2016 APCBEES BUDAPEST CONFERENCE ABSTRACT

August 19-21, 2016

NARIC Food Science Research Institute, Budapest

Budapest, Hungary

Sponsored and Published by

Indexed by

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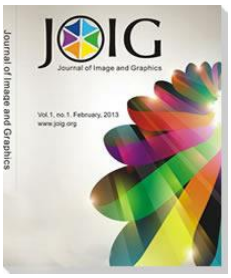
2016 APCBEES Budapest Conference Introductions

Welcome to CBEES 2016 conferences in Budapest. The objective of the Budapest conference is to provide a platform for researchers, engineers, academicians as well as industrial professionals from all over the world to present their research results and development activities in Biomedical Signal and Image Processing, Nutrition and Food Engineering, and Biological and Medical Sciences.

2016 International Conference on Biomedical Signal and Image Processing (ICBIP 2016)



- **Paper publishing and index:** ICBIP 2016 papers will be published in Journal of Image and Graphics (JOIG), which will be included in Ulrich's Periodicals Directory, Google Scholar, Crossref, Engineering & Technology Digital Library and Electronic Journals Digital Library.
- **Conference website and email:** http://www.icbip.org/; icbip@cbees.net.

2016 International Conference on Nutrition and Food Engineering (ICNFE 2016)

- **Paper publishing and index:** ICNFE 2016 papers will be published in the Volume of Journal (IPCBEE, ISSN: 2010-4618), and all papers will be included in the Engineering & Technology Digital Library, and indexed by Ei Geobase (Elsevier), Chemical Abstracts Services (CAS), CABI, CNKI, EBSCO, WorldCat, Google Scholar, Ulrich's Periodicals Directory, Crossref, and Engineering & Technology Digital Library.
- **Conference website and email:** http://www.icnfe.org/; icnfe@cbees.net.

2016 4th International Conference on Biological and Medical Sciences (ICBMS 2016)

- **Paper publishing and index:** ICBMS 2016 papers will be published in International Journal of Pharma Medicine and Biological Sciences (IJPMBS, ISSN: 2278-5221), which will be included in the Engineering & Technology Digital Library, and indexed by Embase (Under elsevier), ProQuest, Google Scholar, Chemical Abstracts Services (CAS), Indian Science, ICMJE(International Committee Medical Journal Editors), HINARI(World Health Organization), and NYU(Health Sciences Library).
- **Conference website and email:** http://www.icbms.org/; icbms@cbees.org.

Presentation Instructions

Instructions for Oral Presentations

Devices Provided by the Conference Organizer:

Laptop Computer (MS Windows Operating System with MS PowerPoint and Adobe Acrobat Reader)
Digital Projectors and Screen
Laser Sticks

Materials Provided by the Presenters:

PowerPoint or PDF Files (Files should be copied to the Conference laptop at the beginning of each Session.)

Duration of each Presentation (Tentatively):

Regular Oral Presentation: about **12** Minutes of Presentation and **3** Minutes of Question and Answer
Keynote Speech: about **40** Minutes of Presentation and **10** Minutes of Question and Answer

Instructions for Poster Presentation

Materials Provided by the Conference Organizer:

The place to put poster

Materials Provided by the Presenters:

Home-made Posters
Maximum poster size is A1
Load Capacity: Holds up to 0.5 kg

Best Presentation Award

One Best Oral Presentation will be selected from each presentation session, and the Certificate for Best Oral Presentation will be awarded at the end of each session on August 20, 2016.

Dress code

Please wear formal clothes or national representative of clothing.

Keynote Speaker Introductions

Keynote Speaker I

Prof. Dr. Bártfai György
University of Szeged, Department of Obstetrics and Gynaecology, Hungary

Studies:
1995 Acquisition of the title Dr. med. habil
1974 Specialization in Obstetrics and Gynaecology
Academic qualifications:
1999 Doctor of the Hungarian Academy of Science
1984 Ph.D. Degree
Professional assignments:

2014-	Emeritus Professor
2000-2014	Professor

Professional memberships and awards:
1992-2000 Society of Hungarian Medical History
1995-2008 Psychosomatic Society of the Hungarian Obstetrician & Gynaecologist
1998- Endocrinological Society of Hungarian Obstetrician & Gynaecologist
1998-2010 Member of the Board of the Hungarian Society of Obstetrician & Gynaecologist
1998-2008 European Society of Contraception member of the Board of Directors
2000- Medical Advisor in Forensic Medicine in the Field of Obstetrics and Gynaecology
2000-2008 Board member of the Doctoral and Habilitation Committee of University of Pécs
2002-2008 Vice secretary of the ESC Executive Committee
2004-2009 Member of the College of the Obstetrics and Gynaecology
2006-2010 President of the Pro Familia Hungary Scientific Society (2 terms)
2006- Head of the Hungarian Affiliation of the ESC
2007- Visiting Professor, University of Novi Sad
2008- Head of the working group of the "Reproductive Health" at the Secretariat of the South-Hungarian Regional Committee of the Hungarian Academy of Sciences
2008- Honorary member of the Society of the Serbian Obstetricians & Gynaecologists
2008- Honorary member of the Society of the Romanian Obstetricians & Gynaecologists
2010- European Society of Contraception, member of the Board of Directors
2012- President of the ESC Internal Scientific Committee
2013 Doctor Honoris Causa, Arad University
2013 Batthyány-Strattmann Award by the Ministry of Education and Heath, Hungary

Other activities:

President of the Egon and Ann Diczfalusy Foundation (at present)

World Health Organisation (WHO) obligations:

Temporary Advisor and Principal Investigator in the following multicentre studies:
Multicenter IUD trials
Cardiovascular diseases & hormonal contraception
Emergency postcoital contraception
Vaginal Ring study B300
Pericoital contraception with Levenorgestrel

Tenders/applications:

Principal Investigator:
European Male Ageing Study 2002-2012
DEVTEGEN Study 2012-2014

Sciento-metric activity:

