



**25/11/2008**

09.00–10.30	<b>RECEPTION OF PARTICIPANTS</b>
10.30–11.00	<b>OFFICIAL OPENNING</b>
11.00–12.00	<b>FAIR OPENNING</b>
<b>Session a. TECHNOLOGY OF FOOD INDUSTRIES</b>	
Chairman: <b>Ali K. Alsaed</b>	
Reporter: <b>Mahmoud Hadad</b>	
12.00-12.20	<b>Mohamed Ali Chaar</b> , Al Baath University, Syria. Mondial production and consumption of vegetable oils.
12.20-12.40	<b>Mouhammad Naddaf</b> , Tishreen University, Syria. A new technique for refining olive oil.
12.40-13.00	<b>Ahmed Mahmoud Matouk</b> , Mansoura University, Egypt. Development and evaluation of an olive oil extracting machine.
13.00-13.20	<b>Obaidah S. Al-Abdallah</b> , Damascus University, Syria. The effect of processing procedure on ascorbic acid, total phenol and antioxidant activity of green pepper.
13.20-13.40	<b>Abdul Mugeeth Saleh</b> , General Commission For Scientific Agricultural Research. Aleppo, Syria. Effecting of planting date in percentages of protein, oil and in the main physical and chemical properties of oils of seven soya bean cultivars.
13.40–15.00	Lunch & poster viewing

## Session b. BIOTECHNOLOGY

25/11/2008

Chairman: **Sharif Sadek**

Reporter: **Ahmad Sammour Ibrahim**

12.00-12.20	<b>Mahmoud Ahmad Mohammad</b> , University of Almosul, IRAQ. Isolation of peroxidase from local plants.
12.20-12.40	<b>Ahed Abou Younes</b> , University of Damascus, Syria. Detecting of lactic acid bacteria isolated from Syrian dairy products.
12.40-13.00	<b>Adib Faleh</b> , Aleppo University, Syria. Increasing quality of biological production of citric acid by using semi-continuous fermentation method.
13.00-13.20	<b>Ali Hazem Mansour</b> , AL-Anbar University, Iraq. Production of single cell protein from whey and remnants of dates and local <i>Candida utilis</i> , <i>Candida tropicalis tropicalis</i> Isolates.
13.20-13.40	<b>Nour Al-Asaad</b> , GCSAR, Syria. GMO detection in some food products in Syrian market using molecular biology techniques.
13.40–15.00	Lunch & poster viewing

**Session a. TECHNOLOGY OF FOOD INDUSTRIES**

**25/11/2008**

Chairman: **Mouhammad Naddaf**

Reporter: **Rana Cheikh Ousman**

15.00-15.20	<b>Mouhammad N. El-Ghazali</b> , Janoub Alwady University, Egypt. Effect of sun-drying and mechanical drying on, chemical composition and lipid, phospholipid fractions of aswan dry-dates.
15.20-15.40	<b>Rana Darboui</b> , Al Baath University, Syria. Study to improvement of the characteristics of soy milk and soy yoghurt by using membrane separation.
15.40-16.00	<b>Khalid M. Al-Ismail</b> , University of Jordan, Jordan. Evaluation of some chemical properties of different burger formulations.
16.00-16.20	<b>Mohammed Nasreddin Zidoune</b> , Université Mentouri de Constantine, Algérie. Chicken Pepsin: extraction, characterization and conservation.
16.40–17.00	Coffee break

**Session b. BIOTECHNOLOGY****25/11/2008**Chairman: **Adib Faleh**Reporter: **Rana Moustafa**

15.00-15.20	<b>Ahmad Ramzi Dabbagh</b> , Aleppo University, Syria. Effect of acid and salt concentration in pickles microbial fermentation.
15.20-15.40	<b>Idham ali AL-Assaffii</b> , AL-Anbar University, Iraq. Evaluate of ceratophylum demeresm waste usage with or without Bio-amendments as substrate for oyster mushroom production ( <i>Pleurotus ostreatus</i> Jacq.fr).
15.40-16.00	<b>Fatma I. EL- Hawary</b> , Mansoura University, Egypt. production of L(+) lactic acid from whey by immobilized whole cells of <i>Lactobacillus delbrueckii</i> and <i>Lactobacllus gasser</i> .
16.40–17.00	Coffee break

**Session a. TECHNOLOGY OF FOOD INDUSTRIES**

**25/11/2008**

Chairman: **Mohammad Riad Al-Bakouni**

Reporter: **Abdul Aziz Abbara**

17.00-17.20	<b>Shaaban Negm Deraz</b> , University of Menofiya, Egypt. Evaluation of chemical components of some Terfezia varieties and using its flour to support the bread.
17.20-17.40	<b>Ilkin Yucel Sengun</b> , Ege University, Turkey. A turkish cereal based fermented food: tarhana.
17.40-18.00	<b>Mustafa Sattouf</b> , Al Baath University, Syria. Quality properties of bug ( <i>Eurygaster Intergriceps</i> ) damaged Syrian wheat, and the effect of different tempering.
19.30–21.00	Diner

**Session b. BIOTECHNOLOGY**

**25/11/2008**

Chairman: **Ahmad Ramzi Dabbagh**

Reporter: **Rawaa Almehdi**

17.00-17.20	<b>Nizar. Issa</b> , ENSAIA – INPL, France. Natural phenols oxidation by laccase of myceliophthora thermophila in aqueous medium: a process « Green » for functionalisation of chitosane.
17.20-17.40	<b>Idham ali AL-Assaffii</b> , AL-Anbar University, Iraq. Use of Initial Inoculum of gluconobacter - ST1 with Aspergillus niger to produce oxalic acid from date mail syrup.
19.30-21.00	Diner

26/11/2008

**Session a. FOOD PRESERVATION AND QUALITY CONTROL**

Chairman: **Karim Allaf**

Reporter: **Duried Alwazeer**

09.00-09.20	<b>Khalifa Suleiman Mohamed</b> , University of Al-Jabal Elgharbi, Libya. Physiological and histological change of peach fruits during the storage.
09.20-09.40	<b>Elias Akkari</b> , ENITIAA, France. Towards a control of thermal runaway in microwave thawing.
09.40-10.00	<b>Fouad Neemah</b> , Al Baath University, Syria. Preservation of camel meat by acidic solutions.
10.00-10.20	<b>Monir Basher Ayoub</b> , Maani Group, Syria. Quality and process control In the food industry.
10.20-10.40	<b>Reem S. Al-Sabbagh</b> , Al Baath University, Syria. Studying the impact of some heat and storage treatments on the conversion of nitrogen compounds into nitrite and nitrosoamine in vegetables.
10.40–11.00	Coffee break



**Session b. WASTE TREATMENT OF FOOD INDUSTRIES****26/11/2008**Chairman: **Ahmed Abd El-Aziz El-Refai**Reporter: **Ahmad Sammour Ibrahim**

09.00-09.20	<b>Darine Selmane</b> , Blaise Pascal University, France. Extraction of proteins from slaughterhouse by-products: study of their functional properties.
09.20-09.40	<b>Amal M. El-Bastawesy</b> , Food Technology Research Institute, Egypt. Utilization of peach and tomato wastes as unconventional sources of edible oils and natural antioxidants.
09.40-10.00	<b>Abdul rzzak Alturkmani</b> , Homs, Syria. Dairy industry effluents treatment.
10.00-10.20	<b>Tamim Alia</b> , Teshreen University, Syria. Composting of solid olivemills by-products.
10.20-10.40	<b>Mona Ghazi Zaeib</b> , Homs Sugar Company, Syria. Optimization of the upflow anaerobic sludge blanket (UASB) reactor for effluents of sugar industry.
10.40–11.00	Coffee break

## Session a. FOOD PRESERVATION AND QUALITY CONTROL

26/11/2008

Chairman: **Shaaban Negm Deraz**

Reporter: **Moustafa Satouf**

11.00-11.20	<b>Nsren Albitar</b> , University of La Rochelle, France. Health and Food Safety: the DIC treatment as a multidimensional approach of preservation and transformation cases of juice, concentrate, dried, and powdery super-fruits.
11.20-11.40	<b>Omar H. Al-Mohamde</b> , AL-Anbar University, Iraq. Effect influence of some plants extracts on the quality natural storability of potato tubers ( <i>Solanum tuberosum</i> L).
11,40-12,00	<b>Duried Alwazeer</b> , Al Baath University, Syria. Extraction of polyphenol oxidase from peppermint and study the effect of reducing compounds on the enzymatic activity.
12.00-12.20	<b>Ali K. Alsaed</b> , University of Amman, Jordan. Detection of olive oils authenticity by GLC analysis of sterols using polar column.
12.20-12.40	<b>Akrum Hamdy</b> , Minia University, Egypt. Factors affecting poultry meat quality.
12.40-14.00	Lunch & poster viewing

**Session b. TECHNOLOGY OF FOOD INDUSTRIES / FOOD PRESERVATION AND QUALITY CONTROL**

**26/11/2008**

Chairman: **Mohamed Ali Char**

Reporter: **Antoun Yousef**

11.00-11.20	<b>Ali K. Abdel-Rahman</b> , Assiut University, Egypt. Modeling of raw cane-sugar syrup concentration using direct contact membrane distillation.
11.20-11.40	<b>Abdel-Rahman Mohamed Attia</b> , University of Halwan, Egypt. Biological effects on experimental rats of polycyclic aromatic hydrocarbons formed in cooked meat using roasting and frying methods.
11.40-12.00	<b>Mohammad Riad Al-Bakouni</b> , Al Baath University, Syria. Using sucrose for production of fructose syrup.
12.00-12.20	<b>Afamia Kouzi</b> , Homs Sugar Company, Syria. Dextran effects on the cane sugar industry case study "Algunied sugar factory".
12.20-12.40	<b>Ahmed Abd El-Aziz El-Refai</b> , Mansoura University, Egypt. Grape and mango seeds as untraditional sources of edible oils, antioxidants and antibacterial compounds.
12.40-14.00	Lunch & poster viewing

## Session a. TECHNOLOGY OF FOOD INDUSTRIES

26/11/2008

Chairman: **Magdi G. Abdelfadeil**

Reporter: **Abdul Aziz Abbara**

14.00-14.20	<b>Haider Galyoun</b> , University of Kalamoon, Syria. Reduction of oil uptake in deep fat french fried potatoes.
14.20-14.40	<b>Bolbol Ramadan Ramadan</b> , Assiut University, Egypt. Characterization of phytases from cereal grains as affected by soaking and germination processes and some inhibitors.
14.40-15.00	<b>Mohamad Alshehabi</b> , GCSAR, Syria. Study the effect of the type of starter and the inoculated rate on the the characteristics of labneh produced in direct way and comparing it with labneh made in traditional way.
15.00-15.20	<b>Mohamad Almasri</b> , Al Baath University, Syria. Production of low calorie natural juice.
15.20-15.40	<b>Farhan Alfin</b> , Al Baath University, Syria. Effects of Konafe dough ingredients on its fiber quality.
15.40-16.00	Coffee break

**Session b. NUTRITION AND HUMAN HEALTH****26/11/2008**Chairman: **Fatma I. EL- Hawary**Reporter: **Rana Cheikh Ousman**

14.00-14.20	<b>Mona Abd El Magied Nasr</b> , Cairo University, Egypt. Efficiency of anthocyanins and $\beta$ -carotene as natural antioxidants.
14.20-14.40	<b>Wagnat Hakiem</b> , Dericons Center, Syria. Secrets of food in treatment of depression.
14.40-15.00	<b>Hamid G. Hasan</b> , University of Sulaimani-Iraq. Inhibitory effect of <i>Gundelia</i> extract on urinary $\alpha$ -amylase activity of type-i diabetes mellitus.
15.40-16.00	Coffee break

## Invited lectures

26/11/2008

16.00-17.00	<b>Pr. Karim Allaf</b> , University of La Rochelle, France. Procédé d'extraction des huiles essentielles de Avicenne à nos jours, de l'analyse fondamentale aux applications industrielles.
17.00-18.00	<b>Pr. Lionel Muniglia</b> , ENSAIA – INPL, France.
19.30-21.00	Diner

**27/11/2008**

09.00-10.30	<b>ANNOUNCEMENT OF THE EXCEPTIONAL RESEARCHES</b>
10.30	<b>THE CONFERENCE CONCLUDING</b>

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# MONDIAL PRODUCTION AND CONSUMPTION OF VEGETABLE OILS

**Chaar Mohamed Ali**

Professor, Food Engineering Department, Faculty of Chemical and Petroleum Engineering, Al Baath University, Homs, Syria.

## ***Abstract***

Vegetable oils and fats are important natural compounds , which interfere in composition of all vegetable and animal organism, and play an important role in the life of human as food material rich in energy which supply approximately the third of human needs from energy.

World production of important Vegetable oils was developed in the large form during last 20 years, and there are increasing about 5% yearly in production, total production was about 66,4 million tons in 1993 and arrived to about 130 million tons in 2007, the big development was in production of palm oil, soybean oil and canola oil, which there production is about 65% from total world production of vegetable oils.

