Name of Candidate: Nesrin Saad El-Din Mohamed **Degree:** M.Sc.
Title of Thesis: Effect of Cold Storage on Safety and Quality of Meat Kofta
Supervisors: Dr. Shafika Abd El Hamid Zaki
Dr. Ahmed Mohamed Ahab
Dr. Nadia Taha Saleh
Department: Food Technology
Branch: Home Economics **Approval:** / /

ABSTRACT

The present study was carried out to extend the shelf life of kofta (raw minced meat with spices) under refrigerating conditions. Fiber with either natural additive chitosan or chemical additive trisodium phosphate were added to kofta sample.

Results demonstrated that raw minced meat had 53 $\times 10^4$ CFU/g total counts, 40 $\times 10^3$ CFU/g *E. coli* and 8×10^2 CFU/g *Staph. aureus*. However, spices showed 379 $\times 10^4$ CFU/g total counts and 353 $\times 10^3$ CFU/g molds and yeasts. Kofta samples before storage had 98.3 $\times 10^4$ CFU/g total counts, 6.5 $\times 10$ CFU/g molds and yeasts, 36.5 $\times 10^3$ CFU/g *E. coli* and 7.5×10^2 CFU/g *Staph. aureus*. Appreciable higher in total counts of bacteria in Kofta were observed compared to minced meat. After storing Kofta for 3 hours in the refrigerator total counts were decreased, while increased counts were noticed with extending storage time up to 24 hours. Steaming, grilling and frying decreased the total count, *Staph. aureus* counts, while destroyed molds and yeasts and *Salmonella* spp. Both frying and grilling killed *E. coli*, while steaming decreased *E. coli*. No significant differences among sensory attributes of Kofta samples cooked by steaming and grilling before storage and those stored for 3 hours or 24 hours. On the other hand, lower significant scores were recorded for taste, color, flavor, texture and appearance of samples cooked by frying and stored for 24 hours compared to other samples stored for 3 hours and without storage.

Chitosan was added to kofta at levels of 0.3, 0.5, 1 and 2% with or without 1% fiber and cold stored for 1, 2, 3, 4 and 5 weeks. The effect of chitosan on decreasing microorganisms was gradually increased with increasing its added percentage. There were greatly increased in the counts of microorganisms in treated samples after storage at (3, 4 and 5) weeks compared with those stored for 1 and 2 weeks.

Trisodium phosphate was added to kofta at levels of 0.1, 0.2 and 0.3% with or without 1% fiber. Results showed that after 3 days storage, the counts of total counts, molds and yeasts, *E. coli* and *Staph. aureus* were appreciably decreased compared to those before storage. However, extending storage time up to 6 days greatly increased in the counts of all the tested microorganisms compared with those before storage and after storage for 3 days. Samples with higher percent of trisodium phosphate had lower counts of microorganisms compared to the other samples content on (0.1 and 0.2%) of trisodium phosphate. Samples with fiber had lower counts of microorganisms than samples having the same percent of chitosan or trisodium phosphate without fiber.

The addition of fiber and trisodium phosphate showed a lower values for water holding capacities and higher values for plasticity, while increasing the percent adding chitosan led to increase values of water holding capacities and lower values of plasticity.

Key words: Kofta, microorganisms, chitosan, trisodium phosphate, fiber

Name of Candidate: Al-Amir Ebrahiem Al-Weshahy **Degree:** Ph.D.
Title of the Thesis: Utilization of Potato Peels as a Source of Phenolic Compounds in the Production of Bread as a Functional Food

Supervisors: Dr. Mohamed Mohamed El-Noketi,
Dr. Mahmoud Ali Bekheet
Dr. Wagih Ahmed El-Malky
Dr. Venket Rao

Department: Food Technology **Approval:** / /

ABSTRACT

Peel samples of two potato varieties, Penta and Marcy, grown in Ontario, Canada, were evaluated as a source of polyphenolic compounds (PC) and related antioxidant capacity. PC and total antioxidant capacity (TAC) were assessed using both chromatographic and spectrophotometric methods. Total (PC) were 2.4 and 1.1 mg/gm of peel dried weight of variety Penta and variety Marcy, respectively, with cholorogenic and caffeic acids been the prominent phenolic acids in both. TAC was followed to (PC) contents with 38.9 and 28.4 mM/gm of peel dry weight.