Scientific publications: 184
Presentations in International and
National Congresses: 250
Cumulative impact factor: 407.2
Independent citations: 3309
Hirsch index: 26

Topic: "Using the iPhone in Everyday Practice in the Obstetrics and Gynecology to Improve the Healthcare"

György Bártfai, Melinda Vanya, Maria Jakó, Győző Füle, Márta Fridrich, Andrea Surányi, and Tamás Bitó

Abstract: The telemedicine programmes are one of the most quickly developing parts of the medicine: from e-consultation to using robot technique at the operations.
On the other hand the mobile phones are widely used regardless of the financial situation of the people. Therefore, it is a paramount of importance to use the advantage of this technique in patient education and communication between patients and medical staff.
Fertility planning including treatment of fertility as well as contraception might involve millions of women all over the world. Therefore, to develop a mobile application for monitoring the menstrual cycles would be a useful application. Measuring the Basal Body Temperature (BBT) provides a low cost method for evaluation of the menstrual cycle including the approximate time of ovulation.
To determine the most sensitive part of the menstrual cycle are equally good for the women who wants a baby and for the ones who does not.
I would like to present one of the possibilities to observe and to record the events in menstrual cycle using iPhone to fulfill this requirement.

Keynote Speaker II

Dr. Attila Kiss
Director, NARIC Food Science Research Institute, Budapest

Appointment: Director of Food Science Research Institute
Scientific degrees: PhD in Chemistry (1997)
Dr. Habil in food chemistry (2011)
Membership of Professional Bodies:
Corporative member of the Hungarian Academy of Sciences (HAS), member of the committee of food sciences of HAS, member of Hungarian Chemists' Association.
Scholarships, awards: Bolyai János Academic Research Scholarship (1999-2002)
Award of Universitas Foundation (1995, 1997)
Békéssy György Research Scholarship (2003-2006)
Award for Talented Scientists Foundation (1996)
Award of Leidenfrost Gyula Foundation (1996, 1998)
Honorary medal for Eszterházy Károly College (2000)
Gold medal for Consumer Sciences (2009)
Golden Merit Cross of the Hungarian Republic (2009)
International relations:
Coordinator of 5 EU-funded projects, research cooperation with Lund University, University of Rome, University of Bochum, University of Teramo, University of Palermo, University of Olomutz, ENESAD Dijon, INRA France, University of Montpellier, University of Perpignon, Catholic University of Lisboa, University of Madrid, University of Valladolid.
English lectured subjects: Environmental Science, Biochemistry, and Environmental Chemistry at higher education institutions.
High level of state language exam (170/1996);
Research activity at Leiden University (Prof. Jan Reedijk) for 4 months;
Research activity at Dortmund University (Prof. Bernhard Lippert) for 4 months.
Workshop on Environmental Protection, Montana USA, 1 month.
Erasmus TS-visit, Newman College, Birmingham, UK, 2 weeks.
Invited speaker for 22 different international conferences on Food Science, Nutritition and Food Chemistry

Topic: "Specifically Tailored Food Engineering Activities and Technological Developments for the Elaboration of Functional Foodstuff"

A. Kiss and E. Németi

Abstract: Consumers' demand for functional foodstuffs with health promoting effect is steadily increasing, however there are only few products at the market with scientifically justified positive physiological effects. In most of the cases both biochemical model studies and human clinical trials are lacking from the point of view of underpinning positive biologival impacts. Our research is focused on the development of specifically flavoured, functional foodstuffs and drinks, rich in antioxidants, as well as in-depth analysis of various herbs and fruit concentrates by means of various and improved techniques. A patent protected special plastic bottle cap represents a key part in the development, which keeps the bioactive components safe and without degradation.

It is of high significance to gain comprehensive and authentic knowledge concerning both the stability and the real concentration of antioxidants in given foodstuffs, as they play crucial role in the prevention of several diseases. To achieve this goal, selective, reliable and accurate analytical tools are required, whose improvement constitute part of the present paper. Application of one single antioxidant measurement procedure can't provide entirely authentic results as these compounds are not of identical chemical structure and characteristics. Therefore, it is highly sensible to apply different methods simultaneously and to assess the results by an integrated and comparative approach.

In the first part of the work various herbs extracts were prepared of catmint (Nepeta catariae), balm (Melissa officinalis) and thyme (Thymus vulgaris). In order to select the most effective extraction method, 3 different patterns of extractions were applied, by using 5 different solvents (water, ethanol, ethyl-acetate, hexane and acetone). When comparing the efficiency of various solvents, water proved to be the most advantegeous one. Besides the usual, one-step extraction, the effectiveness of a sequential, cascade-like, three-step extraction was also investigated at 100 ℃, in order to maximise the extracted amount of the bioactive components. In some case application of this newly elaborated cascade-system was found to be highly beneficial.

In the extracts total phenolic content (by Folin-Ciocalteu reagent) and antioxidant capacity values were analised (by FRAP, DPPH and ABTS methods). The highest phenolic content and antioxidant capacity values were found in balm, so its extract was spray dried and used for further experiments.

Different fruit concentrates, such as sour cherry, strawberry, blackberry, blueberry, black currant, and elderberry were investigated to find the most appropriate ones with the highest total phenolic content and antioxidant capacity. In accordance with literature, strong correlation was found between the total phenolic content and the antioxidant capacity measured with the different methods. On the basis of these results and that of organoleptic tests, the components were combined in an optimal ratio. Along with black currant, as major

constituent, strawberry and elderberry were used in functional food development, as they represent the highest total phenolic content and antioxidant capacity. In addition, application of these antioxidants resulted in the most harmonized scent and colour of the product prototype.

To enhance the nutritional value, beside the spray dried balm extract, Ca-lactate, Se-methionine and K-iodide were also added to the mix, by considering the solubility. The antioxidant capacity of the new aromatised water was 2.48±0.35 mM by DPPH assay and total phenolic content was 327.3 ±9.4 mg/l GAE.