Technological methods and instruments for extraction of vegetable oils and the methods of purification were developed very much during the last century, and happened big increasing in consumption of vegetable oil due to the increasing of population and due to the using of vegetable oils for production different chemical substances and production of BIOSEDEL resulting increasing of petroleum prices in big quantity during last five years.

Vegetable oil industry is considered an essential industry in Syria, big development was happened in the production of vegetable oils during last years and vegetable oil production become one from the important food industry, there are more than 25 factories for production of vegetable oils, ghee and margarine distributed essentially in middle and north of Syria, in addition there are more than 800 olive mills.

# **A NEW TECHNIQUE FOR REFINING OLIVE OIL**

**Naddaf Mouhammad**  
Tishreen University, Syria.

## ***Abstract***

Olive oil is considered as one of the best nutritive plant oil, however, its free fatty acids contents may reduce the oil quality and its commercial and nutritive value. So, difficulties in refining oils whose acid content is too high, prevent its uses in food industry, and make it useful for soap production only, which reduces its economical value.

After intensive work, which continued for two years and half, it was possible to design a new apparatus using new technique, for eliminating free fatty acids and a part of peroxides. Industrial conditions were determined through lab. work, which was adjusted by applicative and statistical studies. It was the technique and the apparatus, which was used, was tested under industrial conditions, in Syrian Olive Oil Company, where they showed their capability to remove oil acidity and the most part of peroxides, it increases oil recovering by 41–44% and saves alkaloids consumption by amount 17%, compared with other techniques common internationally.

This work also introduces a detailed information of this technique and explains the mode and the systematic of the work.

This technique may be used to obtain fatty acids, which can be used in various industrial purposes instead of oil.

# DEVELOPMENT AND EVALUATION OF AN OLIVE OIL EXTRACTING MACHINE

**Matouk A.M.<sup>1,\*</sup>, Owies T.R.<sup>2</sup>, El-kholy M. M.<sup>3</sup>, El-Khawaga S.<sup>4</sup>**

<sup>1</sup>Prof. of Agric Eng., Fac. of Agric, Mansoura Univ., Egypt.

<sup>2</sup>Researcher, Agric. Eng. Res. Institute, Dokki, Giza, Egypt.

<sup>3</sup>Senior researcher, Agric. Eng. Res. Institute, Dokki, Giza, Egypt.

<sup>4</sup>Senior researcher, Agric. Eng. Res. Institute, Dokki, Giza, Egypt.

## ***Abstract***

A study was carried out to develop and evaluate an olive oil extracting machine. The developed machine included washing, crushing and hydraulic press units. The optimum operating condition, machine capacity, working efficiency and energy consumption for the machine units were measured and evaluated for different oil, dual purpose and mixed varieties of olive. The results show that, the average working capacity for the machine units was 197.1 kg/h. While, the energy consumption for the washing and crushing units was 2.53 kw.h and it was 8.13 kw.h for the hydraulic press unit. On the other hands, the extraction efficiency of the hydraulic press unit was varied from 84.49 to 98.33% for the pure varieties and from 87.96 to 91.81% for the mixed varieties which means that, mixing of different varieties does not affecting the extraction efficiency of the hydraulic press unit. In general the developed machine was proved to work satisfactorily for the pure and the mixed varieties considering working capacity, efficiency and energy consumption.

**THE EFFECT OF PROCESSING PROCEDURE  
ON ASCORBIC ACID, TOTAL PHENOL AND  
ANTIOXIDANT ACTIVITY OF GREEN  
PEPPER (CAPSICUM ANNUUM, L)**

**Sumainah Ghiath M., AL-abdallah Obaidah S.,  
Mohamed Mohamed A.**  
Damascus University, Syria.

***Abstract***

The changes occurred between two green peppers, sweet and hot , processed by widely used pickling and air-drying procedures were compared for their chemical composition (moisture, ash, sugar, fat) , biological active compounds (T- phenol, Vit C) and antioxidant activity. Significant changes have been occurred between processed green peppers with regard to their content of ascorbic acid, T-phenol, and antioxidant activity measured by two methods, DPPH and  $\beta$ -Carotene bleaching. The results indicated that processing procedures affect antioxidant activity, vit C, and T-phenol in processed products.

# EFFECTING OF PLANTING DATE IN PERCENTAGES OF PROTEIN, OIL AND IN THE MAIN PHYSICAL AND CHEMICAL PROPERTIES OF OILS OF SEVEN SOYA BEAN CULTIVARS

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<sup>2</sup>Dept. of Food Science, Faculty of Agriculture, University of Aleppo, Syria.

<sup>3</sup>General Commission For Scientific Agricultural Research (GCSAR), Damascus, Syria.

## **Abstract**

This research aimed to study the physical properties and chemical properties of seven soya bean cultivars' oils that had been included in studies of General Commission for Scientific Agricultural Research (GCSAR) and planted at two planting dates: first and second. This research carried out throughout two years; 2005 and 2006.

The study included determination of: the percentages of protein, oil. Also refractive index, unsaponifiable matter, iodine value, saponification number, total tocopherols and fatty acids were estimated.

The results showed that The highest percentage of protein in the first planting date of the first year was in Sb-171 i.e. 38.75% and there were no significant differences between it and Sb-172 which had the highest protein content in the second year (37.15%). The highest oil content in the first year at the second planting date was in Sb-55 (22.04%) there were no significant differences between it and Sb-49. However Sb-49 had the highest percentage in the second year (21.93%). Refractive index studies in temperature 40°C showed that Sb-149 in the second planting date at the first years had the highest level. Sb-55 had the highest level (9000mg/kg) of unsaponifiable matter in the first planting date at the first year while at the second year Sb-172 had the highest level (10750mg/kg), without significant differences between it and Sb-55 (9450mg/kg). The highest iodine value (129.80g iodine/100g) in the second planting date at the first year was in Sb-149, and in the second year was in Sb-49 (129.21 g iodine/100g), which there were no significant differences between it and Sb-149 (128.75 g iodine/100g). Sb-55 in the second planting date at the first year had the highest saponification number i.e. 191mg KOH/g while



at the second year was in Sb-172. The highest contents of total tocopherols in the first planting date at the two years were in Sb-172 (67.34, 79.10mg\100g, respectively). Linoleic acid results revealed that the highest percentages in the first planting date at the two years were detected in Sb-149 (54.71, 56.56%, respectively).

# EFFECT OF SUN-DRYING AND MECHANICAL DRYING ON, CHEMICAL COMPOSITION AND LIPID, PHOSPHOLIPID FRACTIONS OF ASWAN DRY-DATES

El-Ghazali M. N<sup>1</sup>, Hussin F<sup>2</sup>

<sup>1</sup>Home Economic Department, Faculty of Specific Education,  
South Valley University, Qena, Egypt.

<sup>2</sup>Horticulture Department, Faculty of Agriculture, Zagazig University, Egypt.

## **Abstract**

Sakkoti, Bartamuda, and Gondaila are excellent dry date cultivars, grown at Aswan Governorate. Moisture, total solids (T.S), total insoluble solids (T.I.S), total soluble solids (T.S.S.), sugars (reducing and non-reducing), protein, lipids, ash, pH, acidity, minerals contents (Macro- and micro-elements), lipids and phospholipids fractions were determined in fresh date fruit (Tamar), after sun-drying for one months and mechanical drying at 70°C for 24 hrs. Total sugars were higher in content in Bartamuda date fruit (Tamar) than Sakkoti and Gondaila. Also, non-reducing sugar was higher in Bartamuda and Goundaila than Sakkoti (Tamar), while, reducing sugar was higher in Sakkoti than Bartamuda and Gondaila. Crude fiber was higher in Gondaila than Sakkoti and Bartamuda (Tamar). After, sun-drying, total sugars and non-reducing sugars increased in all cultivars, while, reducing sugar decreased. Lipids, protein, ash and pH decreased after sun-drying and mechanical drying, while total insoluble solids (T.I.S), crude fibre and acidity increased in all cultivars. Potassium and chlorine contents were higher in all dates. While, potassium was higher in Bartamuda, chlorine was higher in Gondaila than other dates. Also, trace elements were higher content in Sakkoti than Bartamuda and Gondaila. The phospholipids free fatty acids, sterols, triglycerides and sterol esters were higher in Sakkoti than Bartamuda and Gondaila. Also, this contents decreased during sun-drying and mechanical drying. Sphingolipid, phosphatidyl choline and phosphoglyceric acid were higher content also in Sakkoti than other, while, phosphatidy ethanolamine was higher in Gondaila than Sakkoti and Bartamuda. Highly significant differences were found between treatments in chemical composition and lipid, phospholipid fractions, while, total solids (T.S), ash, calcium and potassium contents did not give any significant difference.

# **STUDY TO IMPROVEMENT OF THE CHARACTERISTICS OF SOY MILK AND SOY YOGHOURT BY USING MEMBRANE SEPARATION**

**Darbouli Rana**

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## ***Abstract***

Soy milk is made in the Orient by soaking whole raw soybeans, grinding them in water, filtering them to remove okara (soy residue) and then heating the extract. Although this process is simple, the resulting beverage has a strong color, beany off-flavor and odor. Thus, it is undesirable for Western and Arab peoples.

The aim of this research is to produce soy milk and soy yoghurt with a good taste, by reducing saccharides content, which causes undesirable taste, by the Ultrafiltration technology. The effect of the operation conditions upon milk concentration such as pressure, temperature, supply flow was studied. Total solids content was measured in the concentrated milk. When the desired concentration was achieved, the concentrated milk was fermented in order to obtain yogurt.

By the Ultrafiltration technology, good soy milk concentration was obtained. Thus, it was fermented to obtain a final product with good sensitive characteristics and in which the protein content has been increased at 25% while saccharides content has been decreased at 50% as compared with traditional methods.

# EVALUATION OF SOME CHEMICAL PROPERTIES OF DIFFERENT BURGER FORMULATIONS

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<sup>1</sup>Department of Nutrition and Food Technology, Faculty of Agriculture,  
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## **Abstract**

Five burger formulations were prepared to study the effect of the replacement of beef and chicken fat with olive oil or mixing of meat chicken with beef on some of their chemical properties during storage and grilling at 75°C for 20 minutes. The five burger formulations were: beef, chicken, mixed beef and chicken (50:50), beef with olive oil and chicken with olive oil. The effect of formulation, frozen storage and grilling of the five treatments on some chemical and sensory properties was evaluated by determining thiobarbituric acid reactive substances (TBARS), fatty acid profile, cholesterol, 7-ketocholesterol and sensory effects. TBARS of raw samples increased after one month of storage, and then declined at the end of storage. Grilling had varying effect on TBARS, since they increased in both chicken treatments, and decreased for the corresponding beef samples. No clear effect of grilling on mixed sample was observed. Mixing of chicken with beef or replacement of fat with olive oil increased their unsaturated/saturated ratio. MUFA and PUFA decreased gradually during storage, but they increased after grilling. Meat mixing decreased cholesterol content in chicken (15%). Addition of olive oil decreased cholesterol contents in chicken and beef treatments by 53% and 58%, respectively. Storage and grilling didn't affect cholesterol oxidation measured by 7-ketocholesterol in all treatments.

**Keywords:** Cholesterol oxidation, Lipid oxidation, meat burger, fatty

# CHICKEN PEPsin: EXTRACTION, CHARACTERIZATION AND CONSERVATION

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## **Abstract**

Our study concerns the extraction of the pepsin from forestomach of chicken according to the protocol described by Bohak, (1970) [1] and the characterization of the crude extract. An essay of the follow-up of the extract clotting activity evolution was realized after freeze-drying and preservation at -18°C. Residual coagulant strength estimated on 64 days was envisaged to appreciate the possibilities of conservation of the extract. Results show, that the extract of chicken pepsin has a proteolytic and a coagulant characteristics. The crude extract freeze-dried and preserved at -18°C, gave a residual activity bordering the 80% of the initial activity.

**Keywords:** chicken pepsin, extraction, proteolytic activity, coagulant strength, freezing drying.

# EVALUATION OF CHEMICAL COMPONENTS OF SOME TERFEZIA VARIETIES AND USING ITS FLOUR TO SUPPORT THE BREAD

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<sup>2</sup>Fac. Science, Garyounis University, Benghazi, Libya.

## ***Abstract***

Chemical composition of fungus truffles varieties, *Tirmania nivea* (White) obtained from Igdabia, *Terfezia africana* (Red) obtained from Igdabia and Tarhona were studied, The total proteins and lipids were (19.94 , 6.43 %), (17.19 , 4.26 %) and (16.44 , 7.31 %) for White Igdabia, Red Tarhona and Red Igdabia, respectively. Essential amino acids were present in fairly good amounts and higher than that in wheat flour, Lysine was the predominant one while Aspartic and Glutamic acids were the predominant Non-essential amino acids. White variety contained the highest amount of unsaponifiable matter (UNS) (2.21%).  $\beta$  -sitosterol was the major sterol followed by campesterol and stigmasterol. Support the bread with 5 % of truffles flour produced acceptable bread.