The stability of (PC) and their (TAC) was measured at different time points, zero, two, four, and eight weeks, under different storage temperatures (-20, 4, and 25 ^{o}C); with the last been also tested under dark and light rhythm. PC and related (TAC) were decreased at first two weeks then increased between fourth week and continued to eighth week. The increase seemed to be affected by light rather than dark storage and it was also influenced by temperature.

As flour was suggested to be replaced by peel in bread baking, chemical composition of freeze-dried peel samples compare to regular hard wheat flour was assessed. Protein levels of peel samples were 12.8, 13.1, and 11.9 % of Penta, Marcy, and flour, respectively. Ash content was 0.4, 9.3, and 6.9 % for wheat flour, Penta, and Marcy while 1.7% was fat ratio in wheat and 0.7% peel samples of both potato varieties. Carbohydrate ranged from 72 to 75 % by difference in control flour as well as peel samples of Penta and Marcy.

Bread was proposed as a functional food model vehicle (PC) from peel samples. Freeze-dried peel samples of either variety Penta or Marcy were substituted the wheat flour, at different levels, 5, 10, and 15% (w/w) and the influence of that on rheological properties of dough and resulted bread characteristics was compared to bread of regular wheat flour. Rheological and features of produced bread was proportion to level of peel sample that replaced wheat flour.

Stability of (PC) under baking and storage conditions were also measured. Levels of (PC) were 6.02 and 3.84 mg per gm of dry weight, correspondingly, at baking day and after storage for one week at room temperature. Amounts of (PC) were in scope of 6.71 mg at day 1 and 5.87 mg in bread of variety Penta and 8.17 to 6.22 mg /gm of dry weight in bread of Marcy, at baking day and after storage, respectively.

Mixed peel samples were fed to rats at levels of 2.5% and 10 % (w/w) of the high-fat diet, as an oxidative stress-inducing diet, for three weeks to assess their antioxidant potency. Neither body weights nor major organs (liver, kidney, heart, and spleen) altered due to consumption of potato peel while oxidative stress were improved in rats fed on potato peel compare to regular rats chow, and the improvement was proportionate to the levels of potato peels in the diet.

Keywords: Antioxidant, Functional foods , Potato peels, Phenolic compounds, Bread

Name of Candidate: Sanaa Sobhy Hassan Aly **Degree:** Ph.D.
Title of Thesis: Effect of storage conditions on migration of packaging materials constituents into refined soy and sunflower oil blend.
Supervisors: Dr. Abd-El Rahman Khalaf-Allah
Dr. Mahmoud Aly Ahmed Bekheet
Dr. Assem Anwar Abou-Arab

Department: Food Technology **Approval:18/9 /2011**

ABSTRACT

The migration of plasticizers, i.e. Di-methyl phthalate (DMP), Di -ethylhexyl phthalate (DEHP), Di-butyl phthalate (DBP) and Di -ethylhexyl adipate(DEHA) from polyethylene terephthalate (PET) bottles and high density polyethylene (HDPE) bottles into edible oils (refined soybean oil with sunflower oil blend (1:1) were studied during storage for 360 days at 4, 20 and 40±1˚C. The plasticizers were determined by Gas - Chromatography (GC). Significant differences for migration of plasticizers into packed oils were observed between treatments. Migration of plasticizers was found to be related to temperature and storage time. Determination of physical, Mechanical properties and permeability of packaging materials. The interaction occurred between oil mixture and PET and HDPE bottles at zero time and at the end of storage at 4, 20 and 40 ˚C using IR was also studied. Survey for migration of phthalate and adipate plasticizer contamination of edible oils from the local market was also carried out. The results showed that, migration was increased with increasing storage temperature and storage time (contact time). The levels of the migrated compounds were found to be higher than the upper limit for global migration from plastic packaging materials into food and food stimulants that set by the European Union (EU) (60 mg/kg or 10 mg/dm ^{2}). The determination acid and peroxide values for oil samples packaged in plastic bottles. The results indicated that, migration must be considered in the determination of the shelf life of edible oils which packaged in plastic containers beside acid value and peroxide value in Egyptian standard.

