University of Szeged
Faculty of Medicine
Department of Public Health

17th DKMT Euroregional Conference on Environment and Health

June 5-6, 2015, Szeged, Hungary

PROGRAM AND ABSTRACTS

–DKMT–

DANUBE-KRIS-MURES-TISA EUROREGION

17th DKMT Euroregional Conference on Environment and Health

June 5-6, 2015

University of Szeged

Szent-Györgyi Albert Education Centre

Szeged, Hungary

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Program and abstracts

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GENERAL INFORMATION

Conference venue:

Szent-Györgyi Albert Education Centre, Dóm tér 13, Szeged

The opening and the oral sessions, and the general assembly will be in

Issekutz Béla Lecture Room (4th floor, room number 49).

The posters will be presented, the coffee and the welcome reception will be served in the Lobby on the 1st floor.

Signs will guide the participants from the building entrance to the sites.

Registration and information desk is open:

12:00–17:30 on Friday

8:30–10:00 on Saturday

Poster session (Lobby on the 1st floor)

When entering the exhibit hall, please look for your number (check your poster number in the list of the posters) on the tack board. The tack boards are two-sided, and each side will be used for presenting one poster.

Glue tack to stick up posters on the boards will be available for your convenience.

Poster hanging time: 14:00-16:30 on Friday

Poster removing time: 18:00-21:00 on Friday

Stand by your poster for the duration of the poster session.

The posters will be evaluated and rewarded by the national representatives of DKMT:

Prof. Dr. Biljana Škrbić, Serbia
Dr. Daniela Cirnatu, Romania
Dr. András Papp, Hungary

The E-book of the conference, containing the complete program and abstracts of oral and poster presentations, is available at

http://web.med.u-szeged.hu/puhe/DKMT2015/abstract-book.pdf

Parking

There is a limited number of paid parking places nearby. One-day parking tickets are available at filling stations or some shops. Alternatively, parking can be paid for by SMS.

Send the message “plate number, country sign, na” (e.g., AR123XY, RO, na or NS12345, SRB, na) to +36–20–4444–660 to obtain parking for whole Friday. On Saturday it is free of charge.

The Organizing Committee

Program

FRIDAY, June 5, 2015

13:30–14:00	**OPENING AND WELCOME** **András Palkó** Vice Dean of General and Academic Affairs, Faculty of Medicine, University of Szeged **Edit Paulik** Head of Department of Public Health, Faculty of Medicine, University of Szeged
14:00–15:30	**PLENARY SESSION** **Chairs: Nagymajtényi, L., Paulik, E.**

14:00: THE BURDEN OF ENVIRONMENT RELATED DISEASES ON HEALTH IN EU

Rusnák, M.
Trnava, Slovak Republic

14:20: OCCURRENCE OF EMERGING POLLUTANTS IN WATER SAMPLES

Škrbić, B., Petrović, M., Živančev, J.
Novi Sad, Serbia

14:40: HEALTH SYMPTOMS RELATED TO INDOOR AIR QUALITY IN ROMANIAN SCHOOLS

Cirnatu, D., Varvari, L., Nicolescu, L.
Arad, Romania

15:00: USE OF THE DROSOPHILA SOMA TO DETECT AND QUANTIFY GENOTOXICITY

Szabad, J.
Szeged, Hungary

15:30–16:00	**COFFEE BREAK** Location: Lobby (1st floor)

FRIDAY, June 5, 2015

16:00–17:00 **ORAL SESSION: FOOD and HEALTH**

Chairs: Škrbić, B., Vágvölgyi Cs.

16:00: PRESENCE OF G-TYPE AFLATOXIN PRODUCING ASPERGILLUS SPECIES IN CENTRAL EUROPE

Baranyi, N., Kiss, N., Kocsubé, S., Palágyi, A., Szekeres, A., Bencsik, O., Kecskeméti, A., Vágvölgyi, Cs., Varga, J.

Szeged, Hungary

16:15: INFLUENCE OF DIET IN GASTROESOPHAGEAL REFLUX AND DYSPEPSIA

Chirila, I., Morariu, I. D., Barboi, O. B., Drug, V. L.

Iasi, Romania

16:30: HEAVY ELEMENTS AND PHTHALIC ACID ESTERS IN RICE SAMPLES COLLECTED FROM THE SERBIAN AND CHINESE MARKET

Škrbić, B., Đurišić-Mladenović, N., Yaqin, J., Cvejanov, J.