The new products were stored under various circumstances for a 12-week-long period to prove that the amount of bioactive compounds does not decrease during the storage. In vitro digestion model studies and human clinical trials were implemented in order to certify the actual beneficial biological effects of the new functional products, as well as the bioaccessibility of the applied bioactive compounds.

Brief Schedule for Conferences

Day 1	**August 19, 2016 (Friday) Venue: Lobby of Hotel Budapest, Budapest** Arrival Registration (10:00~17:00) (Committee Meeting 14:00~16:00)
Day 2	**August 20, 2016 (Saturday) 9:00~18:10** **Venue: Conference Room (NARIC Food Science Research Institute, Budapest)** Arrival Registration, Keynote Speech, and Conference Presentation
	Morning Conferences
	Venue: Conference Room Opening Remarks 9:00~9:10 (Dr. Attila Kiss, NARIC Food Science Research Institute, Budapest) Keynote Speech I 9:10~10:00 Topic: "Using the iPhone in Everyday Practice in the Obstetrics and Gynecology to Improve the Healthcare" (Prof. Dr. Bártfai György, University of Szeged, Department of Obstetrics and Gynaecology, Hungary) Coffee Break & Photo Taking 10:00~10:30 Keynote Speech II 10:30~11:20 Topic: "Specifically Tailored Food Engineering Activities and Technological Developments for the Elaboration of Functional Foodstuff" (Dr. Attila Kiss, NARIC Food Science Research Institute, Budapest) Free Talk 11:20-12:00
	Lunch 12:00~13:00
	Afternoon Conferences
	Session 1: 13:00~15:15 **Venue: Conference Room** 9 presentations-Topic: "Medical Science & Signal and Image Processing"
	Coffee Break 15:15~15:40
	Session 2: 15:40~17:10 **Venue: Conference Room** 6 presentations-Topic: "Food Science"
	Visit NARIC Food Science Research Institute, Budapest 17:10-18:10
	Dinner:18:30 **Venue: Speiz restarurant at the Castle of Buda**
	21:00~21:30 **The St. Stephen's day fireworks from the Castle of Buda Can watch.** **(http://visitbudapest.travel/budapest-events/st-stephens-day/)**

Tips: Please arrive at conference room 10 minutes before the session beginning to upload PPT into the conference laptop.

Detailed Schedule for Conferences

August 19, 2016 (Friday)

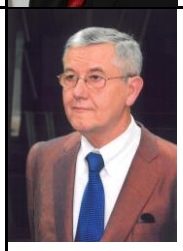
Venue: Lobby of Hotel Budapest, Budapest

10:00~17:00	**Arrival and Registration** **(Committee Meeting: 14:00~16:00)**

Note: (1) The registration can also be done at any time during the conference.
(2) The organizer doesn't provide accommodation, and we suggest you make an early reservation.
(3) One Best Oral Presentation will be selected from each oral presentation session, and the Certificate for Best Oral Presentation will be awarded at the end of each session on August 20, 2016.

August 20, 2016 (Saturday)

Venue: Conference Room

9:00~9:10		**Opening Remarks** Dr. Attila Kiss NARIC Food Science Research Institute, Budapest
9:10~10:00		**Keynote Speech I** Prof. Dr. Bártfai György University of Szeged, Department of Obstetrics and Gynaecology, Hungary Topic: "Using the iPhone in Everyday Practice in the Obstetrics and Gynecology to Improve the Healthcare"
10:00~10:30		**Coffee Break & Photo Taking**
10:30~11:20		**Keynote Speech II** Dr. Attila Kiss NARIC Food Science Research Institute, Budapest Topic: "Specifically Tailored Food Engineering Activities and Technological Developments for the Elaboration of Functional Foodstuff"
11:20~12:00		**Free Talk**
12:00~13:00		**Lunch**

Let's move to the Sessions!

Session 1

Tips: The schedule for each presentation is for reference only. In case of missing your presentation, we strongly suggest that you attend the whole session.

Afternoon, August 20, 2016 (Saturday)

Time: 13:00~15:15

Venue: Conference Room

Session 1: 9 presentations-Topic: "Medical Science & Signal and Image Processing"

Session Chair: Prof. Bártfai György

B0003 Presentation 1 (13:00~13:15)

Despeckling the Medical Ultrasound Image through Individual Despeckling of the One Dimensional Radio Frequency Envelopes by Short-Time Fourier Transform

Jawad Al-Asad

Prince Mohammad Bin Fahd University, Saudi Arabia

Abstract—In this paper Short Time Fourier Transform (STFT) is used to despeckle the medical ultrasound image before reconstruction though despeckling the individual one dimensional (1D) Radio Frequency (RF) envelopes that constitute the two dimensional (2D) image. Total Variation Filter (TVF) and Anisotropic Diffusion Filter (ADF) are also applied on the speckle noisy 2D ultrasound image after reconstruction. Performance comparison is held between despeckling the ultrasound image before reconstruction and after reconstruction. Despeckling the ultraosund image before reconstruction through STFT has removed the speckle noise more efficiently than TVF and ADF and maintained the texture of the original image and that is also compared to STFT performance when applied to the 2D image after reconstruction. TVF was found more efficient in removing speckle when applied through overlapping blocks compared with applying it as a whole to the 2D image. ADF was found outperforming TVF in removing speckle noise and it is found more efficient when applied as a whole to the 2D image compared with applying it through overlapping blocks.

