



FOOD & AGRICULTURE WEEK

3rd Food Science Day

**Organized by
Food Science Department
25 March 2013**



Program & Abstracts

IT BUILDING (MALE CAMPUS)

08:30 – 09:00	Registration
9:00-9:10	Welcome Mariam Yammahi & Ahlam Al-Hammadi
Session-1 (Chair: Dr. Ibrahim Omer and Mariam Rashid Yammahi)	
9:10-9:20	The Importance of Food Science Education & Research in UAE Afaf Kamal-Eldin , Chair, Food Science Department, Food and Agriculture College, UAEU
09:20 – 09:40	Food Innovation Program: A Joint Initiative between UAEU and Khalifa Fund Qussay Abdul Wahab , Khalifa Fund for Enterprise Development
09:40 – 10:00	The Physicochemical Influence of Microenvironments on Bulk Oils Oxidation Elizabeth Budilarto & Afaf Kamal-Eldin , Food Science Department, Food and Agriculture College, UAEU
10:00-10:20	Challenges in Date Disinfestation and Possible Alternatives to Methyl Bromide Mohamed Al-Farisi , ADFCA, Abu Dhabi
10:20-10:40	Quality Assurance in the Food Industry Canute Mathias , Gulf Food Industries-California Garden
10:40-11:00	Coffee Break

3rd FOOD SCIENCE DAY, 25 March 2013

Session – 2 (Chair: Dr. Isameldin Hashim and Ahlam Al-Hammadi)	
11:00 – 11:20	Effect of Sun and Solar Drying on Quality Attributes and Antioxidative Activity of Tomato Sajid Maqsood , Food Science Department , Food and Agriculture College, UAEU
11:20 – 11:40	Meat Adulterations Mahmoud Y. Odeh , Dubai Municipality.
11:40-12:10	Challenges in Detection of Non-Halal Items in Foods Hamzah M. Salleh , International Institute for Halal Research & Training (INHART), International Islamic University Malaysia
12:10 – 12:30	Characterization of Food by Calorimetry Massimo Baiardo , TA Instruments-Waters LLC, New Castle, DE, USA
12:30 – 12:50	Rheological Properties of Food Massimo Baiardo , TA Instruments-Waters LLC, New Castle, DE, USA
12:50	Words of thanks
13:15-14:00	LUNCH
14:00-16:00	Rheometry and Differential Scanning Calorimetry Workshop Venue: Building E3. Demonstrator: Massimo Baiardo.

Abstracts

The Importance of Food Science Education & Research in UAE

Afaf Kamal-Eldin

Chair, Food Science Department, Food and Agriculture College,
UAEU

UAE is a country highly dependent on food imports. The country is also hosting people from all over the world who come with diverse food cultures, tastes, and needs. Assurance of high quality and safety for internally processed and imported foods is essential in lieu of increased food adulteration scandals. The issue of Halal foods and halal food certification is especially interesting and requires concerted actions with other academia, regulatory and control authorities, concerned industries, and other stakeholders. In addition to these concerns, food scientists in UAE and other Arid lands are challenged to add value to important food security crops in the region, i.e. dates and camel milk and meat.

The Department of Food Science at UAEU is engaged in teaching and research activities that aim to give its students high quality academic and practical training in the areas of food chemistry and analysis, food quality and safety, food processing and engineering, and novel and functional foods. The research at the Department is targeted towards the challenges discussed above. Collaboration with other institutes and stakeholders is very important to achieve the anticipated goals. Collaborations include joint research, programs, field trips and internship training, *etc.*

**Food Innovation Program: A Joint Initiative between UAEU
and Khalifa Fund**

Qussay Abdul Wahab
Senior Business Counselor
Entrepreneurship Development Dept.
Khalifa Fund for Enterprise Development

Entrepreneurship is a fundamental foundation of any economy that is seeking balanced, long-term sustainability and a move away from a dominant sector. By 2030 Abu Dhabi intends to build a sustainable, diversified, high-value-added economy that encourages enterprises and entrepreneurship and well integrated in the global economy leading to better opportunities for all. **Khalifa Fund** in partnership with **UAE University** has identified the need to setup and operate a shared kitchen incubator to support food-related businesses. The end result is the establishment of an effective business incubation program that caters for the food sector, suits the needs of the local environment and help in fostering an entrepreneurial culture among the local Emirati population, mainly female, in the Emirate of Abu Dhabi. A shared-use commercial kitchen is a fully licensed, commercially equipped kitchen available for use by growers, new and existing food businesses, caterers, restaurants, special event vendors, bakers, groups, and organizations.... anyone who has ever dreamed of processing and marketing a food product, but lacked the space, equipment, or support to do it. The Kitchen Incubator is the first of its kind in the MENA region and one of the very few kitchen incubators that is fully integrated with a University, Worldwide.