# A TURKISH CEREAL BASED FERMENTED FOOD: TARHANA

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## ***Abstract***

Tarhana is a cereal based fermented traditional Turkish food. It is widely consumed as a soup especially on cold days in Turkey. Tarhana and tarhana-like products are known under different names in the other countries, such as kishk in Syria, Palestine, Jordan, Lebanon and Egypt; talkuna in Finland; kushuk in Iraq and Iran, thanu in Hungary and trahanas in Greece. It is generally prepared by mixing yoghurt, wheat flour, variety of cooked vegetables (tomato, onions, pepper etc.), bakers yeast (some regions), salt, tarhana herb (*Echinophora sibthorpiana*) and other spices (mint, paprika etc.) followed by fermentation for one to seven days. Both lactic acid and yeast fermentation occur simultaneously during the production of tarhana. Lactic acid bacteria have an important role in the fermentation of tarhana. They produce lactic acid, ethyl alcohol, carbon dioxide and different kinds of aromatic compounds typical for tarhana as fermentation products. After fermentation period, tarhana dough is sun-dried and ground into fine powder. The low moisture content (3-9%) and low pH value (4.0-4.5) of tarhana provide a bacteriostatic effect against growth of pathogenic and spoilage microorganisms and increase the self life of the product. This powder can be stored for up to two- to-three years under appropriate storage conditions. Tarhana is used for making soup by adding tarhana powder to boiling water. Different preparation techniques in distinct places lead to the production of various types of tarhana. Shortly, the preparation of tarhana is a traditional family art. In recent years, industrial production of tarhana is also started but it is very limited. Tarhana has a high nutritive value and is considered as a good source of protein, vitamins and minerals. Although several studies related with the effects of different production techniques on tarhana characteristics have been published, only a few microbiological studies have been carried out. They include determination of numbers of aerobic mesophilic bacteria, mould, yeast, coliform and LAB.

**Keywords:** tarhana, fermentation, nutrition, microflora, lactic acid bacteria.

# QUALITY PROPERTIES OF BUG (EURYGASTER INTERGRICEPS) DAMAGED SYRIAN WHEAT, AND THE EFFECT OF DIFFERENT TEMPERING

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## **Abstract**

The properties of suni bug damaged wheat were compared with undamaged samples of the same variety.

Results show that no significant differences between ash content and hectoliter weight between the damaged and undamaged samples.

While one thousand kernels weight; and protein content of damaged samples were less than undamaged samples ( $P \leq 0.05$ ). Analysis of sound flour sample (72% extraction) and unsound flour samples containing gradually increasing amounts of suni-bug damaged kernels, (1%, 3% and 6%) were done.

There were no significant difference among the sound sample and unsound samples, in regard with ash content, gluten index and falling number for flour samples. However, There was a ppositive relationship between the percentage of damaged samples by suni bug and the wet gluten stretched by its own weight, the proteolytic enzyme activity, the diameter of wet gluten globe by time, and the weak-degree in farinogram and negative relationship was found between the percentage of damage and all of the normal ones for the following testes: normal and modified zeleny sedimentation volume, normal and modified SDS sedimentation volume, development time, maximum resistance, energy (extensograph area), separation of the two layers, and constancy of the loaf.

Finally, tempering the 3% damaged sample for 30 minute at 80°C improve the reological dough properties and the quality of bread.

**Keywords:** wheat, bread, suni bug, treatment



# MODELING OF RAW CANE - SUGAR SYRUP CONCENTRATION USING DIRECT CONTACT MEMBRANE DISTILLATION

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## ***Abstarct***

Membrane distillation is an emerging technology for separations that are traditionally accomplished by conventional separation processes such as distillation and reverse osmosis. The membrane distillation driving force is the transmembrane vapor pressure difference that may be maintained with an aqueous solution colder than the feed solution in direct contact with the permeate side of the membrane giving rise to the configuration known as direct contact membrane distillation (DCMD). This process is ideally suited for the concentration of aqueous streams such as fruit juice and sugar solutions.

The present numerical study is carried out to describe how the technique of DCMD can be applied to the concentration of cane-sugar syrup. The main objective of the present study is to provide a detailed numerical analysis of the heat and mass transfer in DCMD and to offer useful basic detailed information about the nature of the process that is needed for process improvement and optimization. In this regards, the present study is carried out to explore the effects of parameters such as the feed temperature, the feed concentration and the hydrodynamics of the hot and cold solutions on the distillate volume flow.

The developed method allows solving numerically the hydrodynamic, heat and mass transport equations with permeation taken into account. Velocity and temperature distributions inside the membrane feed and cold solution channels were obtained, as well as the concentration profiles of the cane-sugar syrup in the membrane feed channel. Some of the principal conclusions drawn from the present study are: (1) the distillate volume flux increases with the feed temperature, (2) the distillate volume flow decreases as the feed initial concentration increase, and (3) the distillate volume flow increases with the flow rate through the feed channel. The results were compared with the available data and the agreement is satisfactory.

**Keywords:** Membrane distillation; Direct contact membrane distillation; Modeling; Cane-sugar syrup, Concentration.

# **BIOLOGICAL EFFECTS ON EXPERIMENTAL RATS OF POLYCYCLIC AROMATIC HYDROCARBONS FORMED IN COOKED MEAT USING ROASTING AND FRYING METHODS**

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## ***Abstract***

The aim of this work was to study the effect of methods of cooking beef meat on producing the polycyclic aromatic hydrocarbons PAH, and the biological effects of these compounds on experimental rats .

Rats were divided into 6 groups , control (casein) , non - protein group and groups fed on diet containing 15% boiled meat , 15% roasted meat, 15% coated fried meat (FBM1) (egg + dry brown bread) and 15% non coated fried meat (FBM2) . The period of experiment was 2 months . Data showed that protein content ranged from (17.48, 11.09, 25.15, 1853 and 13.01) for raw , boiled , roasted , FBM1 and FBM2 resp . also , PAH compound were detected by fluorescence HPLC in raw and cooked samples and in livers of rats from cooked groups . B(a) P identified as a main carcino- toxic compound which presented in levels (2875, 2310, 4943, 5263.5 and 9195.5 ng/kg) for raw, boiled, roasted, FBM1 and FBM2 resp. which indicated that B (a) P levels increased with increasing fat content in cooking methods and using charcoal in roasting .

Levels on B(a)P decreased significantly in livers of rats fed on diet containing 15% cooked beef meat that were (123, 213.6 , 225,15 and 516 ng/kg liver) for boiled , roasted , FBM1 and FBM2 resp . which means that B(a) p—as indicated for all PAH group metabolized and excreted incompletely out of body and stored in liver which led to the carcino- toxic effect in the body.

Data also indicated that levels of TG, cholesterol, VLDL-C, liver enzymes and kidney functions were affected significantly with methods of cooking.

# USING SUCROSE FOR PRODUCTION OF FRUCTOSE SYRUP

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## ***Abstract***

Fructose is one of natural sweetness used in food industry. It is used for preparation of many types of beverage and food products. Its sweetness is more than sucrose.

Fructose can be used by diabetic as it doesn't demand insulin for its metabolism in human body.

There are several processes for production of fructose or fructose syrup i.e.

Acidic hydrolysis or enzymatic hydrolysis of sucrose where an equilevant mixture of glucose and fructose is initially formed . Then the mixture is treated by enzymes to obtain fructose.

Sacchrafication of starch into dextrin's in the first step then to glucose . After that glucose is transferal to fructose by enzymes.

Using Inulin as a raw material for fructose production.

The aim of this work is to obtain fructose syrup by acidic hydrolysis of sucrose syrup according to the successive series of steps (Acidic hydrolysis, Cooling, treating by milk of lime, filtration, carbonation of cake by CO<sub>2</sub>, filtration to get the fructose syrup.

Fructose syrup was analyzed by chemical and HPLC methods . Results show that the yield of fructose was 90.29% according to theoretical yield of fructose and 47.52% on the basis of sucrose.

# DEXTRAN EFFECTS ON THE CANE SUGAR INDUSTRY

## CASE STUDY "ALGUNIED SUGAR FACTORY"

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### ***Abstract***

In sugar manufacture, the quality of the sugar cane supply to the factory plays the most important role in production costs. The cane sugar industry has examined the impact of dextran on the economics of processing as presented in this paper. Sugar cane, in field, transport and factory, is easily subjected to microbial infection, especially by *Leuconostoc mesenteroides*, and to the production of dextran by these microorganisms. Dextran levels in cane are affected by prior planning of cane deliveries, and good hygiene in the cane yard, the mills and the factory. The presence of dextran in harvested cane and its subsequent formation in the factory presents a potential for significant sucrose losses and causes process problems. An applied chemical program can increase sucrose recovery with significant economic gains for the factory.

Samples from Algunied sugar factory for mixed juice, clear juices, syrup, final molasses and commercial sugar were analyzed for Brix, pol, apparent purity, pH, color, viscosity, available sugar, and dextran. A correlation between dextran content and each of these parameters was formulated by statistical analysis to determine the effects of dextran on these process parameters concurrently with mill sanitation effect. The extent of this correlation between dextran content and process parameters may lead to predict the negative effects, and hence to estimate firstly the economic loss due to dextran presence and to calculate of sucrose loss due to dextran and its effect on sugar yield secondly.

***Keywords:*** Sugar factory, mill sanitation, losses, dextran.

# UTILIZATION OF PEACH AND TOMATO WASTES AS UNCONVENTIONAL SOURCES OF EDIBLE OILS AND NATURAL ANTIOXIDANTS

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## **Abstract**

Recycling some waste materials especially, peach and tomato seeds to beneficial materials with high nutritional and functional properties as well as, unconventional sources of edible oils with highly antioxidative properties was the main target of this study. The obtained results revealed that peach seeds had the highest content of oil (43%), and the chemical properties were in the normal range of edible oils. The percentage of the unsaturated fatty acids of peach and tomato seeds oils were high (92.677 and 83.370%, respectively) especially, essential fatty acids (Linoleic, Omega 6), which reflects good nutritional value of these oils. The oxidative stability of sunflower oil increased with increasing the levels of peach methanolic extract up to 400 ppm that exhibited the best oxidative stability and prolonged the shelf life of sunflower oil to 12.5 months. The highest oxidative stability (8.84 hr) was obtained using tomato methanolic extract at level of 600 ppm compared with those obtained with other levels. Shelf life and antioxidant activity of sunflower oil increased gradually with increasing the tomato methanolic extract levels (11.03 to 12.67 hrs and 1.02 to 1.18, respectively). Furthermore, lycopene crude extract acted as pro-oxidant in higher levels, meanwhile, lower levels of lycopene extract (20 and 40 ppm) had an antioxidant effects on the stability of sunflower oil.

From the obtained results, it could be concluded that peach and tomato seeds are considered rich sources of edible oils and natural antioxidants that play a great role in protecting human body. Utilization of these wastes will improve the environmental ecology of industry by recycling its by-products and decrease the problems of pollution from industrial wastes.

**Keywords:** Peach seed oil, Tomato seed oil, Lycopene, Fatty acids composition, Natural antioxidants and Oxidative stability.

# REDUCTION OF OIL UPTAKE IN DEEP FAT FRENCH FRIED POTATOES

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## ***Abstract***

Potato chips and french fries have been popular salty snacks for the last 150 years. The retail sales in the US are more than \$6 billion per year (Clark, 2003; Garayo & Moreira, 2002).

Potato crisps are also one of the most popular consumer snack products throughout the world (Kulkarni, Govinden, & Kulkarni, 1994).

However, oil fried potato chips contain up to 39% oil, which accounts for 60% of their calories (Gladwell, 2001).

Fat and calorie contents of these chips are of concern to health conscious consumers (Lefort, Durance, & Upadhyaya, 2003).

In many countries, medical authorities have implicated a high fat diet as being one of the major factors causing increased incidence of cardiovascular disease (Glew, 1988).

Fats (lipids) are implicated in cardiovascular disease due to the fact that the fats are a major source of energy supplying about 9 kcal/g, whereas proteins and carbohydrates each supply about 4 kcal/g; eating a highfat diet is conducive to obesity (Baur, 1995).

High oil content is therefore a major factor affecting consumer acceptance of oil-fried products today and the low fat food products are becoming more popular (Bunger, Moyano, & Rioseco, 2003).

In particular, during the past 10 years, the American Heart Association and other health organizations have encouraged reduction of fats in foods to less than 30% of calories for most people (USDA, 1990; USDA & USDHHS, 1990).

Saturated fat and trans-fat are the undesirable fats (Allan, 2004).

Reducing oil content in potato chips is motivated by other reasons also; oil is a costly raw material and is an important determinant of the cost of a product. A high oil content often makes the chips greasy or oily. On the other hand it is possible to make chips so low in fat content that they lack flavor and seem harsh in texture (Prosise, 1990).

There have been various techniques applied to minimize the fat content of frying products.