Afternoon, August 20, 2016 (Saturday)

Time: 13:00~15:15

Venue: Conference Room

Session 1: 9 presentations-Topic: "Medical Science & Signal and Image Processing"

Session Chair: Prof. Bártfai György

B0006 Presentation 2 (13:15~13:30)

MAC Protocol for Alleviating the Effect of Hidden Node Problem in Ad Hoc Networks

Sunmyeng Kim

Kumoh National Institute of Technology, South Korea

Abstract—The performance of Ad Hoc networks does not scale with users due to the interference among nodes. DPCF (Distributed Point Coordination Function) protocol was proposed to improve the performance. In the DPCF protocol, when a node gets the channel access right, its destination node polls all the neighboring nodes. Therefore, the DPCF protocol can improve the performance by reducing the overhead associated to the channel access. However, the DPCF protocol suffers from the hidden node problem, which leads to severe degradation of performance. In this paper, the researcher proposes a new MAC protocol in which a node only polls the neighboring nodes in the restricted area to alleviate the effect of hidden node problem. Performance of the proposed protocol is analyzed through simulations. The simulation results show that the proposed protocol tends to improve the overall performance.

Afternoon, August 20, 2016 (Saturday)

Time: 13:00~15:15

Venue: Conference Room

Session 1: 9 presentations-Topic: "Medical Science & Signal and Image Processing"

Session Chair: Prof. Bártfai György

B0008 Presentation 3 (13:30~13:45)

Morphology-based Sensor Pattern Noise Extraction for Device Identification

Hae-Yeoun Lee

Kumoh National Institute of Technology, South Korea

Abstract—Multimedia such as image, audio, and video is easy to create and distribute with the advance of IT. Since novice uses them for illegal purposes, multimedia forensics are required to protect contents and block illegal usage. Using a morphology-based sensor pattern noise (M-SPN), this paper presents a multimedia forensic algorithm for video to identify the device used for acquiring unknown video files. First, the way to calculate a sensor pattern noise using morphology filter is presented, which comes from the imperfection of photon detectors against light. Then, the way to identify the device is explained after estimating M-SPNs from the reference device and the unknown video. For the experiment, 15 devices including DSLR, compact camera, smartphone, and camcorder are tested and analyzed quantitatively. Based on the results, the presented algorithm can achieve the 92.0% identification accuracy.

Afternoon, August 20, 2016 (Saturday)

Time: 13:00~15:15

Venue: Conference Room

Session 1: 9 presentations-Topic: "Medical Science & Signal and Image Processing"

Session Chair: Prof. Bártfai György

B0011 Presentation 4 (13:45~14:00)

Detection and Quantification of Neuron's Cellular Bodies in C. Elegans

Jorge Santos and Daniel Dias

INEB – Instituto de Engenharia Biomédica, Portugal

Abstract—Parkinson's disease is a neuronal degenerative disease characterized by problems on movement ability originated by the presence of mutant forms of leucine-rich repeat kinase in neurons causing its degradation and death. Studying the mechanisms involved in this process is fundamental to find a desirable therapeutical treatment. On way this is being done is to use the Caenorhabditis elegans (C. elegans), a simple nematode, to model this disease and to simulate the influence of certain proteins and dysfunctions in the way the disease evolves. Laboratory experiments are being carried out to study this influence by submitting C. elegans to different conditions and analyzing how the degradation evolves. Images of C. elegans are taken in several stages of the process and several characteristics are extracted to quantify the degradation. In this work, we implement a pipeline using Matlab and CellProfiler to automatize and speedup this process and to alleviate the burden of doing it manually. Preliminary results are very promising and motivate us to continue with this work.

Afternoon, August 20, 2016 (Saturday)

Time: 13:00~15:15

Venue: Conference Room

Session 1: 9 presentations-Topic: "Medical Science & Signal and Image Processing"

Session Chair: Prof. Bártfai György

B0014 Presentation 5 (14:00~14:15)

A 3-D Non-rigid Warping Method Based on Free Formed Deformation for Temporal Subtraction on Thoracic MDCT Images

Yuriko Yoshino, Takumi Tokisa, **Hyoungseop Kim**, Takatoshi Aoki, and Shoji Kido

Kyushu Institute of Technology, Japan

Abstract—Recently, the development of the computer aided diagnoses (CAD) systems has been rapidly remarked. As one of the CAD systems, temporal subtraction technique can emphasize the temporal changes of interested regions by subtracting a previous image from a current image. However, subtraction artifacts are still remained due to mis-registration, which caused by the variation of pose and inhalation differences when a patient accepts CT inspection at different times. Therefore, high accurate registration technique between a previous image and a current image is necessary. The purpose of this paper is to propose a non-rigid warping algorithm in local image matching based on the feature-driven free formed deformation (FFD). The proposal was performed on thoracic MDCT images and the satisfactory results were obtained.

Afternoon, August 20, 2016 (Saturday)

Time: 13:00~15:15

Venue: Conference Room

Session 1: 9 presentations-Topic: "Medical Science & Signal and Image Processing"

Session Chair: Prof. Bártfai György

B0020 Presentation 6 (14:15~14:30)

Stress Recognition from Heterogeneous Data

Bo Zhang, Yann Morère, Loïc Sieler, Cécile Langlet, Benoît Bolmont, and Guy Bourhis

University of Lorraine, France

Abstract—The assessment of the stress of an individual attracts the attentions of the researchers since it helps to provide individualized assistance in managing this emotional state. This paper investigates the potential of stress recognition using heterogeneous data, where not only the physiological signals but also the reaction time (RT) is used to recognize different stress levels. To acquire the data related to mental stress of an individual, we design the experiments with two different stressors: 'Stroop test' and acoustic induction. We develop the classifier based on the Support Vector Machines (SVM) for the stress recognition given the physiological signals. Three physiological signals, Electrodermal activity (EDA), Electrocardiography (ECG) and Electromyography (EMG), are registered and analyzed. An overall high recognition accuracy of the SVM classifier is obtained. During the experiments, RT task appears. RTs are registered and their statistical analysis shows a generally good discrimination between the period of low stress and the period of high stress. Results indicate that the data from heterogeneous sources, such as physiological signal and cognitive reaction can be adopted for stress recognition.