Key words: Migration, Plasticizers, Packaging materials, Edible oils, Temperature, Survey

Name of Candidate: Nadra Sayed Youssef Hassan **Degree:** Ph.D.

Title of Thesis: Formulation and evaluation of the formulas prepared for infants and young children with acute diarrhea

Supervisors: Dr. Shafika Abdel Hamid Zaki
Dr. Ahmed Tawfic El-Akel
Dr. Laila Diaa El–Din El-Mahdy
Dr. Maha Abou Zekri

Department: Food Technology
Branch: Home Economics

Approval: 8 /6/ 2011

ABSTRACT

Six soy-based mixtures were formulated for infants and young children with acute diarrhea included yellow carrots, rice, potato starch powder and orange. Formulas were chemically, microbiologically, physically and sensory and biologically evaluated.

The chemical evaluation showed that the prepared formulas contained 5.67-7 % moisture. The contents of protein, fat, ash, fiber, carbohydrates and total pectin were 23.42-33.20, 6.47-7.5, 2.4-4.5, 3.9-5.98, 51.02-63.81and 2.22-2.67%, respectively. Energy ranged 400.54 - 407.15 kcal/100g formula. Calcium, sodium, potassium, iron and zinc contents were 70.01-138.20, 110.45-153.10, 215.90-320.50, 17.79-28.54 and 8.96-13.36 mg/100g, respectively. Formulas contained 288.46-630.80 IU/100g vitamin A, 40.00 mg/100g vitamin C and 0.24-0.30 mg/100g thiamin, 0.70-0.85 mg/100g phytic acid, 1.50-1.90 mg/g trypsin inhibitor and 0.05-0.08 IU/mg urease. The microbiological examination proved low total microbial counts and freedom from coliform group and yeast & moulds. All formulas were well accepted. Feeding rats with acute diarrhea on the diets with the proposed formulas stopped diarrhea within 1 – 2 days, while diarrhea in control positive lasted for 3 – 4 days. After diarrhea induction significant lower BW of the affected groups getting the proposed formulas were observed compared to normal rats ($p<0.05$). There were very highly significant differences among BWG% and FER of rats in positive and negative control groups ($p<0.05$). Final body weights of rats fed on diets with formulas were significantly higher than those for positive and negative control groups ($p<0.05$). Serum AST&ALT showed significantly lower value after having diarrhea. Despite after feeding rats on diets with formulas were slightly lower than those for negative control values of the experimental rats were in normal range. Uric acid, creatinine and urea levels after diarrhea induction were significantly higher than that of normal rats.

The clinical trial of formulas on infants and young children with acute diarrhea demonstrated insignificant ($p< 0.05$) differences among age, gender (F/M), and illness characterize of enrollment of the cases. Insignificant differences between mean values of HAZ, WHZ and WAZ in study groups for both female and male subjects were found. There was insignificant ($p< 0.05$) difference between weights of the formulas' groups and control at enrollment and after 5 & 15 days. All the groups getting the proposed formulas showed significant lower mean number of motions per day after 5 days compared to control group ($p<0.001$). The percentages of cases with watery, loose and semi solid stools were greatly reduced after five days in all the groups. Formula 2 showed the highest acceptability, following it formulas 6, 4 and 3 in respective order, then formulas 1 and 5 came.

Key Words: Acute diarrhea, infant, soy formula, cereals, nutritive value, antinutritional factors, safety, acceptability, oranges, and kidney and liver functions.