# CHARACTERIZATION OF PHYTASES FROM CEREAL GRAINS AS AFFECTED BY SOAKING AND GERMINATION PROCESSES AND SOME INHIBITORS

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## **Abstract**

The properties of phytases extracted from raw, soaked and germinated cereals; wheat, barley, sorghum and maize were studied. The optimum pH values were 5.0 for wheat, barley and sorghum phytases and 5.5 for maize germ phytase. Wheat and barley phytases had optimum temperature of 55°C while sorghum and maize germ phytases showed optimal value of 50°C. The optimal pH and temperature of phytases from different cereal grains were not affected by soaking or germination processes. Data revealed that maximal activity of phytase from wheat, barley and sorghum was found to be at 2.0 mM sodium phytate concentration and at 1.5 mM from maize germ. The observed Michael's constant (Km) and the corresponding Vmax values were varied for phytases extracted from 96 h-germinated studied grains. The enzyme activity was decreased with the incubation time increase more than 2 h for wheat, barley and maize germ phytase, and more than 1 h for sorghum phytase. The activity of preheated wheat and barley phytase for 10 min at 60°C before assay was decreased by 43.7% and 33.4% of the control value, respectively and by 88.5% and 83.5%, respectively, at 65°C. Preheated phytase activity for sorghum and maize germ reduced by 20.4% and 29.4%, respectively at 55°C and by 90.0% and 78.4%, respectively at 65°C. However, at 70°C and 75°C the activity was practically inhibited. Ca<sup>2+</sup> ions addition had less effect on reduction of phytase activity from all studied cereal samples, whereas others metal ions had variable effect on reduction of enzyme activity. Wheat and sorghum showed highest increase in phytase activity at 120 h- germination (20.75 and 14.5 U/g sample, respectively). However, the highest phytase activity of barley and maize germ was

recorded at 96 h-germination and thereafter the activity was decreased. At optimum germination time, phytase activity increased by 5.4-, 4.6-, 7.3- and 6.9-folds for wheat, barley, sorghum and maize germ, respectively compared with that at zero time.

**Keywords:** Phytase activity, cereal grains, soaking, germination, inactivation factors.



# THE INOCULATED RATE ON THE CHARACTERISTICS OF LABNEH PRODUCED IN DIRECT WAY AND COMPARING IT WITH LABNEH MADE IN TRADITIONAL WAY

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## **Abstract**

8 mixture similar to mixture 3 in the percentage of their total solids 26% were produced and incubated by 8 types of starters (CH1, YC180, LB12, YC-X11, YF-L811, YC350, TH4, R704) in rate of 4% .

These mixtures have been incubated for 6 hours and the CH1 was the best starter, therefore CH1 has been chosen to apply the rest of deals (starter rate, incubation time, added salt before incubation).

After that 8 mixtures of total solids 26% were produced and incubated by different proportions of starter CH1 (1%, 2%, 3%, 4%, 5%, 6%, 7%, 8%), and were incubated for 6 hours . It has been discovered that the best starter rate is 4%, this thus rate addition 4% of CH1 was chosen to apply the rest of deals (time of incubation, rate of added salt before incubation ) .

By comparing labneh made in traditional way (cloth bags) to labneh made in direct way (recombination ) and labneh taken from market , it has been found the following :

Chemically speaking, the dry material mean in labneh made in direct way, was superior to booth the dry material mean in labneh made in traditional way and the labneh taken from market , also the acidity and fat average in labneh made in traditional way more than acidity and fat average in booth labneh made by direct way and labneh taken from market .

Microbiologically speaking labneh which made in the direct way comes first then labneh made in traditional way comes second. Finally, Labneh taken from market comes third .

According to sensory acceptance labneh made in traditional way was the best then came labneh made by direct way and the costs at last labneh taken from market .

As for costs of production the cost of labneh made in direct way were less than that of labneh made in traditional way (manual filling or auto filling)

**Keywords:** labneh , direct way , mixture , starter , rate of starter

# PRODUCTION OF LOW CALORIE NATURAL JUICE

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## ***Abstract***

Low calory natural juices (orange, carrot, orange - carrot mixture juices) were prepared by using aspartame as artificial sweeteners in comparing with juices which sweetened with sucrose, and studying the effect of pasteurization in different degrees on juice physical and chemical properties.

The data proved that using the aspartame as artificial sweeteners in production of Low calory natural juices with no change in properties of product juice.

The pasteurization preferred on 88°C for 15 sec because it gave best results. mixture orange and carrot by using aspartame improved the nutritional value and testing properties to the products.

# EFFECTS OF KONAFE DOUGH INGREDIENTS ON ITS FIBER QUALITY

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## ***Abstract***

Many type of Mediterranean sweets dessert made from Konafe fiber (shredded dough). There are no researches about Konafe dough or Konafe fiber, so this research investigated technological and rheological properties of three types of flour and viscosity of sample flour when adding different water percents 130-180%. As well, effects of Konafe dough ingredients (water, fat, starch, sugar and powder milk) on it fiber quality have been investigated. There was a correlation between technological and rhological characteristics of flour with viscosity properties of flour and water mixes. Quality of Konafe fiber is affected by water, fat, milk and starch but not affected by sugar. The optimum structure ingredient which gave best Konafe fiber quality was at 180% water, 0% fat, 7.5% starch, 10% milk and 1% sugar.

## ISOLATION OF PERXIDASE FROM LOCAL PLANTS

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### **Abstract**

The research was concerned with determination of peroxidase in some local plants include red rapa, white rapa, cauliflower, local red radish, tall red radish and black radish. The peroxidase isolation from local red radish (*Raphanus sativus* var. local red) by the extraction with sodium phosphate buffer ((50 mM), pH = 6.5) and using different biochemical techniques.

It is shown that, using gel filtration chromatography on sephadex G-75, the solution of the proteinous precipitate (after dialysis) produced by ammonium sulphate saturation, contains three proteinous peaks. The first and the second peaks possessed a variable activity of peroxidase where maximum specific activity was obtained in the second peak which showed 31.7 folds of purification.

Furthermore, the comparative molecular weight of the partially purified peroxidase enzyme (second proteinous peak) using both gel filtration and sodium dodecyl sulphate-polyacrylamide gel electrophoresis techniques, was found to be (39,500 D) and (39,000 D) respectively.

The research was also concerned with finding the optimum conditions of peroxidase enzyme; maximum activity was obtained using sodium phosphate buffer (100 mM) at pH (6.5), (60°C) and (30 mM) of guaiacol as a substrate. Using Linweaver - Burk plot, it was found that  $V_{max}$  and  $K_m$  have the values of (262.2 enzyme unite/ml of proteinous solution) and (9.3 mM) respectively.

The results also indicated that the activity of the enzyme decreased gradually to (65%) and (57%) when the enzyme was stored for (22 day) at (4°C) and room temperature (30-35°C) respectively.

The heat inactivation was also studied and the results indicated that the activity of the enzyme dropped to (53%), (9%), (4%) when the enzyme was heated for (4min) at (70°C), (2 min) at (80°C) and (1min) at (90°C) respectively.

The effect of  $\text{NaN}_3$ , NaF,  $\text{Na}_2\text{SO}_3$  and KCN on the activity of the enzyme was also studied and it was found that these compounds inhibited the enzyme, and the inhibition was a competitive type using KCN a concentration of ( $0.32 \times 10^{-2}$  mM).

Finally, using ion exchange chromatography on Diethyl amino ethyl-Cellulose, the partially purified enzyme contained five proteinous peaks possessed a variable activity of peroxidase enzyme.

**Keywords:** peroxidase, isolation, purification, inhibition, radish

# DETECTING OF LACTIC ACID BACTERIA ISOLATED FROM SYRIAN DAIRY PRODUCTS

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## ***Abstract***

This research was conducted in agriculture college food science Dept. Damascus university, for detecting of Lactic acid bacteria isolated from Syrian dairy products (white fresh cheese- Leben), were collected during August 2004 to October 2005 from different areas in Syria . 245 desolates of bacterial isolates from 40 samples of white fresh cheese and 58 samples of yogurt. After analysis, the genus Enterococcus was dominant with a percentage of (47.52%), while Pediococcus had a percentage of (26.3%), while Lactococcus had a percentage of (15.38%) and only (3.2%) for Lactobacillus.

**Keywords:** Lactic acid bacteria , isolation, identification, white fresh cheese, Leben.

# INCREASING QUALITY OF BIOLOGICAL PRODUCTION OF CITRIC ACID USING SEMI-CONTINUOUS FERMENTATION METHOD

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## ***Abstract***

Citric acid considers one of the most important organic acids which human used to add to his food. It uses in many fields such as nutrition , medicine and industry .

This search aims to produce citric acid by using semi-continuous fermentation technology by using imported and developed genetic strain of *Aspergillus niger* by using molasses of sugar beet from Meskene sugar factory's as a primary matter for growing and development and to increase quality of production and to shortcut time in case using fermentation and preparing planting media and adding primary period for reproduction which may arrive 40% from the entire time of one fermentation.

The results of this search showed the ability to replacement half the amount of planting media of fermentation at the fourteen day of the essential fermentation and for five following times, and observed the stability of period which necessary to metabolism the content of sugars with the amount of molasses solution adding in each replacement which was six days at first and second replacement , and this period increased to seven days at third and forth replacement and ten days at fifth replacement and the total amount resulting of planting media of fermentation was in case replacement half amount of this media about 350% of the amount of planting media of essential fermentation during fermentation time for 50 days.

# PRODUCTION OF SINGLE CELL PROTEIN FROM WHEY AND REMNANTS OF DATES AND LOCAL CANDIDA UTILIS , CANDIDA TROPICALIS TROPICALIS ISOLATES

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## **Abstract**

This study was conducted for producing a single-cell protein from Whey and remnants of dates, using local yeast Isolated from the environments of Whey and remnants of dates of Isolates. These isolates were ready and diagnosed beforehand; they were isolated by previous actions from local different environments. The efficient Isolates were selected for utilization of the used carbon sources and production of single-cell protein.

The limitation of the appropriate incubation period for growth and production as trial to improving the nutrient media components which was performed by the increment of the prepared of carbon source by focusing Whey or mixing it with the remnants of dates at different rates. The addition of supports to the media included food powder plant Northblan and remnants of culture of mushrooms and shellfish waste of bloody massacres meat and crude oil. The study also tackled the impact of the use of selected mixed culture isolates and impact of shaking and aeration processes on producing single-cell protein. The production of single cell protein was performed in shaking incubator and by using Fermenter.

The most important findings are : Sexes Isolates obtained from natural sources, which included 3 Isolates of the whey environment and 3 Isolates of remnants of dates. Test results showed the efficiency of isolates selected in the production of single cell protein fermentation process for four days, the concentrated whey media gave the best production rate 4.60 g/liter. The study showed that mixing 50% of remnants of dates with 50% of concentrated whey led to significant increase in the production of single cell protein which was 6.56 g/liter. The use of the improved materials for the media led to significant increase in the results of single-cell protein, achieving higher productivity 8.35 g/liter when using remnants of the bloody massacres of meat. The increased sugar concentration in the media to 3% has led to an increase in production of single-cell protein by 3.5%. The use of mixed cultures led to significant

increase in the production of single-cell protein compared with pure cultures of Isolates that gave mixed isolates  $Wt_2Dr_1Fl$  higher productivity amounted to 14.79 g/liter. The study showed that the process of agitation and aeration had significant role in raising production to hit 17.61 g/liter when using aeration rate of 0.5 liter/minutes with shaking speed of 150 cycle/minutes. The use of the Fermenter instead of the shaking incubator had significant increased production rate of the single-cell protein that was 23.35 g/liter. The results of diagnostic tests showed that isolates  $Wt_2$  and  $Dr_1$  returning to Ascomycetes, Genus of Candida, as *Candida utilis* $Wt_2$  and *C. tropicalis* $Dr_1$ . The analysis of results showed that the components of single-cell protein product that the proportion of crude protein ranged between 52.55-57.01%, and percentage of carbohydrates 23.74-26.9%, and the proportion of ether extracted fat ranged 2.74-2.98%, The percentage of ash about 11.03-11.38%, the percentage of nucleic acid (3.40-3.96%). free from toxins. The study showed a decline in the value of BOD for the used mediato 480 mg/liter at the development mix isolates  $Wt_2Dr_1Fl$  on the mixture of concentrated whey with the remnants of dates when shacking speed at 150 cycle/minute and aeration rate of 0.5 liter/minutes.



# **GMO DETECTION IN SOME FOOD PRODUCTS IN SYRIAN MARKET USING MOLECULAR BIOLOGY TECHNIQUES**

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## ***Abstract***

The increase of the global area of transgenics or GM crops grown by farmers all over the world necessitate finding out a rapid and accurate methods for detection of GM food products which are produced by introducing an alien desired gene in combination with a marker selectable gene during genetic transformation into the genome of the GM plant . This transgene is expressed and translated into a protein or specific enzyme to confer a new trait such as resistance to insects or herbicide tolerance or other trait.