Afternoon, August 20, 2016 (Saturday)

Time: 13:00~15:15

Venue: Conference Room

Session 1: 9 presentations-Topic: "Medical Science & Signal and Image Processing"

Session Chair: Prof. Bártfai György

B3001 Presentation 7 (14:30~14:45)

A Class Identification Method Using Freeman's Olfactory KIII Model

Masanao Obayashi, Ryohei Suda, Takashi Kuremoto, and Shingo Mabu

Yamaguchi University, Japan

Abstract—In recent years, researches on the olfactory have been actively conducted. As one of models of olfactory function, there is KIII model proposed by Freeman et al. There have been some researches on the classification using KIII model. These class distinctions are performed by the particular feature, the amount of statistics, namely, the standard deviation of the time series signal in the KIII model. However, as the identification rates of them are low, there need to improve identification rates. In this study, we propose a high performance feature extraction method in the classification using Freeman's olfactory KIII model, making use of the cepstrum analysis often used in speech recognition field. Finally, through computer simulations, it is verified that the proposed method is superior to the conventional method.

Afternoon, August 20, 2016 (Saturday)

Time: 13:00~15:15

Venue: Conference Room

Session 1: 9 presentations-Topic: "Medical Science & Signal and Image Processing"

Session Chair: Prof. Bártfai György

M0004 Presentation 8 (14:45~15:00)

Development of Non-Restraint Blood Pressure Measurement Method Utilizing PWV

Yasunari Asakura and Yoshiyuki Sankai

University of Tsukuba, Japan

Abstract—Hypertension is a major risk factor of ischemic heart disease and cerebrovascular disease. In order to prevent hypertension, it is important to measure blood pressure regularly. Non-restraint blood pressure measurement method would make daily measurement convenience. The purpose of this study is to develop a novel non-restraint measurement method and device of PWV (Pulse Wave Velocity) that relates to blood pressure strongly and verify the feasibility of measuring PWV with the proposed method. We developed pressure plethysmogram sensors that could detect BCG (Ballistocardiogram), and attached it on a chair. PWV was calculated from two characteristic points of BCG, which were the rising point of H wave and the bottom of I wave. In the experiment, developed system is applied to five participants, and measured values of PWV are increased according to values of systolic blood pressure. In addition, the correlation coefficients are enough to imply the relationship between PWV measured by our device and systolic blood pressure. In conclusion, we developed a novel non-restraint measurement method and device of PWV that relates to blood pressure strongly and confirmed that correlation between systolic blood pressure and PWV by using this method and device.

Afternoon, August 20, 2016 (Saturday)

Time: 13:00~15:15

Venue: Conference Room

Session 1: 9 presentations-Topic: "Medical Science & Signal and Image Processing"

Session Chair: Prof. Bártfai György

M0005 Presentation 9 (15:00~15:15)

Differences in the Behavior of Attached and Floating Cells Subjected to Low Intensity Ultrasound

Mariantonietta Ivone, Carmine Pappalettere, and Katsuro Tachibana

Politecnico di Bari, Italy

Abstract—Through mechanical considerations, we will try to determine whether cancer cells die because of resonance or energy present in solution. Attached and floating cells were stressed at fixed frequencies in a range between 400 kHz and 620 kHz at 10 PRF (Pulse Repetition Frequency). In the floating cells the power and the mortality show similar variations with respect to frequency and this allows to assume a direct relationship between power and mortality.

The same experiment was replicated on attached cells by exposing the cultures at US of fixed frequency (between 400 and 620 kHz, with 10 Hz Pulses Repetition Frequency) either keeping constant power output or voltage. Cell mortality was found to be more sensitive to the frequency.

15:15-15:40	**Coffee Break**

Session 2

Tips: The schedule for each presentation is for reference only. In case of missing your presentation, we strongly suggest that you attend the whole session.

Afternoon, August 20, 2016 (Saturday)

Time: 15:40~17:10

Venue: Conference Room

Session 2: 6 presentations-Topic: "Food Science"

Session Chair: Dr. Attila Kiss

N0005 Presentation 1 (15:40~15:55)

Chow Mein and Halva in Europe? Consumption Frequency of Different Cuisines in Europe

Viktória Szűcs and Erzsébet Szabó

Hungarian Chamber of Agriculture, Hungary

Abstract—Due to the globalizing world, nowadays it is not necessary to travel to a given country in order to get acquainted and taste the gastronomic specialties of them. In order to analyse the consumption frequency of different international cuisines and to identify the features of their consumers a questionnaire survey was conducted in seven European countries (Austria, Germany, Hungary, Ireland, Latvia, the Netherlands and Slovakia). Results of 1731 consumers showed the strong dominance of national cuisines. Italian and Chinese were found to be the most frequently consumed as well as the most admitted ones. Respondents preferring spicy meals chose Chinese, Japanese/Thai or Indian cuisines more frequently. In addition Indian meals are also preferred by respondents showed high willingness to try new or special herbs and spices. Higher consumption frequency of young adults, big city citizens, single households and higher educated participants was found in case of several cuisines. Open-mindedness of young consumers was identified, thus rising popularity and consumption frequency of international cuisines is expected. As appearance and rising consumption popularity of international cuisines will be occurred in the future, nutritional surveys as well as strategies to promote healthy eating and nutritional policies have to take them into consideration.

Afternoon, August 20, 2016 (Saturday)

Time: 15:40~17:10

Venue: Conference Room

Session 2: 6 presentations-Topic: "Food Science"

Session Chair: Dr. Attila Kiss

N0006 Presentation 2 (15:55~16:10)

The Application of Slightly Acidic Electrolyzed Water as a Potential Washing Agent on Shelf-life and Quality of Fresh Cut Vegetables (Lettuce and Carrot)

Liping Wang, Qiang Xia, Peng Huang, and Yunfei Li

Shanghai Jiao Tong University, China

Abstract—In order to evaluate slightly acidic electrolyzed water (SAEW) and sodium hypochlorite solution, the washing agents on shelf-life and quality were investigated during 25 days cold storage. The results showed that the specific maximum peak force of lettuce and carrot significantly increased after treated with SAEW, while carrot with sodium hypochlorite solution treatment was not significantly ($P > 0.05$) increased. Also the shelf-life of lettuce processed with SAEW was prolonged for another 4.5 days. The results indicated that SAEW technology had stronger decontamination ability than sodium hypochlorite with its conveniences.