Novi Sad, Serbia

16:45: ESSENTIAL OILS AS NATURAL PRESERVATIVES: INHIBITION OF BACTERIAL BIOFILM FORMATION AND QUORUM SENSING

Kerekes, E. B., Chandrasekaran, M., Kadaikunnan, S., Alharbi, N. S., Vágvölgyi, Cs., Krisch, J.

Szeged, Hungary

17:00: REDUCTION OF GROWTH AND MYCOTOXIN PRODUCTION OF FOOD-SPOILAGE AND MYCOTOXIN PRODUCING FUNGI USING ESSENTIAL OILS

Gömöri, Cs., Nacsa-Farkas, E., Kerekes, E. B., Vágvölgyi, Cs., Krisch, J.

Szeged, Hungary

17:15–18:00 **POSTER PRESENTATIONS**

Location: Lobby (1st floor)

18:00 **GENERAL ASSEMBLY, ELECTION**

Location: Issekutz Béla Lecture Room (4th floor)

19:00 **WELCOME RECEPTION**

Location: Lobby (1st floor)

SATURDAY, June 6, 2015

9:00–10:10 **ORAL SESSION: CANCER PREVENTION**

Chairs: Prejbeanu, I., Molnár, R.

9:00: DEUTERIUM DEPLETION RESULTS IN SEVERAL FOLD INCREASES IN THE MEDIAN SURVIVAL TIME OF CANCER PATIENTS DURING ONCOTHERAPY

Somlyai, G., Debrődi, M., Somlyai, I., Abonyi, O., Boros, L.G.

Budapest, Hungary

9:25: FEARS ABOUT CANCERS AND THEIR ROLE IN THE UTILIZATION OF SCREENING IN HUNGARY

Molnár, R., Erdős, Cs., Müller, A., Nagymajtényi, L., Paulik, E.

Szeged, Hungary

9:40: GENETIC AND EPIGENETIC BIOMARKERS IN THE NONINVASIVE DIAGNOSIS OF ORAL CANCERS

Dumache, R., Popoiu, C., Andreescu, N., Puiu, M.

Timisoara, Romania

9:55: HUMAN PAPILLOMA VIRUS INFECTION AS A RISK FACTOR OF CERVICAL CANCER - KNOWLEDGE OF SECONDARY SCHOOL STUDENTS IN SOUTH-EAST HUNGARY

Erdős, Cs., Molnár, R., Müller, A., Nagymajtényi, L., Paulik, E.

Szeged, Hungary

10:10–10:30 **COFFEE BREAK**

Location: Lobby (1st floor)

SATURDAY, June 6, 2015

10:30–11:45 **ORAL SESSION: ENVIRONMENT AND HEALTH**

Chairs: Cirnatu, D., Papp A.

10:30: IS IT NECESSARY TO IMPROVE HAND HYGIENE AMONG MEDICAL STUDENTS?

Mirzaei L., Szabó A., Paulik E.

Szeged, Hungary

10.45: SMOKING AND SECONDHAND TOBACCO SMOKE EXPOSURE AMONG PREGNANT WOMEN IN SOUTHERN HUNGARY

Paulik E., Maróti-Nagy Á., Orvos H., Baloghné Fűrész V., Goda E., Kotroczóné Antal T., Grenczer A., Balázs P.

Szeged, Hungary

11:00: INFLUENCE OF THE RESIDENCE ENVIRONMENT ON THE SEXUAL BEHAVIOUR OF YOUNG ROMANIAN PEOPLE

Prejbeanu, I., Hurezeanu, A., Mihai, M., Cara, M.L., Dragomirescu, A., Boz, B. C.

Craiova, Romania

11:15: NEW NATURAL DISINFECTANTS: ESSENTIAL OILS

Vidács, A., Véha, A., Gyimes, E., Vágvölgyi, Cs., Krisch, J.

Szeged, Hungary

11:30: ANTIFUNGAL RESISTANCE OF CLINICAL CANDIDA ISOLATE S AND POTENTIAL ALT

Hatvani, L., Brazao Lima Silva, J., Moreno Blanco, A., Piqueras Marzo, A., Rubio Garrido, M., Chandrasekaran, M., Kadaikunnan, S., Alharbi, N. S., Vágvölgyi, Cs.