The Physicochemical Influence of Microenvironments on Bulk Oils Oxidation

Elizabeth Budilarto and Afaf Kamal-Eldin

Food Science Department, Food and Agriculture College, UAEU

It has been long known that lipid oxidation occurs through sequences of chemical reactions, namely initiation or induction, propagation and termination periods. This pure chemical paradigm was not able to explain several peculiarities related to antioxidant potency. Recently, it became evident that physical factors also have great influences on lipid oxidation. In 1980, the polar paradox, was first brought up, by Porter *et al.*, who proposes that polar antioxidants (e.g. Trolox, ascorbic acid) are more effective in water-in-oil emulsions, while non-polar antioxidants (e.g. α -tocopherol, ascorbyl palmitate) are more effective in oil-in-water emulsions. In recent years, it has been revealed that the microenvironment that is formed by surface active minor components and polar compounds, represent the site of lipid oxidation. The existence of microenvironment reduces interfacial tension, changes the physical location of prooxidants, antioxidants and oxidation products, hence affecting lipid oxidation. Hydroperoxides decompose quicker inside the micelles and oxidation is prevalent at the interface of air/oil and water-oil microenvironments. The polarity of antioxidants is closely related to their Hydrophilic lipophilic balance (HLB), which is an important parameter for micellization. The aims of my PhD research are to investigate the existence of microenvironments and their roles in lipid oxidation in vegetable oils.

Challenges in Date Disinfestation and Possible Alternatives to Methyl Bromide

M. Al-Farisi^{a*}, A. Abuagla^a, E. Mohamed^a and U. Gohs^b,

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Methyl bromide is the most common fumigant used to control insects in dates and other food commodities. Recently methyl bromide was banned from use as a fumigant due to depleting substance of ozone layer. Therefore, alternative, preferably non-residual methods of effective pest control are needed for the post-harvest handling and storage of dates. This is a commercial scale study to assess the effect of Electron Beam (EB) treatment on pest load, microbial load, antioxidant and free radical content of dates using different doses; 0.5, 1.0, 2.0 kGy. EB efficiency was assessed by measuring *O. Surinamensis* mortality, Total Viable Count (TVC), Yeast and Mold Count (YMC), total antioxidants and free radicals. All doses used in EB treatment successfully eliminated all stages of *O. Surinamensis* in dates. EB dose of 2.0 kGy had the greatest reduction in TVC to 4.35 log CFU/g in Khalas and 4.75 log CFU/g in Lulu . YMC was low in samples treated by EB compared with control sample. There were no significant differences in total antioxidants between treatments, except reduced antioxidants for samples treated with 2.0 kGy. The free radical content of samples treated by 2 kGy decreased by 65% after 25 days of storage. These results support the applicability of using 1.0 kGy to ensure and enhance the safety of dates.

Quality Assurance in the Food Industry

Canute Mathias

R&D and Quality Control Manager
Gulf Food Industries-California Garden

Quality Control and assurance in the food processing plant is generally assumed to have basic aims to assure compliance with government regulations, maintain and improve the quality grade, thereby enhancing the product value in the market place and to reduce the probability of spoilage and resultant hazards to consumers and economic loss. Slight improvements in quality would increase product value or salability and might be realized by huge gains. Control of factory operations, daily sanitation survey, daily plant inspections, examinations of line samples, examination of water, raw materials etc. are the important jobs of the quality control in food processing plant and implementation of food safety systems and ISO systems will boost the performs of the quality control in the production. As a an example, In the Gulf food Industries ,the established canned food facility the principles of quality control procedures are implemented to get the consistent quality of canned food. The successful validation, implementation of Food Safety Management system like HACCP,ISO 22000 and implementation of ISO 9000,ISO 14000,OHSAS 18000 has been done and these certifications have helped the operation to achieve the goals of the company and placed the organization as the leader in the canned food production with superior quality products.”