Afternoon, August 20, 2016 (Saturday)

Time: 15:40~17:10

Venue: Conference Room

Session 2: 6 presentations-Topic: "Food Science"

Session Chair: Dr. Attila Kiss

N0007 Presentation 3 (16:10~16:25)

Characterization of Volatile Compound Profiling of Germinated Brown Rice Revealed by Headspace Solid-phase Micro Extraction Coupled to Gas Chromatography Mass Spectrometry

Qiang Xia, Liping Wang, Peng Huang, and Yunfei Li

Shanghai Jiao Tong University, China

Abstract—Due to impressive health promoting effects, germinated brown rice is an increasingly popular functional food. As a wholegrain, odor and flavor characteristics largely influence consumer perception of cereal based products, such as GBR. However, there is no quantitative information available for volatile compounds contained in GBR. This work examined the profiling of volatile component in two representative varieties of pre-germinated brown rice, JZDG (*Oryza sativa* L. ssp. *Indica*) and CMSG (*O. sativa* ssp. *Japonica*), using headspace solid-phase micro extraction coupled to gas chromatography mass spectrometry (HS-SPME-GC/MS). The results showed that significant difference in the volatile compounds was not only present in the relative abundance of individual components, but also in the varieties of the identified compounds between JZDG and CMSG. A total of 36 volatile compounds were detected in cooked GBR. Aldehydes and alkanes were the major chemical categories identified. Among these compounds, hexanal, pentanal and 2-pentyl-Furan showed relatively high concentration. Cyclotetradecane, 2-methyl-1-Penten-3-one, 4-Decanone, 6-methyl-5-Hepten-2-one 2-n-Heptylfuran, 3,3,5-trimethyl-Cyclohexene, 4-Methyl-1,5-Heptadiene, (*E*,*E*)-2,4-Decadienal, 2-Carene were only present in JZDG, while some compounds were only detected in CMSG, such as 4-methyl-(Z)-2-Pentene, 2-Methoxy-4-vinylphenol and 2,6,10-Trimethyl-dodecane. Characterizing aroma compound profiles of GBR is considered as the first step to understand flavor formation, and thus orientedly modify and design the product flavor.

Afternoon, August 20, 2016 (Saturday)

Time: 15:40~17:10

Venue: Conference Room

Session 2: 6 presentations-Topic: "Food Science"

Session Chair: Dr. Attila Kiss

N0008 Presentation 4 (16:25~16:40)

Impact of High Hydrostatic Pressure Processing on Fruit Flesh Quality of Fruit Containing Carrot Juice

Peng Huang, Liping Wang, Qiang Xia, and Yunfei Li

Shanghai Jiao Tong University, China

Abstract—The quality of fruit flesh containing beverage is highly affected by the inside flesh. Using high hydrostatic pressure process, dealing with three different flesh types (apple, water chestnut, pear) carrot juice, analysis of different pressure (300 MPa, 400 MPa and 500 MPa) of polyphenol oxidase and peroxidase activity and total phenol content, the trend of total antioxidant value, and its influence to the flesh browning. The results show that different pressure treatment for apple and water chestnut of polyphenol oxidase enzyme activity change is not significant, and pear enzyme activity is positively correlated with the pressure. Apple and pear peroxidase enzyme activity are suppressed by pressure. Total phenol content has varying degrees of decline by high hydrostatic pressure process. Total antioxidant value is generally a downward trend with pressure rise, and the pear flesh has a better resistance to adverse environment. High hydrostatic pressure processing is effective in anti-flesh browning.

Afternoon, August 20, 2016 (Saturday)

Time: 15:40~17:10

Venue: Conference Room

Session 2: 6 presentations-Topic: "Food Science"

Session Chair: Dr. Attila Kiss

N0009 Presentation 5 (16:40~16:55)

Encapsulation of *Michelia champaca* L. Extract and Its Application in Instant Tea

Niramon Utama-Ang, Prodepran Thakeow, Phikunthong Kopermsub, and Rajnibhas Samakradhamrongthai

Division of Product Development Technology, Faculty of Agro-Industry, Chiang Mai University, Chiang Mai, Thailand
Lanna Rice Research Center, Chiang Mai University, Chiang Mai, Thailand

Abstract—This research was aimed to investigate the encapsulation of *Michelia champaca* L. (MCL) extract and apply in instant Champaca tea. The MCL encapsulated flavor powder was produced using spray drying. The carries of encapsulation were at 20% w/v of maltodextrin with 0.5% w/v of trehalose. The experiment was conducted by variation of 5, 10, 15 and 20% MCL extract. The result showed that 10% MCL extract provided the highest encapsulation efficiency (93.39±0.57%) with high yield recovery (34.52±0.61%). The gas chromatograph mass spectrometry showed that there were 15 volatile compounds could be identified such as; camphene, limonene, β-elemene, and β-caryophyllene. The principle analysis (PCA) of volatile compounds using electronic nose suggested that the 10% MCL extract can entrap the extract higher the others. This encapsulated MCL powder was mixed with green tea powder in three variations (0.1, 0.3, and 0.5% w/w) to produce instant Champaca tea. The sensory evaluation showed that MCL powder at 0.3% w/w provided the highest sensory liking score in the range of 6.0–6.6 with 96.7% acceptance. In summary, the 10% MCL extract was the most suitable to produce the MCL encapsulated flavor powder and it could apply in instant Champaca tea at 0.3% w/w.