The aim of the current study was to conduct a survey for some agricultural crops and food products found in the local market to detect whether they have genetic modification or not using molecular biology techniques based on PCR.

Food samples such as: corn, soy bean, some tomato varieties, biscuits, were collected from local markets followed by DNA extraction. DNA quality and quantity were checked using spectrophotometer.

Tests to ensure purity of DNA samples were done using specific primers for a specific genes of a plant such as detection of Lactin gene which is specific to soybean.

GMO detection was conducted using PCR, Multiplex PCR and nested PCR in some samples using specific primers for the most commonly used genes in genetic transformation such as 35S promoter and nos terminator and other genes using the PGIIMH35S-2ps as a positive control.

Tests revealed existence of GM in some imported products such as corn, soybean and others, while results showed that there is not GM in local products.

In Syria, there is increased interest and awareness to protect and preserve biodiversity from uncontrolled or illegal introduction of GM materials into a centre of origin of any crop.

The current paper discusses the strategies of GMO detection methodologies in some products introduced into the country and the importance of such practices to preserve the biodiversity and control introduction and handling of GMOs entrance in the country.

# EFFECT OF ACID AND SALT CONCENTRATION IN PICKLES MICROBIAL FERMENTATION

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## ***Abstract***

Pickling is considered as a method to keep vegetables by using salt and organic salts. The main purpose of pickling is to transform vegetables from its fresh condition to distinctive taste and to stimulate the appetite.

The aim of research is to study the effect of acid and salt concentration on the microbial fermentation of Pickles. Vegetables were used were (Cucumber, Swede and Carrot), which washed and pickled by using a concentrating salt solution of 5%, 10% and 15%, spices has added only to apart of them, and about 5 ml of apple vinegar has added with spices to another part.

Changes on samples have been examined after 5, 10, and 15 days. pickling of Cucumbers and Swede was faster comparison with Carrot during the fifth day, acidity rised in the tenth day as a result of activity increasing of lactic acid bacteria, beside the change in color of pickles.

After the tenth day yeast membrane grew in pickles and led to reduced acidity, which encouraged the growth of microorganisms, and spoilage began in pickles at the third week. samples of concentration 5% were faster in spoilage comparing with samples of pickles of concentration 10% and 15%. While the spoilage was slower in pickles with vinegar additions.

Colonies growth in pickles solutions have been studied by using culture media, High number of bacteria, yeast and fungi colonies was found in pickles of 5% concentration, which led to rapid spoilage of pickles, where the number of microorganism decreased in pickles of 10% and 15%. While the growth of yeast and fungi has increased in pickles with apple vinegar and spices.

**EVALUATE OF CERATOPHYLUM DEMERESM WASTE  
USAGE WITH OR WITHOUT BIO - AMENDMENTS AS  
SUBSTRATE FOR OYSTER MUSHROOM PRODUCTION  
(PLEUROTUS OSTREATUS JACQ.FR.)**

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***Abstract***

This study was conducted to evaluate ceratophlum demeresm wastes usage as a substrate with or without Bio-amendments (Azotobacter spp, Streptomyces spp. and Pesudomonas spp.) to produce Oyster mushroom pleurotas ostreatus (jacq) fr. and the effects of this substrate on sun fruit bodies quality and quantity properties.

Results indicated that the best mycelial growth rate . mat dry weight and high fruit bodies yield of the P. ostreatus was obtained from wheat straw substrate inoculated with Azotobacter was 8.9 cm, 0.34 g/100 ml and 510.64 g/500 g substrate respectively (biological effeciancy 102.12%) while growth rate from sunflower wastes inoculated with Streptomyces 7.8 cm and mat dry weigh from wheat straw inoculated by Streptomyces was 0.31 g/100 ml where lower growth rat and dry mat was obtained from subsrates inoculated with Pseudomonas on other hand mixture substrates which content ceratophylum demeresm wastes can be replaced wheat straw or other wastes to produce P.ostreatus.

# PRODUCTION OF L(+)LACTIC ACID FROM WHEY BY IMMOBILIZED WHOLE CELLS OF LACTOBACILLUS DELBRUECKII AND LACTOBACILLUS GASSER

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## **Abstract**

A process based on low cost production media was developed for fermentative production of L (+) lactic acid. Various process parameters were optimized for the production of L (+) lactic acid from whey medium by immobilized whole cells of *Lactobacillus delbrueckii* and *L. gasseri*. The parameters considered for optimization were concentration of alginate and  $\text{CaCl}_2$ , initial cell concentration, curing time, bead size and incubation time of fermentation, Reusability of immobilized cells up to six batches was observed without any decline in lactate production. Lactic acid for *L. delbrueckii* and *L.gasseri* were 56.78g/L and 54.38g/L lactic acid (after 96 h. incubation period) respectively, while mixed of the two strains was 52.8g/L lactic acid (whey medium supplemented with wheat bran). Lactic acid production reached a maximum in whey medium with soybean flour (53.25, 78.36 and 80.56g/L, respectively).However, the entrapment of cells in 2% agar substantially decrease the lactic acid production. column bioreactor packed with immobilized *Lactobacillus delbrueckii* or *L.gasseri*. or mixed of the two strains immobilized on Ca-alginate were run for three weeks with a lactate yield of 0.75-0.95g lactic acid /g<sup>-1</sup>, reducing sugar with an average production rate of 0.48 g x l<sup>-1</sup> x h<sup>-1</sup>. The study revealed that agro-residues like whey could be used as source material for developing a low cost technology for lactate production.

**Keywords:** Whey, *lactobacillus delbrueckii*, *L.gasseri*, immobilization, L(+) lactic acid

# NATURAL PHENOLS OXIDATION BY LACCASE OF MYCELIOPHTHORA THERMOPHILA IN AQUEOUS MEDIUM: A PROCESS « GREEN » FOR FUNCTIONALISATION OF CHITOSANE

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## **Abstract**

One method of functionalisation the materials, is to react functional pendant groups on an existing natural polymer; chitosan. Here, an enzymatic process has been utilized as a method of creating new coloured polymer from chitosan. We examined an enzymatic method for modifying chitosan using the enzyme laccase from *Myceliophthora thermophila* which is known to catalyse the oxidation of phenolic substrates to reactive o-quinones in the final steps. It was found that initial coloured oligomers react with amino groups of chitosan as o-quinones done, made it coloured polymer, whose colour changes according to utilized substrate. Chemical evidence for covalent grafting onto chitosan was provided by several analytical approaches. Compared to unmodified chitosan, enzymatic modified chitosan had significantly increased absorbance in the UV-visible region and changes in the NH bending and stretching regions of chitosan's IR spectra. The coloured chitosan has been remained stable under different combined pH- temperature and light in the both organic and aqueous media for many weeks. These results demonstrate the potential for renewable resources and enzymatic processing to create environmentally friendly coloured polymer useful functional properties in cosmetic and food preparations, avoiding controversial, synthetic colorants like tartrazine (E102).

**Keywords:** phenol, ferulic acid, Laccase, colorants, polymer, functionalisation.

# USE OF INITIAL INOCULUM OF *GLUCONOBACTER* - ST1 WITH *ASPERGILLUS NIGER* TO PRODUCE OXALIC ACID FROM DATE MAIL SYRUP

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## **Abstract**

This research has been carried out to produce Oxalic acid from Date Mail Syrup by shaken flask technique using local bacterial and fungal isolate. It was included isolation of acid-producing microorganisms from different environmental sources in Ramadi-Iraq including soil, sewage, diary products and air. Among these isolates, the best one has been chosen to produce Oxalic acid. The isolate of *Gluconobacter* - ST1, w hich has been isolated from from Date was used with *Aspergillus niger* as Initial Inoculum to increase the acid produced.

Thirty-two acid producing isolates has been obtained with variable ability to produce acids. Twenty-two isolates has been chosen as they produced an acid zone on test medium that exeeded 15 mm diameter. Nine of them succeeded in producing for Oxalic acid from Date juice. The highest productivity was achieved by *A. niger* with significant differences with other isolates.

Date Mail Syrup ,when used as carbon source give a high productivity of oxalic acid which was 15.35 g/l.

The isolate of ST1 , which has been proved to belong to the Genus *Gluconobacter*. showed an ability to increase acid production when using it as initial inoculum. It achived 15.74 g/l of oxalic acid comparing with the control 7.98 g/l.

## PHYSIOLOGICAL AND HISTOLOGICAL CHANGE OF PEACH FRUITS DURING THE STORAGE

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### ***Abstract***

Three peach cultivars (Florida Prince, Alomge and T. Snow) were stored at two different temperatures (0°C R.T90-95%, room temperatures). The flesh firmness, total sugar and total acidity decreased with increasing storage period. The average daily whole of weight losses was 12.43, 12.95 and 11.73 in Florida Prince, Alomge and T.Snow respectively. After 13 days with storage period advanced at cold storage, a slow increases in soluble solid content (S.S.C) occurred during storage. Florida Prince cv. has higher trichomes compared to other cultivars. T.Snow cv. has thicker wax compared to other two cultivars.

# TOWARDS A CONTROL OF THERMAL RUNAWAY IN MICROWAVE THAWING

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## ***Abstract***

The cycle of freezing/storage/defrosting is today's most employed technique for food preservation in industrial countries. Among the techniques commonly employed to realize food thawing, the use of microwaves to increase thawing kinetics was a promising one, but a particular phenomenon, called thermal runaway, constituted a major challenge to its industrial development. Indeed, microwave ovens have come into wide use because of their ability to re-heat food quickly and conveniently, but the fact that they can cause non-uniform temperatures in the food is a major problem. This drawback is widely amplified in food thawing, mainly due to the large gap in dielectric properties of water

The control of microwave power by on/off cycles, as it is the case in certain domestic microwave oven, consists in applying a on/off cycle which pulse length and duration are a priori fixed in function of the mass of product to defrost. Such an approach is insufficient in an industrial context, where microbial activity at the surface of food can be important if the temperature increase too much. Consequently, a relevant solution consists in adding to the microwave power a cooling system, composed of a tangential air blast. However, so as not to reach an aberration from an energy point of view, a fine control of the process has to be done. In such control problematic, a model of the heat transfer within the food is required, sufficiently accurate to take into account the thermal runaway phenomenon inherent to microwaves but sufficiently simple to be easily implemented in a real-time control procedure. To achieve such an objective, the resolution of Maxwell's equations, needed to estimate locally the electric field and consequently the source term, is to avoid. Thus, we propose here to consider the source term as an absorptivity function, depending on temperature, and which parameters can be experimentally adjusted using reverse techniques. An experimental validation of the model is carried out in a laboratory pilot.



# PRESERVATION OF CAMEL MEAT BY ACIDIC SOLUTIONS

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## ***Abstract***

This study was performed to shed the light on the use of some preservative acidic solutions in order to preserve camel meat especially in areas that are far from residential populations. This method is recommended in remote areas where preservation methods such as cooling, freezing, etc. are not available. Four different acidic solutions are prepared to preserve pieces of camel meat at room temperature between 24–29°C. Meat pieces were immersed in the preservative acidic solution for one minute and left on open air at room temperature. Later during passing time the changes of meat pieces were studied from the point of bacterial load such as bacterial count, sensory characteristics such as color, tenderness, smell and taste and physiochemically such as development of acidity (pH). It was shown in this work that the first solution gave the best results concerning camel meat preservation. This solution consists of potassium sorbate solution, citric acid, ascorbic acid and salt. The camel meat that was immersed in the first solution stayed fresh and safe for human consumption for more than 48 hours whereas the other four solutions kept the camel meat fresh and safe for human consumption not more than 24 hours. For this reason the preservative acidic solutions are considered one of the most common suitable technical methods of camel meat preservation in remote areas for short periods of time until the meat is transported to the nearest residential population to be utilized. On the other hand, this method of preservation is considered applicable, easy to be transported and prepared, cheap and available in markets.

# QUALITY AND PROCESS CONTROL IN THE FOOD INDUSTRY

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## ***Abstract***

Quality control is a dynamic concept always growing up and became more flexible with increasing the quality experiences in the organization, experience comes by dealing with the product, deferent raw materials, technological process every day, and reflects by incrassating the assurance of tests on row materials and product as well as a good definitions of critical control points in the process to produce a safe product, all modern food manufacturers in the world to day are connected to a quality control systems like: ISO9000 series or good manufacturing practice (GMP) or HACCP system, and some times to local regulations like "quality mark", in order to guide the organization to continual improvements, the structure of quality control systems in near future suppose to be directed to combine all types of quality systems in one system can process continually all data and reflect the real situation of production allowing a direct intervention in the process and taking acorrection actions, it is not an imagination if appear the future director seating behind a table and very easily he is following the current situation of the marketing and performance of the production and quality , this can happen if there is a system can produce and processes necessary data continuously.