Effect of Sun and Solar Drying on Quality Attributes and Antioxidative Activity of Tomato (*Lycopersicon esculentum* L.)

Sajid Maqsood

Food Science Department, Food and Agriculture College, UAEU

A comparative study on effect of sun and solar drying on different quality parameters and antioxidative activity of tomato was investigated during October, 2012. Drying of tomato under sun displayed a higher rate of moisture loss than those dried inside solar drier. However, both the samples finished the drying process after 52 hours. Evaluation of different quality parameters and antioxidative activity revealed that drying process was known to decrease lycopene, vitamin C, total phenolic and flavonoid content as well as decreased activity was displayed in different antioxidative assays when compared to fresh tomato. Among the samples dried under sun and inside solar drier, there was no significant difference in lycopene and vitamin C content ($p < 0.05$). However, total phenolic and flavonoid content was higher in solar dried samples compared to those of sun dried samples. Moreover, antioxidative activity also did not display any difference between the two samples. More importantly, sensory evaluation showed that consumer panelist preferred sun dried samples over solar dried samples. Sun dried sample were more bright red in color with higher redness (a^*) and lightness (L^*) values than solar dried samples which were darker in color. Therefore, sun drying with some modification can be a promising technique to preserve the perishable tomato and can be effective in preventing the quality losses and decrease in antioxidant activity.

Meat Adulteration

Dr. Mahmoud Yousef odeh
Principal veterinary doctor /technical incharge
Veterinary Control unit / meat inspection sub unit
Veterinary services section.
Public Health Services Department.
Dubai Municipality

1-Definition of adulteration: The act of debasing a pure or genuine commodity for pecuniary profit, by adding to it and inferior or spurious article, or by taking from it one or more of its constituents.

2- What's the reason behind the scandal?

3- Anatomical differences between horse, pig and ox.

4- Carcass General differences.

5- Visual difference of meat.

6- Differentiation in minced meat.

7- Ultimate pH value.

8- Laboratory test.

9- Authority responsibility.

Challenges in Detection of Non-Halal Items in Foods

Hamzah Mohd. Salleh

International Institute for Halal Research & Training ((INHART)

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Muslims are urged to consume *halalan toyyiban* food and consumer products. Halal industry is today among the fastest growing global businesses. Halal food has attracted the interest of non-Muslim producers and consumers as well due to its wholesome, hygienic and contamination-free principles in food production. It is important to uphold the halal integrity in the entire food value-supply chain – raw materials, packaging materials, ingredients and additives, processes and the final products. However, major food adulteration and contamination events seem to occur with some regularity, such as the recent meat adulteration scandal in Europe and the widely publicized adulteration of milk products with melamine in China not so long ago. Food adulteration and contamination can have health implications and/or resentment by religiously conscious consumers due to religious dietary law. With globalization and rapid distribution systems, traceability in the food supply chain has become ever challenging. A range of technologies are available for the detection of food adulteration and contamination in *halalan toyyiban* food production, and some of these will be highlighted in the seminar, In-sha Allah.

Rheological Properties of Food

Massimo Baiardo

TA Instruments-Waters LLC, New Castle, DE (USA)

TA Instruments is the market leader for rotational rheometers. In this presentation, the latest developments in the field of rheological and mechanical characterization from TA Instruments will be introduced. Specific examples of the benefits of the latest technologies to characterize food will be presented and representative data will be discussed. Processability, Shelf-Life, Stability, Sedimentation, Viscosity, Product Performance, Leveling, Texture, Cereal Characterization and Dough Elasticity represent some of the typical targets of this characterization.

Characterization of Food By Calorimetry

Massimo Baiardo

TA Instruments-Waters LLC, New Castle, DE (USA)

TA Instruments has long been at the forefront of Calorimetry and Thermogravimetry technology. Innovations including Modulated DSC®, Tzero® technology and Hi-Resolution TGA® were invented and developed at TA Instruments, and represent major advancements in the science of Dynamic/Isothermal Calorimetry and Sorption Techniques. In this presentation, the latest developments in the field of Calorimetry and Sorption Analysis from TA Instruments will be introduced. Specific designs will be presented and representative data will be presented and discussed. Shelf-life, Stability, Solid Fat Analysis, Protein Denaturation, Freeze-drying Process, Crystallization, Melting, Product Performance Cookies and Chips Glass Transitions represent some of the typical targets of this characterization.