Name of Candidate: Hoda Hassan Abou El-soud Hafez **Degree:** Ph.D.
Title of Thesis: Effect of Pectin, Fiber gel and Phospholipids Isolated From Soy Bean Waste on Some Bakery Products Quality
Supervisors: Dr. Fathalla Abd El-Salam El- Wakiel
Dr. Yahia Ibrahem Sallam
Dr. Afaf Ahmed Abd El- Hamed
Department: Food Technology
Branch: - **Approval: 21 /05/ 2011**

ABSTRACT

The current study was carried out to utilize soybean hulls for preparation of pectin and fiber gel, meanwhile soy gums (by product of oil processing) were used for phospholipids preparation. Pectin and phospholipids were used for pan bread preparation in order to enhance the reheological, physical and chemical properties. Also, pectin and fiber gel were evaluated for using as fat replacer in the production of low calorie- high fiber cakes, biscuits and pies. The biological parameters of rats fed on low calorie pies which containing desirable levels of pectin, fiber gel and phospholipids were also determined *in vivo*.

Addition of pectin and phospholipids to hard wheat flour (72%) led to improvement the reheological parameters and physical properties of pan bread. Pectin and fiber gel resulted in noticeable increment in fiber and carbohydrate with low fat and calories in resultant products when compared with control sample.

Cakes, biscuits and pies with fat replacing 25 and 50% by weight of pectin and fiber gel possessed overall acceptability similar to that of the control sample. Replacing 75% of fat with pectin and fiber gel reduced caloric value by 13.43 and 23.7 respectively compared to that of control sample.

Serum glucose, total cholesterol, LDL cholesterol, VLDL, triglycerides and liver function (GOT and GPT) in blood serum were significantly increased as a result of diabetic and hypercholesterolemic induction in rats. Normal rats fed on pies containing pectin, fiber gel and phospholipids exhibited slight significant decrement in blood glucose, total cholesterol, LDL cholesterol and triglycerides with non significant decrement in GOT and GPT. However, in diabetic and hypercholesterolemic rats significantly lowered blood glucose, triglycerides, total cholesterol, LDL cholesterol, VLDL cholesterol GOT and GPT compared with control pies and basal diet. In general, the resultant products seemed to be acceptable with respect to all organoleptic properties. Finally, it is recommended to utilize pectin, fiber gel and phospholipids to prepare healthy diets with low calorie to diabetic and hypercholesterolemic status and control of some biological parameters.

Key words: Soy hulls, pectin, fiber gel, phospholipids, diabetic, hypercholesterolemia

Name of Candidate: Hanaa Mohamed Abd El-Aziz **Degree:** Ph.D.
Title of Thesis: Hypoglycemic Effect of Cinnamon and Propolis in Diabetes Mellitus
Supervisors: Dr. Shafika Abd El Hamid Zaki
Dr. Ghada Mohamady El-Kherbawy
Dr. Shreef Gamal Noub
Department: Food Technology
Branch: Home Economics
Approval: 26 /7 /2011

ABSTRACT

The present study aimed to find out new effective natural materials with therapeutic and protective effect to reduce blood glucose level and the toxicity of used drugs.

Thirty male albino rats were randomly divided into two main groups. The first group (n=6) was considered as negative control non diabetic rats (group 1). The other group of rats (24 rats) was subjected for intravenous injection with recrystalyzed alloxan to induce hyperglycemia. The diabetic rats were randomly assigned to four equal groups. (Group 2) Alloxan induced, untreated rats (n=6) chosen as positive control and the other three groups (group 3, 4 and5) were given cinnamon, propolis and mixture of cinnamon and Propolis with stomach tube, respectively. the concentration of dry material were 10 mg cinnamon /ml, and 3 mg propolis /ml and mixture of 10 mg cinnamon and 3 mg propolis /ml for groups 3,4 and 5 respectively intragastrically once daily for 6 weeks(all groups were fed the basal diet). Results showed that treatment of diabetic rats with cinnamon, propolis and their combination led to improve, BWG%, FER, serum glucose levels, insulin, hemoglobin and glycosylated hemoglobin, lipid profiles, liver functions, kidney functions, and lipid peroxidation enzymes. Histopathlogical examinations of the normal and treated groups revealed the normal histological structure of liver, kidney, pancreas and lungs. However, positive control group (diabetic group) demonstrated harmful alternations in the examined samples of these organs.