# STUDYING THE IMPACT OF SOME HEAT AND STORAGE TREATMENTS ON THE CONVERSION OF NITROGEN COMPOUNDS INTO NITRITE AND NITROSOAMINE IN VEGETABLES

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## **Abstract**

The influence of some heat and storage treatments on the nitrite concentration of some leafy and root vegetables was evaluated. Samples (blanched and unblanched) were stored in two ways (chilling, freezing). Nitrite concentration was measured after 1 week, 2 months and 3 months of storage. Results showed the importance of blanching treatment on reducing the nitrite content and retarding the conversion of nitrogen compounds (especially nitrite) into nitrosoamine, the material that has cancerous influence on the body. The length of chill storage period was noticed to increase vegetables' content of nitrosoamine because of the psychrophile microorganisms which confer nitrite into nitrosoamine compounds at 4°C but the blanching treatment stops this activity. Therefore, for long period of storage, it's highly recommended to subject the vegetables that suspect to have a large content of nitrite (even nitrate) to a blanching treatment, discard the blanching water and freeze store them.

**HEALTH AND FOOD SAFETY: THE DIC TREATMENT AS  
A MULTIDIMENSIONAL APPROACH OF PRESERVATION  
AND TRANSFORMATION PROCESSES. CASES OF  
JUICE, CONCENTRATE, DRIED, AND  
POWDERY SUPER-FRUITS.**

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***Abstract***

Preservation and processing of food products, which are indispensable in the policy of sustainable development, seem to be stressed opposed constraints and conflicting requirements. By processing agricultural raw materials for food uses (even cosmetic or pharmaceutical applications), industry must adopt processes able to satisfy seven categories of seemingly contradictory requirements namely 1) high nutritional content, 2) safety and hygienic content, 3) organoleptic content, 4) convenience, 5) low energy consumption, 6) friendly environmental process and 7) relevant adequate equipment.

New processes carried out from DIC technology (Instant Controlled Pressure-Drop) could satisfy such constraints; through multidimensional approaches, they allow consumer to get high quality final products in terms of Nutritional, Safety and Health, Organoleptic, and Convenience. Such DIC processes must systematically be defined, studied and optimized through multidimensional analysis, research and technological works. Therefore, they are Low energy cost, friendly environment processes, with very relevant facilities.

# EFFECT INFLUENCE OF SOME PLANTS EXTRACTS ON THE QUALITY NATURAL STORABILITY OF POTATO TUBERS (SOLANUM TUBEROSUM L. )

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## **Abstract**

This study was conducted on potato tubers *Solanum tuberosum* L. Desiree cv. in spring season for the growing season of 2002. The tubers were planted and stored in the field and stores of Horticulture Department, Agriculture College, Baghdad University. Curing was done on  $15\pm 1^{\circ}\text{C}$  and 80-85% relative humidity for 15 days. tubers were dipped with the following extracts:

Fenugreek, Caraway, Okra, Ber, and (V.G) Vapor Gourd wax in addition to the control treatment in which tubers were dipped with water. Three concentrations of each extracts were used. Tubers were dipped for 10 or 20 minutes for all treatment then stored in the cold store on  $4\pm 1^{\circ}\text{C}$  and 80-85% relative humidity for three months. After then, they were transferred for reconditioning on  $26-31^{\circ}\text{C}$  and 45-50% relative humidity which represent the marketing stage.

The experiment was conducted in a Randomized Complete Block Design with four replications (3 kg in mesh plastic bags) for each replicate. Means were compared according to LSD-test with 5% significant level. The results could be summarized as follows: Caraway extract to prevent reduced sprouting percentage to 8/gm/l with 20 minutes in the storage but the sprouting percentage in the end reconditioning become 0.33 in the same Treatment .as to effect treatment okra extract 100% with 20 minutes given less percentage weight loss 0.67% in the end storage and continue to end reconditioning.

# EXTRACTION OF POLYPHENOL OXIDASE FROM PEPPERMINT AND STUDY THE EFFECT OF REDUCING COMPOUNDS ON THE ENZYMATIC ACTIVITY

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## ***Abstract***

This research aims to Extract the polyphenol oxidase from peppermint, and study the influence of reducing compounds on the enzymatic activity of Poly phenol oxidase (PPO) isolated from peppermint. The results gave a practical method of preparing an enzymatic extract of peppermint PPO. Also it showed that reducing agents to the reaction medium, prevent the formation of colored products resulting from the phenol oxidation. Moreover, the reducing agents react irreversibly with o-quinones to form stable colourless products, thereby result in medium's colour disappearance. This gives us an effective method to control the browning which is a significant problem in the food industry.

**Keywords:** polyphenol oxidase, peppermint, Extraction, reducing compounds.

# DETECTION OF OLIVE OILS AUTHENTICITY BY GLC ANALYSIS OF STEROLS USING POLAR COLUMN

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## **Abstract**

Olive oil is usually more expensive than other edible oils, which makes it a candidate for adulteration with other cheaper oils. Therefore, different methods have been developed to countertract the falsification that is being perpetrated. The quantitative analysis of fatty acids, triglycerides or sterols can be useful for detection of olive oil adulteration. The determination of sterols in olive oil or other vegetable oil is usually carried out by gas chromatography.

The maximum content of campesterol in olive oils must be  $\leq 4\%$ , while that of stigmasterol must be less than 4%. On the other hand, the level of these sterols in the other vegetable oils exceeds their levels in olive oil by more than two times or more times. Therefore, this property was used in this study to determine the minimum detectable levels of olive oil adulteration with soybean, corn, cottonseed and sunflower oils by the GLC analysis using the thermo stable polar column.

The sum of campesterol and stigmasterol percentages was used as an indicator to detect the adulteration of olive oil with some plant oils. Model systems of corn, soybean, sunflower and cotton seed oils in olive oil at levels of 5, 10 and 20% were prepared. The unsaponifiables of these model systems were analyzed by GLC using polar column with high thermal stability. An olive oil authenticity factor, which based on the summation of campesterol and stigmasterol percentages, was established as an indicator of olive oil adulteration with vegetable oils. The results indicate the possibility to detect the presence as little as 5% of these plant oils in olive oil.

# FACTORS AFFECTING POULTRY MEAT QUALITY

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## ***Abstract***

Before poultry meat quality is addressed, the term quality should be clearly defined as it relates to poultry. This is a difficult task, because quality is "in the eye of the beholder." For example, someone trying to sell a product might view its quality in terms of how well it sells and how much people are willing to pay for it. However, this definition is incomplete, because it does not consider the product's character. Since people only buy what they like, the consumer's perspective of quality is more appropriate. When consumers buy a poultry product, cook and serve it to their families, they expect it to look, taste, and feel good in their mouth. If these characteristics do not meet the consumer's expectation, the product is considered to be of lower quality.

Whether or not a poultry product meets the consumer's expectations depends upon the conditions surrounding various stages in the bird's development from the fertilized egg through production and processing to consumption. Although there are a number of characteristics that determine the overall quality of meat, the following discussion will focus only on appearance, texture, and flavor.

The most important aspect of poultry meat is its eating quality - a function of the combined effects of appearance, texture and flavor. Live production affects poultry meat quality by determining the state of the animal at slaughter. Poultry processing affects meat quality by establishing the chemistry of the muscle constituents and their interactions within the muscle structure. The producer, processor, retailer and consumer all have specific expectations for the quality attributes of poultry; however, the ultimate authority will always be the consumer.



# EXTRACTION OF PROTEINS FROM SLAUGHTERHOUSE BY-PRODUCTS: STUDY OF THEIR FUNCTIONAL PROPERTIES

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## **Abstract**

This paper investigates the extraction at pilot scale and study of the functional properties of proteins from MDCM (Mechanically Deboned Chicken Meat) and beef lungs considered as slaughterhouse by-product. The effects of pH (acidic pH $\approx$ 4, neutral pH $\approx$ 7, and alkaline pH $\approx$ 9), temperature (20, 30 and 40°C) and time (60 and 120 min) taking the mass ratio of by-product/water equal to 1/5 on extraction yield were investigated. Proteins were then concentrated by acid precipitation to their pI. Proteins from MDCM were then purified by lipids extraction including a 3/2 volume ratio of hexane and isopropanol. Average molecular weight, solubility, hydrophobicity, surface tension and interfacial tension of protein concentrates from beef lungs were determined. The functional properties of extracted proteins such as gelling, emulsifying and foaming properties were measured and compared to those of some commercial ingredients such as whey proteins, Na-caseinates, egg white and soy isolates proteins. The best condition for extraction of protein from MDCM is pH=9, temperature 40°C and time 60 min. While for beef lung proteins the extraction conditions remained the same except for temperature 20°C instead of 40°C. The overall recovery yields of proteins were 55 and 40% for MDCM and beef lung respectively. The results showed that lipid extraction from MDCM proteins presented negative effect on gelling and foaming properties but improved the emulsifying properties. Proteins from MDCM before lipid extraction exhibited better gelling properties than egg white. Beef lungs proteins have a low-molecular-weight and exhibited good solubility and high hydrophobicity with small surface and interfacial tensions. This explained their excellent emulsifying activity, higher than Na-caseinates, and their good foaming properties.

From technical point of view as the methods developed in this work are easy to scale-up, the extraction of proteins at industrial scale will be

possible, however before such application it is necessary to do an economical evaluation of the process.

**Keywords:** slaughterhouse by-products, meat proteins, protein extraction, functional properties.

# UTILIZATION OF PEACH AND TOMATO WASTES AS UNCONVENTIONAL SOURCES OF EDIBLE OILS AND NATURAL ANTIOXIDANTS

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## **Abstract**

Recycling some waste materials especially, peach and tomato seeds to beneficial materials with high nutritional and functional properties as well as, unconventional sources of edible oils with highly antioxidative properties was the main target of this study. The obtained results revealed that peach seeds had the highest content of oil (43%), and the chemical properties were in the normal range of edible oils. The percentage of the unsaturated fatty acids of peach and tomato seeds oils were high (92.677 and 83.370%, respectively) especially, essential fatty acids (Linoleic, Omega 6), which reflects good nutritional value of these oils. The oxidative stability of sunflower oil increased with increasing the levels of peach methanolic extract up to 400 ppm that exhibited the best oxidative stability and prolonged the shelf life of sunflower oil to 12.5 months. The highest oxidative stability (8.84 hr) was obtained using tomato methanolic extract at level of 600 ppm compared with those obtained with other levels. Shelf life and antioxidant activity of sunflower oil increased gradually with increasing the tomato methanolic extract levels (11.03 to 12.67 hrs and 1.02 to 1.18, respectively). Furthermore, lycopene crude extract acted as pro-oxidant in higher levels, meanwhile, lower levels of lycopene extract (20 and 40 ppm) had an antioxidant effects on the stability of sunflower oil.

From the obtained results, it could be concluded that peach and tomato seeds are considered rich sources of edible oils and natural antioxidants that play a great role in protecting human body. Utilization of these wastes will improve the environmental ecology of industry by recycling its by-products and decrease the problems of pollution from industrial wastes.

**Keywords:** Peach seed oil, Tomato seed oil, Lycopene, Fatty acids composition, Natural antioxidants and Oxidative stability.

# DAIRY INDUSTRY EFFLUENTS TREATMENT

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## **Abstract**

The dairy industry is generally considered to be the largest source of food processing wastewater in many countries, e.g. Syria. Although the dairy industry is not commonly associated with severe environmental problems, it must continually consider its environmental impact, particularly as dairy pollutants are mainly of organic origin. For dairy companies with good effluent management systems in place, treatment is not a major problem, but when accidents happen, the resulting publicity can be embarrassing and very costly. Biological treatment methods are the most common ways for treating the dairy factories wastewaters.

Cheese whey is a warm, high-strength organic waste produced during the manufacturing of cheese. Since, recent researches have determined that anaerobic biological treatment is successful in treating high-strength industrial wastes (such as whey). Therefore, current research is being conducted to evaluate the anaerobic treatment of whey.

A pilot-scale of anaerobic stirred batch reactor (AnSBR) was undertaken to assess its applicability to be a primary stage of whey treatment. The AnSBR reactor was fed with fresh whey (75000 mg of COD per litre) diluted with water in different concentrations. A COD removal efficiency of  $\geq 76\%$  was achieved when the reactor was operated at a HRT longer than 5 days and an OLR lower than 10 g COD/l.d. The organic loading rates increased step by step to provide a good condition for anaerobic bacteria acclimation with high organic loads. The COD removal efficiency decreased to less than 74% when the OLR was increased above 15 gCOD/l.d. The maximum removal of COD was 87% for 7.5 gCOD/l.d of OLR.

The production of biogas, in our study, increased continuously, day by day, until reaching to a constant value nearly. The maximum production of biogas was 0.32 litre per gram of COD removed (or 20.8 L of biogas per litre of whey).

Ferric ions addition has an improving effect on methanogenesis by increasing the methane production and acetate conversion rate. By adding 50 mg/l of  $\text{FeCl}_3$  to the AnSBR in our experiment, the biogas production increased 50%.

Temperature controlling on 38°C was stopped to evaluate the performance of the reactor for biogas production. The temperature dropped from 38 to 21°C, and then the biogas production reduced 45 %.