Afternoon, August 20, 2016 (Saturday)

Time: 15:40~17:10

Venue: Conference Room

Session 2: 6 presentations-Topic: "Food Science"

Session Chair: Dr. Attila Kiss

N2001 Presentation 6 (16:55~17:10)

A Model of a Comprehensive University Course in Adult Nutrition

John Orta

California State University, Los Angeles, California, USA

Abstract—Traditional university nutrition courses deal with general nutrition topics throughout the life cycle, the proposed presentation describes a comprehensive nutrition education course taught at the California State University -- Los Angeles, USA, dealing exclusively with the nutritional concerns of adults in health and disease. Topics described include standards such as the functional role of nutrients throughout the different stages of adulthood encompassing young adulthood, middle adulthood through old age, energy balance, and the nutritional needs linked to pregnancy and lactation right through medical nutrition therapy in common adult afflictions including diabetes mellitus, obesity, metabolic syndrome, the hyperlipidemias, cardiovascular conditions and other common adult afflictions. Innovative topics addressed include vegetarianism, functional foods, and phytochemicals. Finally, the highlight of the presentation describes innovative strategies for designing and implementing university instruction in adult nutrition education.

Poster Session

Tips: The poster session will last from 9:00 to 17:10. Please provide your home-made poster to the Conference Specialist before the conference beginning.

August 20, 2016 (Saturday)

Time: 9:00~17:10

Venue: Conference Room

M0002

Biosynthesis of Polyhydroxyalkanoates Consisting of 3-hydroxybutyrate and Medium-Chain-Length 3-hydroxyalkanoates by Mixed Cultures using Plant Oils

Young Jae You, Sun Hee Lee, and **Young Ha Rhee**

Chungnam National University, Korea

Abstract—Polyhydroxyalkanoates (PHAs) are a family of bacterial polyesters that have been attracting considerable attention as promising biomaterials capable of replacing synthetic polymers. However, their widespread applications have been limited due to high production cost compared with the oil-derived plastics. One of the promising strategies to reduce the production cost is to synthesize PHAs by using mixed cultures and cheap substrates.
The current study describes the potential use of plant oils as the cheap carbon substrates for the production of PHAs by mixed cultures enriched under aerobic dynamic feeding. The plant oils used in this study included grape seed oil, palm oil and canola oil. The enrichment of bacterial populations capable of producing PHAs from plant oil was achieved by periodic feeding with the corresponding plant oil in a sequencing batch reactor (SBR). Exposure of activated sludge to the so-called 'feast and famine' conditions induced the accumulation of PHA and subsequent degradation of PHA in the cells. PHA accumulation in the cells increased up to 7.3-14.8% of dry cell weight at the end of the feast phase and later decreased with the onset of the famine phase. The composition of bacterial populations enriched in the SBR using three different plant oils was analyzed by means of denaturing gradient gel electrophoresis (DGGE) of PCR-amplified 16S rRNA gene segments. DGGE analyses showed a high bacterial diversity, with *Cupriavidus*, *Flavobacterium*, and *Acinetobacter* species dominating in a SBR fed with palm oil. Contrastingly, *Pseudomonas aeruginosa* was the most dominant bacterium that was enriched with grape seed oil. This species, together with *Comamonas* sp. and *Flavobacterium* sp., was found in a SBR fed with canola oil. These results suggested that the predominant populations may vary depending on the types of carbon substrates present in the each oil. The PHA storage capacity of the biomass, enriched

in each SBR run, was evaluated by batch fermentation process using the plant oils as the sole carbon source. The composition of PHAs, synthesized from canola oil and palm oil, consisted of 3-hydroxybutyrate (87-96 mol%) and 3-hydroxydecanoate (4-13 mol%). In contrast, the produced polyester from grape seed oil was composed of 3-hydroxybutyrate (49 mol%), 3-hydroxydecanoate (22 mol%), and 3-hydroxyoctanoate (17 mol%) as the major constituents and 3-hydroxyhexanoate and 3-hydroxydodecanoate as the minor constituents. Solvent fractionation experiments revealed that the polyesters produced from plant oils were mixtures of both short-chain-length and medium-chain-length PHAs. The PHA yields from these substrates were in the range of 28 – 46% of dry cell weight. The present results suggest that the application of mixed cultures might be useful for the biosynthesis of PHAs from plant oils.

August 20, 2016 (Saturday)

Time: 9:00~17:10

Venue: Conference Room

M1005

The Comparative Monitoring of Endem Rare and Endangered Trees and Shrubs in Azerbaijan

Tofig Mammadov and Vagif Novruzov

Institute of Dendrology Azerbaijan National Academy of Sciences, Azerbaijan

Abstract—Azerbaijan is the richest area in biodiversity in the Caucasus region due of a special plant cover distributed by geographical location, relief, soil and climate conditions. The diversity of flora and fauna species in Azerbaijan and classy endemism are associated with environmental conditions in the area due to the historical evolution.

Despite of the country richness in flora and fauna in the past 30 years they are close to the destruction as a result of irrational, or various natural and human factors rapidly degradation a variety of plant species.

There are analyzed during carried research work the comparative monitoring of rare and endangered species of trees and shrubs in the natural flora, also discovered the reduction factors that cause in the habitat of the species and investigated possible solutions to resolve these problems.

Therefor by impacts of anthropogen factors many of precious trees and shrubs in forests areas Quercus macranthera, Acer trautvetterii, Betula pendula, *B.*litvinovii,Paeonia mlokosewitschii, Laurocerasus officinalis, Taxus baccata, Pinus eldarica, *P. Kochiana*,Punica granatum, Cotoneaster saxatilis, Juniperus foetidissima, Pistacia mutica, Rhus coriaria, Rosa spp, Pyracantha coccinea are extremely reduced.