The effect of Cinnamon, propolis or their combination on fasting blood glucose as well as lipid profiles were studied in type 2 diabetic individuals. Forty eight type 2 diabetic patients of both sexes were divided into 3 groups. In addition to dietary management, each group (16 patients) was assigned for different treatments. Cinnamon, propolis and their combination were administered for group 1, 2 and 3, in respective order. Cinnamon and /or propolis were introduced in the form of cookies containing 3 g cinnamon, 0.3 g propolis and 3 g cinnamon plus 0.3 g propolis, respectively. These cookies were given for 45 days .Fasting blood samples were withdrawn for analysis on day zero (starting day of the experiment) and at the end of the experimental period (on 45 days). Fasting blood glucose (FBG), triglycerides (TG), total cholesterol (TC), high density lipoprotein (HDL-c), low density lipoprotein (LDL-c) and very low-density lipoprotein cholesterol (VLDL-c) in the serum of all the groups was determined. The obtained data demonstrated that taking cookies with cinnamon, propolis or their combinations for 45 days led to significant decreased levels of fasting blood glucose, triglycerides, total cholesterol and low-density lipoprotein cholesterol and very low-density lipoprotein cholesterol of the diabetic patients compared with the baseline values in serum of fasting subjects ($P< 0.001$). However, it showed significant increased serum levels of high-density lipoprotein cholesterol ($P< 0.001$). Insignificant differences among all the studied parameters of the three groups under study were noticed. These results suggest that both cinnamon or propolis and their combination have a possible potential modest effect in lowering blood glucose levels and improving lipid profiles in patients with poorly controlled type 2diabetes . BMI value was correlated with triglycerides and HDL.

Key words: Type 2 diabetes mellitus , Cinnamon, propolis, blood glucose, total cholesterol, high density lipoprotein and low density lipoprotein cholesterol.

Name of Candidate: Fatma Sela Abolgasem **Degree:** M.Sc.
Title of Thesis: Effect of oat flakes as a fat replacer on chemical, physical and sensory properties of low-fat beef burgers
Supervisors: Dr. Nadia Abd El-Rahman Salama,
Dr. Mohamed Mohamed El-Nikeety
Department: Food Technology
Branch: **Approval: / /2011**

ABSTRACT

This investigation was carried out to study the production of low-fat beef burgers using animal fat replacer, i.e oat flakes and corn oil to improve the quality and functional properties of low-fat beef burgers. Beef burgers were produced with four different formulations including 5, 10, 15 and 20% oat flakes and animal fat at 15, 10, 5% and 0 + 5% corn oil levels, respectively. Control samples were formulated with 20% beef fat addition. All samples were stored at -20^{o}C for 6 months for evaluating chemically, physically and sensory before and after cooking at zero time and after 2 and 6 months of frozen storage.

The main results can be summarized as follows:

Reducing total fat levels with addition of oatmeal was important effect on the quality of beef burgers. Addition of oatmeal to beef burger increases protein and ash content and decreased moisture content. Beef burgers with 20% oatmeal+5% corn oil had the highest concentration of unsaturated fatty acids and lowest cholesterol contents. The peroxide values of all oatmeal beef burger samples were lower than the control sample.

The water holding capacity (WHC), plasticity, fat and moisture retention, cooking yield, shrinkage and tenderness of beef burger samples were improved by adding of oatmeal when compared with the control sample at zero time and after 2 and 6 months of frozen storage.

There was a significant ($p \geq 0.05$) difference among the samples in respect to sensory properties and the greatest overall acceptability was attained when the oatmeal was at 15% addition level. The results indicate that, 15-20% oatmeal can be used as a fat replacer to produce low-fat beef burger.

Key words: Oat flakes, corn oil, low-fat, beef burgers, quality properties.