## COMPOSTING OF SOLID OLIVEMILLS BY-PRODUCTS

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### ***Abstract***

Recently, the converting of solid by-produces to organic compost had reached to an advanced levels depending on limitation of organic compost sources, and increasing of organic agricultural demands. The research aims at studying the main factors affected on processes of olivemills solid by-products composting to improve the degradation rate and increasing the ratio of nitrogen compounds by adding types of organisms and studying the effect of other factors (Temperature, pH, aeration and moisture), for getting a high quality organic compos. The results showed the efficiency of adding BZT® Compost Activator and Azotobacter on composting rate with relation to other mentioned above factors. It means that through control the studied factors, the optimum conditions of degradation ratio and nitrogen content should be achieved.

# OPTIMIZATION OF THE UPFLOW ANAEROBIC SLUDGE BLANKET (UASB) REACTOR FOR EFFLUENTS OF SUGAR INDUSTRY

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## ***Abstract***

Sugar factory effluents, which contain biodegradable organic and non-toxic matter, are amenable to anaerobic treatment (the conventional aerobic wastewater treatment systems would not be appropriate because of the large land space requirements, high capital costs and operational costs).

By comparing the different existing anaerobic treatment systems, the upflow anaerobic sludge blanket (UASB) reactor appears to be a potential candidate for sugar mills.

Hence, the objective of this study was to assess the feasibility of the anaerobic technology for the treatment of sugar industry wastewater using the UASB system in terms of:

- The removal of pollutants (COD).
- Optimizing the design criteria for further extension of the UASB treatment systems
- Provide some base-line information of the operation of scaled-up UASB reactor for the treatment of sugar mill wastewaters.
- Build up of experience in the operation and monitoring of anaerobic wastewater treatment plants for sugar industry.

In order to achieve the above objectives the treatment of sugar factory waste water was studied using a 1L lab-scale UASB model was designed for experimental work in this research.

The influent was a molasses-based substrate with COD of about 1000 mg/l. the results showed that it is feasible to design a UASB reactor to treat sugar factory effluents at COD removal efficiency of about 90% at HRT of six hours.

# EFFICIENCY OF ANTHOCYANINS AND $\beta$ -CAROTENE AS NATURAL ANTIOXIDANTS

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## **Abstract**

Anthocyanins and  $\beta$ -carotene pigments were extracted from food wastes such as red grape residues marc and carrot pulp wastes. These natural pigments were utilized as natural antioxidants comparing with the synthetic antioxidant BHT for sunflower oil. Fractionation by HPLC for the extracted and lyophilized anthocyanins pigment showed the presence of 7 fractions. Malvidin 3-O-glucoside (Mv-Gl) was recorded the highest concentration. The oxidative stability of sunflower oil based on Rancimat method was used. The different antioxidants “anthocyanins,  $\beta$ -carotene and BHT” were tested either individually or as mixtures in different concentrations. The induction period of sunflower oil with anthocyanins was shorter than sunflower containing BHT. Meanwhile the highest induction period was with 100ppm of  $\beta$ -carotene. So, anthocyanins and  $\beta$ -carotene can react as antioxidants that delayed the onset of oxidation. The study was extended to elucidate the effect of these antioxidants as hypocholesterolemic agents through the biological evaluation on rats. Ten groups of Wistar male rats (185-195g) each containing 6 rats were fed with different tested diets for 10 weeks. G1 fed with basal diet, G2 fed with high fat diet containing 1% cholesterol (HFD +Chol). G3, G4, G5 fed with HFD+Chol, and had anthocyanins daily as 0.71, 1.0, 1.43 mg/200g rat/day respectively. G6, G7, G8 fed with HFD+Chol and had  $\beta$ -carotene daily as 2.5, 5.0, 10.0 mg/200 g rat/day. G9 and G10 fed with HFD+Chol and had BHT as 2, 4 mg 200g rat/day. Serum total cholesterol for G3, G4 and G5 had the lowest concentration of total cholesterol, for example G5 recorded cholesterol concentration of 56.31 mg/dL, which was nearly to that of G1 61.38 mg/dL. LDL concentration in rats serum reflect the effectiveness of anthocyanins as natural antioxidant especially G5 which lowered LDL to the largest extent (23.57 mg/dL). The lowest level of HDL was with G2 (control positive) that recorded 9.51 mg/dL. Meanwhile G4, G5 and G10 those had 1mg or 1.43mg anthocyanins or 4mg BHT were recorded the highest concentration of HDL (23.06, 25.52 and 23.9 mg/dL) respectively.  $\beta$ -carotene was more effective than

anthocyanins on lowering total cholesterol, total lipids and triglyceride in heart and liver. Rats fed with diet containing  $\beta$ -carotene had the lowest total cholesterol, total lipids and triglyceride. GSH-PX activity in blood of G2 rats recorded only 26.02 U/ml. Meanwhile, it was 65.78 U/ml for G1. Groups had anthocyanins was more effective than those had  $\beta$ -carotene. The highest value of malondialdihyde (MDA) was located for G2 of rats which recorded 28.20 nmol/ml. The groups of rats fed HFD + Chol with anthocyanins,  $\beta$ -carotene or BHT were in less values of MDA which appeared the importance of these antioxidants as lowering lipid peroxidation. The natural antioxidants anthocyanins or  $\beta$ -carotene were affected as positive action for reducing the activity of AST or ALT. Meanwhile, synthetic antioxidants showed negative action for these enzymes



# SECRETES OF FOOD IN TREATMENT OF DEPRESSION

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## **Abstract**

Holds diseases resulting from ill-health organization of nutrition great interest by everyone, but we rarely find one to talk about the close relationship between the food system at the individual psychological health and sense of happiness.

In fact, the food is one of the things that affect and are affected by the mood of the individual as way of eating is linked to a number of human psychological aspects.

The food plays a role as "important" in building objects and maintain all posts by including responsibility for depression, behavior, ill-tempered and short-term memory and contribute to the prevention and treatment of them.

The central nervous system in the brain produces materials "claims Neurotransmitters are chemicals that act as a liaison between the brain and other nerve, which helps in the secretion of hormones function works to relieve the nerves and a feeling of nervous depression, including serotonin, dopamine, endorphins, glutamine, and others.

Body produces these hormones of food intake of protein, vitamins, enzymes, carbohydrates, and fats .When food intake does not contain enough of these materials must be appropriate as the object of everyone, this leads to a sense of depression, nervous tension, loss of appetite, Alzheimer disease, and others.

Mood and food:

- human nature enjoys food eating , but his fear of weight gain that prevents him from enjoying eating some of the materials necessary for the body such fat or carbohydrates, believing "it causes weight gain, while it essential to the process of digestion and metabolism and body function.
- balance between protein and carbohydrates consumed in the diet can affect the manufacturing and activity of hormones such as serotonin, which improves mood, as well as of proportion between starchy materials and fatty substances that affect mood, and the performance of the brain. eating disorders such as loss of appetite (anorexia, bulimia) and excessive eating (overeating) have a close relationship with food and hormone secretion of the brain. Diets that are low in the amino acid tryptophan, or does not contain sufficient quantities of antioxidant vitamins and mono and trace fatty acids as well as materials Starchy full cause the tension ,and the change in mood and depression.

This research deals with these following points:

1. The hormones produce in the brain that affect the mental health situation.
2. New researches that prove the importance of food and its impact on the treatment of depression and mood disorder.
3. Diseases that affect and increase the situation of depression in humans.
4. Study the impact of food and nature of cosmic energy to the liking of mood, which cause chronic depression.
5. Ways to treat depression by food.

We have conducted a search in the Kingdom of Saudi Arabia on 200 patients suffering depression in the first degree, where they had been given food program measured in terms of proteins, fats and carbohydrates and rich in minerals and vitamins. Patients classified on the basis of patient history and food and also "the age and weight and the nature of their bodies. And provided with these programs for 3 consecutive months

The result was as follows:

No	Age	Patient history	Nutritional history	Result
1	12-20	well	High fat/low minerals and vitamins	79% positive result 30% boys 49% girls
2	30-45	Diabetic/heart diseases/ intestinal disorders	High fat and carbohydrates	50% positive result 20% men 30% women
3	50-70	intestinal disorders/diabetic/heart diseases	malnutrition	40% positive result 10% men 30% women

# INHIBITORY EFFECT OF GUNDELIA EXTRACT ON URINARY ALPHA-AMYLASE ACTIVITY OF TYPE-I DIABETES MELLITUS

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## ***Abstract***

Alpha-amylase has been investigated in urine samples (50) diabetes mellitus-I. Activity was found to be elevated in urine of diabetes mellitus-I ( $281.70 \pm 10.03$  IU/24hr), compared with the control group samples (30) of  $43.38 \pm 3.33$  IU/24hr). The study was concentrated on the inhibition of the amylase activity using Gundelia plant extract as a wild plant used locally as traditional food in north of Iraq. Data obtained were reflects an inhibition in the amylase activity using 15 mg/ml of the Gundelia extracts. Determinations of the physical parameters ( $V_{max}$  and  $K_m$ ) were obtained applying Lineweaver-Burk analysis. All determined parameters were established using buffer preservative at optimum pH value of 7.0 at 20°C.

**PROCEDE D'EXTRACTION DES HUILES ESSENTIELLES  
DE AVICENNE A NOS JOURS, DE L'ANALYSE  
FONDAMENTALE AUX APPLICATIONS INDUSTRIELLES**

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University of La Rochelle, France.

**Lionel Muniglia**  
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# POSTERS



# STUDYING OF SYRIAN WHEAT'S SUITABILITY FOR NOODLES PRODUCTION

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In order to investigate of Syrian wheat's suitability for production instant fried noodles, (6) samples of Syrian durum wheat's and (6) samples of Syrian soft wheat's have been selected and their major properties have been determined. Buhler (MLU 202) laboratory mill has been used for milling these samples to produce flour. major physical, chemical and rheological flour characteristics have been determined. Noodles have been prepared of flour, and have been assessed by using sensory analyses. Cooking properties, oil and wet contents in instant fried noodles have been determined.

Doma (1) wheat was the best according to its instant fried noodles sensory and cooking properties compared with the other studied wheat's, next to Doma (1) were Bohoth (6), Bohoth (4), Bohoth (9), wheat's respectively the best according to the referred properties. Sensory properties to the Other samples were good but its cooking properties were different.

Moisture mean in durum and soft wheat noodles was not different. Bohoth (5), Bohoth (7), Doma (1) and Cham(4) Bal wheat's instant fried noodles respectively had the lowest moisture content compared with the other studied wheat's. oil mean in durum wheat's noodles was less than it in soft wheat's noodles. Doma (1), Bohoth (11) wheat's instant fried noodles respectively had the lowest oil content compared with the other studied wheat's, next were both Bohoth (9) and Bohoth (5) wheat's instant fried noodles which had the same content of oil.

**Key words:** Syrian Durum wheat, Syrian Soft Wheat, Milling, Flour, Noodles.



# **MICROENCAPSULATION TECHNIQUES TO ENHANCE THE QUALITY PROPERTIES AND NUTRITIONAL ATTRIBUTES OF CEREAL FOODS**

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## ***Abstract***

Cereal foods represent a staple for many in the world. During processing and storage there are substantial losses of vitamins can be sufficient to result in cereal foods being poor sources of these nutrients. Microencapsulation of vitamins and food acids offers the potential for greater control to enhancing the quality properties and nutritional value of these products. The aim of the current study has been to evaluate range of agent and techniques for microencapsulation of vitamins and food acids.

Various vitamins, food acids, and carbohydrate agents have been effectively encapsulated by melt dispersion and a number of different waxes utilised. The application of spray drying with gum acacia as well as rice starch in combination with various hydrocolloids was also investigated.

The release characteristics of the microcapsules have been studied by differential scanning calorimetry and baking studies using a rapid dough formulation and processing. The release of some of the additives as the temperature increases during baking results in enhanced loaf properties and nutritional value.

The encapsulation of the vitamins and food acids by melt dispersion and spray drying using hydrocolloid gums and rice starch gave good yields of a practical product that was readily usable in breadmaking.