Szeged, Hungary

11:45–12:00 **CLOSING CEREMONY**

LIST OF POSTERS

1. A CASE STUDY OF COMMUNITY INTERVENTION FOR ADOLESCENT SMOKING PREVENTION
   Albert-Lőrincz, M., Albert-Lőrincz, E., Bernáth K., Gáspárik, I., Foley, L. K., Paulik, E., Szabó, B.
   Târgu Mures, Romania
2. IN VIVO EVALUATION OF ANTIINFLAMMATORY EFFECTS OF SPIRULINA PLATENSIS
   Andrica, F., Dehelean, C., Coricovac, D., Pânzaru, I., Ghiulai, R., Drăgan, S.
   Timisoara, Romania
3. B TYPE PROTOCEREBRAL NEUROSECETORY NEURONS OF *EISENIA FOETIDA* (L.) UNDER THE INFLUENCE OF EXTREMELY LOW FREQUENCY ELECTROMAGNETIC FIELDS
   Banovački, Z., Srećković, I., Matavulj. M.
   Novi Sad, Serbia
4. SOCIOECONOMIC STATUS DIFFERENCES IN PHYSICAL ACTIVITY AMONG PREGNANT WOMEN
   Barka, N., Orvos, H., Molnár, R., Paulik, E.
   Szeged, Hungary
5. HEALTH AND HEALTH BEHAVIOUR AMONG SCHOOLCHILDREN IN PALICS
   Bessenyei, L., Müller, A.
   Szeged, Hungary
6. MONITORING OF TOTAL ORGANIC CARBON IN DRINKING WATER
   Bobić, S., Torović, Lj., Červenka, I., Mihajlović, B., Bijelović, S.
   Novi Sad, Serbia
7. SUBCELLULAR LOCALIZATION OF ISOPRENE BIOSYNTHETIC ENZYMES IN MUCOR CIRCINELLOIDES
   Bogár, É., Páll, O., Nagy, G., Voigt, K., Vágvölgyi, Cs., Papp, T.
   Szeged, Hungary
8. TLC/DENSITOMETRY ANALYSIS OF DIASTEREOMER MIXTURES AS PSEUDO-CERAMIDE PRECURSORS FOR DERMATO-COSMETOLOGY
   Bozin, L., Neanu, C., Pascariu, M. C., Belengeanu, D., Dragomirescu, A., Serb, A., Peter, F., Sisu, E.
   Timisoara, Romania
9. ALLERGIC RHINITIS
   Bugari, R., Baschir, S., Jompan, A., Turcin, L.
   Arad, Romania
10. CORRELATIONS BETWEEN ENVIRONMENTAL FACTORS AND HYPERTENSION IN PREGNANCY
    Cirnatu, D., Onel, C., Furău, Gh., Furău, C., Daşcău ,V., Tătaru, L., Stănescu C.
    Arad, Romania

11. DEVELOPMENT OF *IN VIVO* MELANOMA MODELS
Coricovac, D, Ciurlea, S., Danciu, C., Ghiulai, R., Antal, A., Pinzaru, I., Dehelean, C.
Timisoara, Romania

12. THE EFFECTS INDUCED BY THE INORGANIC PHASE OBTAINED VIA COSORB PROCESS ON SKIN PHYSIOLOGICAL PARAMETERS
Coricovac, D., Dehelean, C., Pinzaru, I., Ionescu, D., Soica, C., Simu, G.
Timisoara, Romania

13. CLINICAL MANIFESTATIONS OF NOROVIRUS DIARRHEA IN CHILDREN
Dumitra, S., Pilat, L., Crisan, C.
Arad, Romania

14. CHILDREN NUTRITION BETWEEN TRADITION AND MODERNITY
Hurezeanu, A., Prejbeanu, I., Mihai M.
Craiova, Romania

15. THE CORRELATION BETWEEN THE PHENOLIC CONTENT AND ANTIOXIDANT ACTIVITY OF SOME HERBS FROM CLUJ COUNTY, ROMANIA
Ienaşcu, I. M. C., Oarcea, A. I., Căta, A., Olah, N.K., Ştefănuţ, M. N., Bratosin, D.
Timisoara, Romania

16. ESSENTIAL OILS AS NATURAL FOOD PRESERVATIVES IN FRUIT JUICES
Jenei Török, J., Krisch, J., Gyimes, E., Véha, A.
Szeged, Hungary

17. ISCHEMIC STROKE, A POSSIBLE CAUSE FOR D-DIMERS ELEVATION
Jipa, R., Pitis, B.
Arad, Romania

18. THE OVEREXPRESSION OF GHRELIN GENE IN SEVERELY OBESE PATIENTS
Kevorkian, S. E. M., Buburuzan L., Sirbu, A., Fica, S., Hermenean, A.
Arad, Romania