Name of Candidate: Rasha Ali Taha Abd El-wahab Hamza **Degree:** M.Sc.
Title of Thesis: Effect of Some Spices and Type of Frying Oil on Quality Attributes of Semi-fried Chicken Fingers during Frozen Storage
Supervisors: Dr. Ahmed Tawfek El-Akel
Dr. Mohamed Mohamed El-Nikeety
Dr. Atef Saad Osheba
Department: Food Technology **Approval:**3 /10/ 2011

ABSTRACT

This study was carried out to evaluate chemical, microbiological and sensory properties of semi-fried chicken fingers which manufactured from spent laying hen meat, besides, selection of the best spices mixture which can be used in processing. Preliminary experiments results cleared the best spices mixture which can be used in preparation of chicken fingers (25% thyme + 25% sage + 50% white pepper). Therefore, chicken fingers were prepared by using this mixture and then semi-fried by using two different types of frying oil (palm olein oil and sunflower seed oil), beside preparation of control sample containing just white pepper for comparison. Results indicated no significant differences ($p>0.05$) in chemical composition, thiobarbituric acid (TBA), peroxide value (PV) and total volatile nitrogen (TVN) between control sample and that containing spices mixture immediately after processing without semi-frying process. Moreover, semi-frying process with both type of oil led to increment of TBA and PV meanwhile; TVN had slight decrement. The chicken fingers which semi-fried with palm olein oil had significantly lower in above-mentioned parameters when compared with that semi-fried with sunflower seed oil during frozen storage. Microbiological results indicated that, chicken fingers which prepared with spices mixture were lower in total bacterial count, coliform group and psychrophilic bacteria when compared with control sample. Also, semi-frying with both frying oils led to total bacterial count decrement and complete elimination of coliform and psychrophilic bacteria. Sensory properties stated that, chicken fingers which prepared with spices mixture and fried with palm olein oil were the highest overall acceptability scores meanwhile, control sample which fried with sunflower seed oil had the lowest overall acceptability.

Key words: Spent laying hen, semi-frying, sunflower seed oil, palm olien oil, chicken fingers, sage, thyme, white pepper.

Name of Candidate: Dalia Fawzi Hasneen Mohamed **Degree:** M.Sc.
Title of Thesis: Chemical, Physical and Organoleptic Evaluation of Low Calorie Cakes
Supervisors: Dr.Enayat Mahmoud Hassan, Dr. Ahmed Tawfik El-Akel
Dr. Sayed Abd Elhamid Soliman
Department: Food Technology
Branch: Home Economics **Approval:** / /

ABSTRACT

The present study aimed to prepare and develop low calorie cakes containing fat and sugars replacer by partial substitution of wheat flour with chickpea flour .Also, partial substitution was carried out on the accepted cake formula by carrot, banana or strawberry purees or powders. The accepted cakes were taken to partially replace sucrose with stevia , fructose and their blends . Chemical, physical and organoleptic evaluation of accepted cakes were done to produce low calorie cakes that closely mimic those of full fat and full sugar cakes. Results revealed that the butter showed the highest caloric value (733.0Kcal/100g), while the calories obtained from strawberry, banana or carrot powders were 320,318 and 310 Kcal /100g, respectively. The water absorption values of wheat flour substituted by 20 or 40% chickpea flour were higher than the control, while data showed decreasing in its degree of weakening. The resistance to extension, extensibility, proportional number and energy of dough decreased with increasing the chickpea flour by 20 or 40%. Also the increasing of wheat flour substitution with chickpea reduced the specific volume of cakes. The crumb yellowness values and total color different of the control (ΔE) were increased by increasing wheat flour substitution levels, while lightness values were decreased. Baking quality and sensory evaluation of cakes were satisfactory up to 40% level by substituting with chickpea flour as well as the nutritive value of cakes could be enhanced.

Carrot, banana and strawberry purees or powders were used to replace cake butter by 10,20,30,50 and 75 % .Results revealed that the specific volume of produced cakes were decreased. All Hunter values were affected by increasing fat replacement level of fruit purees. Total color differences (ΔE) of cakes increased by increasing fat replacement level. While, the lightness values were decreased as fat replacement levels increased. It could be concluded that the replacement of fat with various fruit purees enhanced flavor (taste and order), while other sensory characteristics were gradually decreased. The physical measurements of cake containing carrot , banana or strawberry powders were affected at all replacement levels. The replacement with strawberry powder had the strongest effect. Data showed that the increasing of fat substitution levels led to decrease in volume and specific volume of cakes, however, their weights increased. The increasing of fat replacement with fruit powders led to decrease in cakes color. Results indicated that all produced cakes were accepted and those had good sensory attributes can be produced by using fruit puree or powder as fat replacers up to 50%. The caloric values of tested cakes decreased by increasing the level of fat replacement. Results revealed that the increasing sugar replacement levels in low fat cakes led to increase in total color difference, while the specific volume were decreased.