# GLUTEN FREE COUSCOUS WITH RICE AND LEGUMINOUS: PARTICLE DEVELOPMENT AND PRODUCTIVITY ACCORDING TO A TRADITIONAL MANUFACTURING DIAGRAM OF THE EAST OF ALGERIA

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## **Abstract**

The aim is the elaboration of formulae basing on the supplementation cereal-leguminous and to study their technological aptitudes to make gluten free couscous (GFC). Three formulae are made on base of 2/3 (m/m) rice and of 1/3 (m/m) leguminous : chickpea (*Cicer arietinum*), or Proteaginous Pea (*Pisum arvense*) or Field bean (*Vicia faba*) according to a home-made mode of manufacturing but with stage of cooking of raw material in the vapour. These formulae are compared to a couscous Control with Hard Wheat (HWC). Granulometry for each raw material is estimated separately before formulation. More coarse semolina (>500 µm) is noted for the hard wheat against more fine semolina (≤ 500 µm) for the milled rice and leguminous. Granulometry distribution shows more likeness between the three dried GFC and distinguish them from the HWC by the presence of more fine grains fractions [500-630 µm]. The Rice-Filed bean Formula (RFF) presents the best productivity of the GFC. This productivity remains, however, satisfactory, but less than the HWC. The easiness of aggregating different ingredients from the RFF is indicated by the presence of the highest coarse couscous grains fraction in the Rice-Filed bean Couscous (RFC). While hard wheat and rice semolinas show a vitreous and salient aspect, leguminous semolinas seem to be more floury with more round edge of fragments. An intensified yellow colour is more noted for the chickpea and the proteaginous pea than the field bean. In formulae, we can see the domination of the white colour on the yellow one expressing the 2/1 ratio used in the rice-leguminous supplementation. This couscous formula appears to have more similarities in aspect with regard to the control. Its grains seems to have more homogeneous and smoothness aspect contrarily to the Rice-

Chickpea Couscous (RCC) and the Rice- Proteaginous pea Couscous (RPC). The GFC absorb less water than HWC. Their loss in dry material is lower than the HWC and also lower than couscous made according to a diagram without stage of cooking of raw material in vapour. The sensorial analysis place the RFC as the best couscous after the HWC followed by the RCC then the RPC.

**Keywords:** Gluten free couscous, formulation and fabrication of food, technological aptitude, rolling, productivity, celiac disease, couscous imagery

# EFFECTS OF DRIED APRICOT PULP ON SOME CHARACTERISTICS OF BEEF SAUSAGES

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## **Abstract**

The concern of consumers for healthy foods has been stimulating food technologists due to enriched food products and new high fibre additives for processed foods. In the meat industry there is a growing interest in using dietary fibre in meat product formulations. Fibre is suitable for meat products and it has previously been used in cooked meat products to increase cooking yield due to its water and fat binding properties and to improve texture. The aim of this study was to evaluate the effects of adding different levels of dried apricot pulp on colour, texture and fatty acid composition of beef sausages and compare with control samples. For this purpose, dried apricot pulp was added to the sausage formulation at the levels of 5, 10, 15%. Sausages were stored at 4°C for five months.

All samples with dry apricot pulp were affected in surface lightness ( $L^*$ ) values. There was an increase in lightness values of samples during the storage period. Dry apricot pulp addition affected surface redness ( $a^*$ ) values of the sausages in the first day of the production. Yellowness values ( $b^*$ ) of the groups with dry apricot pulp were higher than the control group and when dry apricot pulp addition was higher yellowness was higher. For the storage period, all  $b^*$  values were changed and the highest value was owned by the group with 15% dry apricot pulp, the lowest  $b^*$  value was owned by the control group for the 2nd month. Dry apricot addition affected hardness, elasticity and puncture resistance values significantly. When the added level of dry apricot pulp was increased these values were decreased. Samples with 5% and 10% dry apricot pulp showed the same hardness values with the control samples. Usage of dried apricot pulp in sausage formulation did not significantly affect the fatty acid composition, saturated and unsaturated fatty acid rates of samples.

**Keywords:** Sausage, apricot pulp, fibre, colour, texture

# SERUM LIPID FRACTIONS ALBINO RATS AS INFLUENCED BY SOME NATURAL ANTIOXIDANT OF VEGETABLES ORIGIN

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## **Abstract**

Fast food being rich in saturated fatty acid is more common now among children and youth, that lead to increased incidence of hypercholesterolemia and hyperlipidemia predisposing them to atherosclerosis and heart disease. More researches were carried out to study the relation of some foods (vegetables) and hypercholesterolemia to decrease the liver, kidney and heart diseases which result from precipitation of cholesterol in arteries. Accordingly, this study aimed to evaluate the effect cholesterolemia on general health condition, and investigate the effect of some vegetables such as watermelon, green pepper, rocket and their blend, (2.5%) and (5%) level , to combat with hypercholesterolemia via determination of some biological parameters (body weight, food in take, and food efficiency ratio), biochemical parameters of serum (TC, TG, LDLC, HDLC ,VLDLC, total lipids and (Risk Ratio) liver and renal function parameters (GPT, GOT, ALP, craetinine and urea), blood hemoglobin and also histopathological examination of liver and heart.

# STABILITY OF BETALAIN PIGMENTS FROM A RED BEETROOT (BETA VULGARIS)

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## **Abstract**

The crude pigments obtained from a red beetroot (*Beta vulgaris* L.) as root juice, were evaluated for their stability at various pH values, different ascorbic acid concentrations, and in the presence of N<sub>2</sub> and air. The effect of pasteurisation and storage periods with exposure to light and dark at room temperature and in refrigerator in both the presence and the absence of ascorbic acid as stabilizer was also estimated. The stability of extracted pigments was measured on the basis of their UV-visible absorption spectrum. The stability is, however, strongly dependent on pH : it is best at pH values between 6.5 and 7, while the poorest at low pH values. Ascorbic acid at 0.05% was the best concentration to protect the red colour. Both samples treated with ascorbic acid or pasteurisation had much better stability in refrigerator than at room temperature in light or dark after 35 days. The exclusion of light and the presence of N<sub>2</sub> improved the stability of beetroot pigments. Beetroot pigments exhibited good stability under selected conditions and these characteristics give them considerable potential for development for use in the pharmaceutical and food industries, particularly for low temperature and moderate pH uses.

# ESTIMATION THE EFFECTS OF HEATING ON THE OXIDATIVE STABILITY OF PEANUT AND SESAME OILS BY UV-SPECTROSCOPY.

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## **Abstract**

This investigation was carried out on peanut and sesame oils extracted by traditional method in local traditional mill in Taiz city (Yemen), in an attempt to evaluate the effects of heating time at ( $180^{\circ}\text{C} \pm 5^{\circ}\text{C}$ ) up to 16 hours on the oxidative stability of studied oils by absorptivity in the UV-spectrum .

The obtained data could be concluded as follows:

The UV spectrum from 200-400 nm showed that obviously difference between peanut and sesame oils. The main difference of both oil spectrum was between 256 and 310 nm, whereas peanut oil had a small peak in this region (17 % of total peanut oil peaks area), while sesame oil had a high peak in such region (58 % of total sesame oil peaks area).

Compared crude sesame oil with sesame oil neutral lipid UV spectrum, high peak of crude sesame oil spectrum in region among 256-310 nm due to high phenolic compound content of sesame oil.

The initial value of hydroxynonenal value at 221 nm of peanut and sesame oils was 1.17 and 1.11 which increased to 1.97 and 2.02; respectively, after 6 hour of heating at  $180^{\circ}\text{C} \pm 5^{\circ}\text{C}$ . This value approximately stable or slightly increased during next four hour of heating, then elevated gradually reached to 2.57 and 2.68 after 16 hour of heating for peanut and sesame oils, respectively.

Same trend was obtained for conjugated diene at 232-234 nm but it shows sharp increased during first 2 hour of heating at  $180^{\circ}\text{C} \pm 5^{\circ}\text{C}$ , from initial value 2.96 and 2.41 to 6.77 and 6.55 then gradual increase reached to 9.18 and 9.08 at the end of heating after 16 hours, for peanut and sesame oils, respectively.

The absorption values at 245 nm UV region could be used helpfully for lipid oxidation monitoring.

# QUALITY EVALUATION OF EGYPTIAN HONEY DURING STORAGE AT ROOM TEMPERATURE

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## ***Abstract***

This investigation was carried out on seven honey types produced in different regions in upper Egypt (El-Minia, Assiut and Qena governorates) namely; Alfalfa, Cotton, Sunflower (two samples, (I) from Assiut and (II) from El-Minia), Sesame, Eucalyptus, Lemon and Orange honey (citrus honeys). All honey samples were collected during summer 2003 season (July-September), except lemon and orange honey samples which were collected during winter 2004 season (April). The effect of one year storage at room temperature (14-32°C) periodically, every three months on some physico-chemical properties of studied honey types were studied. The obtained data revealed that: Colour density, reducing sugars, hydroxymethyl furfural and total acidity were significantly increased, whereas sucrose, diastase activity were decreased and insignificant changes in pH values were observed during storage period. Generally, storage at room temperature had significant ( $p < 0.05$ ) effect on quality of studied honeys.



# PHYSICOCHEMICAL AND ACID-INDUCED GELATION PROPERTIES OF SKIM MILK RECONSTITUTED WITH OR WITHOUT PECTIN: EFFECT OF A REVERSE CO<sub>2</sub>-ACIDIFICATION CYCLE

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## **Abstract**

The influence of a reverse CO<sub>2</sub>-acidification cycle on the physicochemical and acid-induced (glucono- $\delta$ -lactone, GDL) gelation properties of skim milk containing or not low methoxyl pectin (LMP) was assessed by measuring the ionic calcium level, zeta potential, particle size, buffering properties and SAOR-rheological moduli. No variation in the Ca<sup>2+</sup> level, zeta potential and particle size was observed after the pH cycling by CO<sub>2</sub> (pH target 4.9) of control milk. However, such CO<sub>2</sub> treatment had a significant impact on the acid-induced gelation behaviour. The presence of LMP in milk improved its acid-induced gelation behaviour with a domination of ionized calcium-dependent pectin-pectin interaction. Application of a CO<sub>2</sub> cycle (pH target 4.9) on milk pre-supplemented with LPM led to a stabilization of complex system in wide pH range (pH 6.0-5.1) and a further improvement in its gelation behaviour. Besides, the measurements of Ca<sup>2+</sup> level during GDL-acidification showed that the rate of Ca<sup>2+</sup> release in the 5.6-5.1 pH range and the maximal level below pH 5.1-5.0 for milk-pectin sample treated by a CO<sub>2</sub> cycle was significantly less important compared to the other samples. These observations indicated that a considerable part of the Ca<sup>2+</sup> released during CO<sub>2</sub> cycling was trapped by pectin molecules in the serum.

**Keywords:** Pectin, casein micelles; CO<sub>2</sub>; ionized calcium; rheology, acid-induced gelation.

# ETUDE DE L'ACTIVITÉ ANTIOXYDANTE DES HUILES ESSENTIELLES EXTRAITES DE *MYRTUS COMMUNIS*

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## **Resume**

L'une des préoccupations majeures de l'humanité a toujours été de conserver ses aliments de façon à pouvoir se nourrir en tout temps. Or les développements microbiens et les oxydations représentent les principaux risques sanitaires et les principales sources de détérioration des aliments . Depuis quelques années, divers facteurs, notamment la méfiance du consommateur vis-à-vis de tout ce qui est artificiel, favorise la recherche de molécules naturelles (Alais et Linden, 2001).

Le désir d'augmenter la durée de stockage des aliments a suscité le problème d'oxydation. L'auto -oxydation des acides gras produit des composés instables qui changent le caractère rhéologique sensoriel et les caractéristiques nutritionnelles des aliments. Les antioxydants synthétiques comme le Butyl hydroxytoluène BHT et le Butyl hydroxyanisole BHA sont utilisés dans l'industrie alimentaire pour améliorer la stabilité des produits (Thyrion, 1999). Ils sont efficaces mais peuvent avoir des effets indésirables pour cela, l'utilisation d'antioxydants naturels est largement préconisée.

Dans ce contexte, cette étude consiste à extraire les huiles essentielles des feuilles fraîches et sèches de *Myrtus communis* et à déterminer leur activité antioxydante en la comparant à celle de la Vitamine E.

# LE FROMAGE TRADITIONNEL ALGÉRIEN BOUHEZZA: PRÉSENTATION ET CARACTÉRISATION

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## **Resume**

La fabrication de bouhezza est anciennement pratiquée chez les populations Chaoui qui vivent dans la région des Aurès et au-delà même, couvrant une grande partie de l'Est du pays. Sa spécificité est l'utilisation d'une peau d'animaux « chekoua » comme contenant de la matière première et séparateur de lactosérum. Une enquête a permis de lancer sa fabrication pour suivre l'évolution des caractéristiques du fromage au cours de l'affinage. Un salage en masse et des ajouts successifs de lben et de lait cru permettent l'accumulation de la pâte fromagère dans la chekoua. L'affinage du fromage est montré par le suivi de ses caractéristiques physicochimiques et microbiologique sur dix semaines. L'extrait sec de la pâte a augmenté jusqu'à 36% et semble être assuré par l'augmentation significative ( $p < 0,01$ ) de la teneur en matières azotées totales et en matières grasses, respectivement de 3,4 et 0,91% (j+0) à 19,02 et 10,8% du fromage (j+70). Le taux de protéolyse est non négligeable, il atteint 38 % à j+70. Le bouhezza obtenu présente une flore constituée surtout de lactobacilles et de streptocoques lactiques (108ufc/g). Le recoupement des résultats d'enquête et des caractéristiques des fabrications nous a permis d'établir la fiche technique du fromage et de le classer.

**Mots clés :** Bouhezza, fromage, enquête, fabrication, caractérisation.