moreover, diclofenac caused a significant decrease in the content of plasma ascorbic acid at all period of treatment. The results showed a significant decrease in GST activity in plasma, liver, kidney and heart caused by spinosad and diclofenac after four weeks of treatment. There was a significant decrease also in SOD activity in plasma, liver, kidney and heart caused by diclofenac. The results showed a significant increase in GPx activity in liver and kidney caused by spinosad and diclofenac. While, spinosad and diclofenac caused a significant decrease in the activity of plasma CAT after four weeks of treatment.

A significant increase in MDA level was occurred by spinosad and diclofenac in plasma, liver, kidney, heart and brain. While, the results showed a significant decrease in AchE activity in plasma, liver and brain caused by diclofenac.

The results showed a significant increase in the activity of AcP, ß-GAL and ß-NAG caused by spinosad at all periods of treatment in liver lysosome compared with control. The present study showed that the number of metaphases and percentage of cells with structural aberrations increased by treatment with spinosad more than diclofenac. Similar, spinosad induced DNA damage in liver more than diclofenac. Concerning to histopathological studies the results showed changes in the hepatocytes in sever manner allover the hepatic parenchyma with spinosad also, was noticed by diclofenac compared with control. However, Sp+AM and Dic+AM moderate the changes that occurred by spinosad and diclofenac respectively.

Key words: Spinosad, diclofenac, enzymes, liver, chromosomal aberrations, histopathological

Name of Candidate: Shereen Nazeh Lotfy Hassan **Degree:** Ph.D.
Title of Thesis: Preparation of Natural Meaty and Nutty Flavour Substitute Using Various Thermal Processing Technology
Supervisors: Dr. Abdel kader Moursy Abdel Samad
Dr. Mohamed Ibrahem Kobeasy
Dr. Hoda Hanem Mohamed Fadel
Department: Agricultural Biochemistry
Branch: Biochemistry **Approval:** 21 /2/ 2011

ABSTRACT

The main objective of the present study was to produce thermal process flavourings by using model mixture based on the hydrolyzed soybean meal protein (HSMP). Hydrolyzed vegetable protein (HVP) was prepared either by acid hydrolysis (A-$HSMP_2$, A-$HSMP_4$ and A-$HSMP_6$) at different time intervals 2, 4, 6 h. or by enzyme hydrolysis (E-HSMP). Glutamic acid was the major free amino acid in (A-$HSMP_6$) followed by aspartic acid and glycine. Whereas alanine was the most abundant free amino acid in E-HSMP followed by leucine. Sample A-$HSMP_6$ exhibited the highest total colour change (ΔE) value compared with the other hydrolyzed soy bean meal protein samples. Concerning meat-like process flavouring, each hydrolyzed soy bean meal protein sample was involved in model mixture containing other precursors (thiamine, cysteine, taurine and xylose) and subjected to thermal processing, then encapsulated in gum Arabic. Methanthiol and dimethyl sulfide were predominant volatile compounds in $MAHSMP_2$ and $MAHSMP_4$. $MAHSMP_4$ contained the highest yield of Strecker aldehydes followed by $MAHSMP_2$. 2-Methyl-3-furanthiol the most contributor of meat aroma comprised more than 47% of the total volatiles in $MAHSMP_6$. $MAHSMP_6$ possessed the highest acceptability as beef-like flavouring compared with samples $MAHSMP_2$ and $MAHSMP_4$. The effect of storage on the overall quality of sample $MAHSMP_6$ for 1, 3 and 6 months was studied. 2-Methyl-3-furanthiol was the most potent odorant showed gradual decrease during storage. 2-Methyl-3-furanthiol was the major compound followed by dimethyl disulfide in freshly meat-like process flavouring from model system based enzyme hydrolyzed soybean protein (E-HSMP). During storage for 1, 3 and 6 months 2-methyl-3-furanthiol showed remarkable increase. The nut-like process flavouring ($NAHSMP_6$) was prepared by thermal treatment of model mixture containing (A-HSMP) with other precursors (glycine, glutamic, lysine, asparagine, L-arginine and xylose) and subjected to thermal processing then encapsulated in gum Arabic. Pyrazines were the most abundant compounds in the present study. 2, 3-Dimethylpyrazine was the major compound followed by 2-methylpyrazine and 2-ethyl-3, 5-dimethylpyrazine. pyrazine showed a decrease after storage for 6 months. Biological evaluation had been carried out for the three samples $MAHSMP_6$, MEHSMP and $NAHSMP_6$. The percentages mortality of MEHSMP (12.5%), $NAHSMP_6$ (25%) and $MAHSMP_6$ (62.5%), then MEHSMP proved to be the safest followed by $NAHSMP_6$.

Key words: Meat-like flavour, nutty-like flavour, Maillard reaction, hydrolyzed vegetable protein , thermal process flavourings