The replacement of sugar with stevia , fructose or blend of 50% stevia +50% fructose enhanced cakes taste and odor, while the other sensory attributes were gradually decreased . It could be concluded that replaced cakes with 50% stevia, fructose or their blends were more acceptable in most physical and sensory characteristics. Generally, tested cakes were accepted organoleptically such cakes can considered as good bakery products among people who are on the diet and willing to decrease their bodies weight due to low calories cake.

Key words:Flour substitution,Chickpea,fat and sugar replacers, low or free fat and sugar cake,fruit puree or powder,stevia sugar

Name of Candidate: Amira Aly Fahmy Ayad **Degree:** M.Sc.
Title of Thesis Formulation of Special Diets for Preschool Children
Supervisors: Dr. Shafika Abd El-Hamid Zaki
Dr. Ghada Mohamedy El-Kherbawy
Department: Food Technology
Branch: Home Economics **Approval:** **/10 / 2011**

ABSTRACT

Probiotic functional foods face high technology demands. Probiotics live microorganisms administered in adequate amounts confer a health benefit on the host. It needs to retain its viability during all the production steps and even in the gastrointestinal (GI) tract of the consumer

The present study aimed to formulate special probiotic functional diets for preschool children. The survival of probiotic strains (*B. bifidum*, *B. infantis*, *B. breve* and *L. paracasei* 441) in different concentration of bile salts and low pH were evaluated. Three treatments for making synbiotic fermented milk with *Bifidobacterium spp*. were used (T1: without adding inulin "as control", T2: adding 3% inulin, T3: adding 1% inulin *and L. paracasei* 441). Changes in pH, titratable acidity, viscosity and sensory evaluation as well as viability of bacteria in symbiotic milk throughout storage period (4˚C for15 days) were tested. Sensory evaluation was done for fresh and stored milk. Microencapsulation of probiotic strains were done to improve its properties. Viability, stability, bile salt, low pH of microencapsulated probiotic cells (*L. paracasei* 441 and *B. bifidum*) in skim milk at different concentrations (10, 15, 20 and 30%) as spraying solution for loading probiotic on cereal flakes were examined. Viability of microencapsulated cells after adding cold, warm and hot milk to the prepared probiotic cereal flakes was determined.

The obtained results showed that *L. paracasei* 441 and *B. bifidum* strains were more susceptible to1% bile salt in viability after 3 h. All the strains were able to tolerate pH 2.0, 2.5 and 3.0 for three hours with reduction in viable count less than one log. Changes in pH acidity and viscosity and viability of bacteria as well as sensory evaluation of fermented milk demonstrated that the treatments could be ranked as follows T3 > T2 >T1. Microencapsulation of probiotic strains enhanced its viability and stability. The best concentrations of skim milk reached 20%for *B. bifidum* and 30% and *L. paracasei* 441as spraying solution for loading microencapsulated strains on cereal flakes. Higher viability of microencapsulated cells was noticed after adding either cold or warm milk compared to hot milk. Sensory evaluation proved that probiotic cereal flakes diets with different flavors were well accepted by preschool children. No differences were found between either in the two storage temperature or flavors.

Key words: Cereal, inulin, synbiotic, young children, functional diets.