August 20, 2016 (Saturday)

Time: 9:00~17:10

Venue: Conference Room

N0001

Evaluation of Some Sea Cucumbers as a Nutrition Supplement in Turkey

Mustafa Ünlüsayin

Akdeniz University, Turkey

Abstract—Sea cucumbers are part of a larger animal group called Echinoderma, which also contains starfish and sea urchins. Sea cucumbers are found in virtually all marine environments throughout the world. There are 37 species of *Holothuroidae* in Mediterranean Sea. Commercial sea cucumber species are also reported in Turkey in the Aegean, Mediterranean and Marmara Seas. However they are totally exported as they are not consumed domestically. Among commercial sea cucumber species found in Turkey, *Holothuria tubulosa, Holothuria polii, Holothuria mammata* are known as the most commonly exported species. In addition *Holothuria sanctori and Stichopus regalis* are found in Mediterranean Sea in Turkey. In Turkey, sea cucumbers are not well known and they are not consumed as food, although they have been consumed in many countries such as India, Fiji, Papua New Guinea, China, and Japan of years. Exporting sea cucumbers are annually exported approximately 150 tons. Total amount of 40 tons of dried sea cucumbers are exported to EU Countries and China, Japan, South Korea in 2014. East Asian markets after being processed by different ways. Products of sea cucumber are highly demanded not only by consumers for their nutritional value, but also by companies for pharmacology medicine and cosmetic purposes. Also it has high rate of long-chain fatty acids (PUFA) and rich in EPA and DHA. In this review, evaluations of some sea cucumbers in Turkey were discussed as a nutrition supplement. Sea cucumbers are valuable source of several kinds of substances that can serve as natural health products, and perhaps, be evaluating as a nutrition supplement in our country.

August 20, 2016 (Saturday)

Time: 9:00~17:10

Venue: Conference Room

N0002

Investigation of the Effects of Milk Composition on the Performance and Selectivity of Microfiltration Membranes

Kadir Cinar and Haci Ali Gulec

Trakya University, Turkey

Abstract—Membrane filtration has been involved in milk processing for several decades and nowadays it is implemented widely in the dairy industry especially for concentration of milk and whey. Milk is microfiltrated to manufacture micellar casein concentrate that is used for cheese making or for manufacturing milk protein concentrates. Microfiltration (MF) is a pressure driven membrane filtration process which can selectively separates particles with molecular weights larger than 200 kDa based on sieve effect. MF membranes whose pore sizes range are between 0.05-1.0 μm can be used to fractionate milk proteins. Moreover, the native casein micelles can be concentrated from skim milk by polymeric MF membranes with pore sizes between 0.05 and 0.20 μm. Therefore, MF of milk is a protein selective process that can be used for retaining all of the casein in the retentate and thus passes a major portion of the whey protein into the permeate. This study aimed to investigate the effects of milk composition on the performance and selectivity of microfiltration membranes. For that purpose, whole milk and skim milk were subjected to membrane filtration process by using 0.05 μm polyethersulfone (MP005) and 0.20 μm polyvilidene fluoride (MV020) MF membranes. As a MF equipment laboratory scale SEPA CF-II cross flow filtration unit equipped with a flat plate was used. Permeate flux was measured in fixed conditions of temperature (25±3 ℃) and axial feed flow rate (210 L/h) at 2.76 bar transmembrane pressure. Chemical compositions (dry matter, protein, fat, ash) of both permeate and the retentate streams were analyzed and evaluated according to the concentration factors achieved.

Visit NARIC Food Science Research Institute, Budapest from 17:10~18:10

Dinner	
18:30	**Speiz restarurant at the Castle of Buda**

The St. Stephen's day fireworks can be watched from the Castle of Buda from 21:00 to 21:30. (http://visitbudapest.travel/budapest-events/st-stephens-day/)

Conference Venue

Registration on August 19, 2016 in the lobby of Hotel Budapest, Budapest

Address: Szilagyi Erzsebet Fasor 47, Budapest, 1026, Hungary
Hotel Website:
http://www.danubiushotels.com/our-hotels-budapest/hotel-budapest/rooms?sid=lbnsu58bvsevd8fmn1grfhilp5
Reservation phone: +36 1 889 4280, Reservation fax: +36 1 889 4203, E-mail: budapest.reservation@danubiushotels.com

Conference on August 20, 2016 in NARIC Food Science Research Institute, Budapest

(A car will be arranged for picking up service from Hotel Budapest, Budapest to NARIC Food Science Research Institute in the morning of August 20, 2016.)

Address: Herman Ottó str. 15, Budapest 1022, Hungary
Website: http://eki.naik.hu/index.php/en/
Contact: Tel.: +36 (1) 796-0400, FAX: +36 (1) 796-0449, E-mail: eki@cfri.hu

National Agricultural Research and Innovation Center, NARIC was founded by the governmental act 1476 (VII.24.), on January 1, 2014. An integrated, single legal entity was established from the fragmented and ill-proportioned sectoral governmental RDI capacities (13 research institutes in the field of agriculture and food science), where the institutes keep their professional autonomy as separate organizational units and their financial management is carried out on a high level of independence.
Food Science Research Institute originally was established in 1959 to carry out research and development in the field of the food industry, as well as to provide data and information on food technologies and food safety.
FSRI constitutes a bridge between food manufacturers and the consumers by the implementation of well-tailored and extensive basic and applied research in biology, chemistry, physics and technology. NARIC FSRI satisfies the consumers' demands of the modern society as it provides scientific results on food safety and food origin, as well as takes part in the development of new, healthy foodstuffs and novel special technologies. Monitoring of food safety and composition is assisted by state-of-the-art (bio) analytical methods and devices.

Budapest Information: http://budapest.hu/sites/english/Lapok/default.aspx
Budapest public transport information: http://www.bkv.hu/en/

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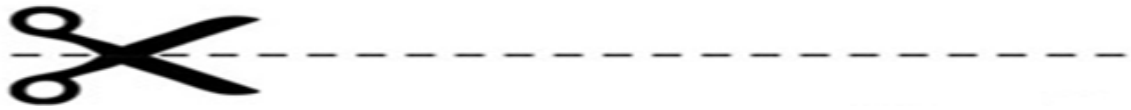

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Did the conference fulfill your reason for attending?	Yes– Absolutely □ Yes- But not to my full extent □ No□ (If "No", please tell us the main reason)
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Thank you for taking time to participate in this conference evaluation. Your comments will enable us to execute future conferences better and tailor them to your needs!