Name of Candidate: Eman Sami Ibrahim **Degree:** M.Sc.
Title of Thesis: Effect of Parsley and Coriander Leaves on Hypercholesterolemic Rats
Supervisors: Dr: Shafika Abd El-Hamid Zaki
Dr: Ghada Mohamady El-Kherbawy
Department: Food Technology
Branch: Home Economics **Approval:** / /

ABSTRACT

The study aimed to investigate the effect of hypercholesterolemic diet enriched with different levels of parsley or coriander on hypercholesterolemic rats. Sixty four male albino rats (Sprague- dawly strain) weighting 250±5g were assigned to 8 groups, each group had 8 rats. The negative control received a basal diet throughout the experiment. However, the experimental groups including fifty six rats were fed on hypercholesterolemic diet for two weeks to develop hypercholesterolemia. The hypercholesterolemic rats were divided to seven groups, fed on hypercholesterolemic diet for six weeks, and one of their seven groups was chosen as a positive control. The rats in the positive control continued on the same hypercholesterolemic diet. The six remaining groups of rats received hypercholesterolemic diets with three levels (10, 15 and 20%) of dried coriander or parsley leaves.

Adding the dried parsley or coriander at the three levels showed significant ($P<0.05$) lower body weight gain percentages and feed efficiency ratios compared with the corresponding values of normal or hypercholesterolemic rats(NC and PC).

At the end of experiment, serum lipids (TC, TG, LDL-c, VLDL-c) and LDL/HDL-c of hypercholesterolemic rats fed on diets with either parsley or coriander were significantly ($P<0.05$) lower than the corresponding values of positive control but higher than those of negative control. The highest HDL-c was found for the group fed on diet with 20% of parsley, followed by that of the group getting 20% of coriander.

. Among the experimental groups, the positive control group fed on hypercholesterolemic diet recorded the highest significant AST and ALT values ($P<0.05$). No significant differences were found among AST values of the other experimental groups .While ،the lowest significant ALT value ($P<0.05$) was noticed in negative control group. AST and ALT values of all groups were in normal range. Urea, uric acid and creatinine in all treated groups were insignificantly different compared with negative control group. There were no significant differences among urea, uric acid and creatinine of the groups treated with parsley or coriander.

The addition of dried parsley or coriander demonstrated significantly ($P<0.05$) higher fecal bile acid, fecal sterol, fecal fat and SOD values than those of positive control. Adding 20% parsley or coriander showed significantly ($P<0.05$) higher GSH and SOD than that of positive controlHistopathological studies in rats showed that diets with either parsley or coriander exerted protective effects on liver and heart. Generally, parsley addition demonstrated more pronounced effects on hypocholesterolemia than coriander.

Key words: parsley, coriander, lipids, hypercholesterolemia, histopathology, feed efficiency ratio, feed intake, weight gain, liver and kidney function, antioxidant, fecal analysis.

Name of candidate: Karima Saeid Mohamed Hammad **Degree:** M.Sc.
Title of thesis: Degossypolization and decolorization of solvent extracted cottonseed oil
Supervisors: Dr. Saad Ahmed Saad Hallabo
Dr. Samy Mohamed Galal Abdel Aziz
Department: Food Technology
Approval: / /

ABSTRACT

Six types of bleaching agents: Commercial, Engelhard and Tonsil bleaching earth, magnesium oxide, aluminum oxide and charcoal were selected to evaluate their abilities on reducing the color and the gossypol content of color fixed neutralized cottonseed oil. Color of this oil was higher than 50 red /20 yellow using Lovibond Tintometer and 1 inch cell and its gossypol content was 200 ppm. The bleaching of this oil was carried out by using two methods, conventional method (stirring oil with bleaching adsorbents), or passing the oil on column filled with bleaching adsorbents. The aluminum oxide showed a superior adsorption capacity in reducing the color of the oil to less than1.4 red/20 yellow and reducing its gossypol content to 21 ppm, by using the column system, at the oil:adsorbent ratio of 8:1. The conventional method failed to reduce the color of the treated samples therefore, alkaline pretreatments were conducted. Treatment of color fixed oil with alkaline solution (sodium hydroxide solutions (14.5 Be^o), sodium silicate (45 Be^o), ethanol amine and ammonia followed by bleaching with Engelhard earth at different levels using conventional method reduced the color of oil to values lower than 1.4 Red/20Yellow which makes it edibe according to Egyptian Standard for edible cottonseed oil. The most efficient method was found to be use 2.5% NaOH solution followed by bleaching with Engelhard at 2% level.

Key words: bleaching, bleaching agents, color fixation, cottonseed oil and gossypol