19. LABORATORY DIAGNOSIS OF *BLASTOCYSTIS* SPECIES BY TRADITIONAL AND MOLECULAR METHODS
Kincses, A., Terhes, G., Kredics, L., Urbán, E**., Dóczi, I.**
Szeged, Hungary

20. EFFECTS OF SUBCHRONIC ACRYLAMIDE TREATMENT OF RAT COLON MORPHOLOGY
Koledin, I., Rajkovic, V., Kovac, R., Matavulj, M.
Novi Sad, Serbia

21. MUC2 EXPRESSION IN COLON MUCOSA AFTER ACUTE ACRYLAMIDE TREATMENT
Koledin, I., Kovac, R., Rajkovic, V., Matavulj, M.
Novi Sad, Serbia

22. CASPASE 3 IMMUNOPOSITIVITY IN THE LIVER OF ACRYLAMIDE-INTOXICATED JUVENILE RAT
Kovac, R., Rajkovic, V., Koledin, I., Matavulj, M.
Novi Sad, Serbia

23. COMBINED APPLICATION OF *TRICHODERMA*, *STREPTOMYCES* AND *AZOTOBACTER* STRAINS IN THE SOIL CONDITIONER BIOEGO
    Körmöczi, P., Bóka, B., Szabó, S., Tarnai, G., Manczinger, L., Chandrasekaran, M., Shine, K., Naiyf, A., Vágvölgyi, C., Kredics, L.
    Szeged, Hungary
24. ONSET OF THE PERIOD AND ITS EFFECTS ON SEXUAL AND SMOKING BEHAVIOUR OF ADOLESCENTS
    Maróti-Nagy, Á., Varga-Tóth, A., Paulik, E.
    Szeged, Hungary
25. THE WORKING ENVIRONMENT FOR HEALTH SCIENCE AND NON-HEALTH SCIENCE FACULTIES AT THE UNIVERSITY OF SZEGED
    Mátó, V., Paulik, E., Molnár R., Nagymajtényi L.
    Szeged, Hungary
26. A NOVEL METHOD TO OBTAIN COPPER(II) POLYHYDROXOLACTATE THROUGH OXIDATION OF PROPYLENE GLYCOL WITH COPPER(II) NITRATE
    Niculescu, M., Sisu, E., Pascariu, M. C.
    Timişoara, Romania
27. EXPRESSION OF Δ9 AND Δ6 FATTY ACID DESATURASE GENES INVOLVED IN POLYUNSATURATED FATTY ACID BIOSYNTHESIS UNDER DIFFERENT CULTURING CONDITIONS IN *MORTIERELLA* AND *UMBELOPSIS* STRAINS
    Nyilasi, I., Dudás, K., Juhász, H., Kovács, A.S., Kecskeméti, A., Bencsik, O., Szekeres, A., Certik, M., Papp, T., Vágvölgyi, Cs.
    Szeged, Hungary
28. TOXICOLOGICAL EVALUATION OF THE EFFECTS INDUCED BY DEODORANTS WITH ALUMINUM CONTENT ON SKIN PHYSIOLOGICAL PARAMETERS BEFORE AND AFTER THE EXPOSURE AT UV IRRADIATION
    Oancea, A., Kopandi, A., Bocu, C., Rusu, A., Coricovac, D., Andrica, F., Ciurlea, S.A.
    Timisoara, Romania
29. DETERMINATION OF CYTOTOXICITY AND GENOTOXICITY OF AEROSOL SAMPLES WITH SIMPLE MICROTITER PLATE METHODS
    Palágyi, A., Bozóki, Z., Ajtai, T., Manczinger, L., Vágvölgyi, Cs.
    Szeged, Hungary
30. WATER QUALITY SURVEY OF STREAMS FROM RETEZAT MOUNTAINS, ROMANIA
    Pascariu, M. C., Tulucan, T., Niculescu, M., Ştefănuţ, M. N.
    Arad, Romania
31. THE *IN VITRO* ACTIVITY OF RUTIN FATTY ACID ESTERS
    Pinzaru, I., Coricovac, D., Andrica, F., Soica, C., Dehelean, C.
    Timisoara, Romania
32. THE CASE OF SCOMBROID SYNDROME ASSOCIATED WITH CONSUMPTION OF CANNED SARDINES IN PUBLIC KINDERGARTEN IN NOVI SAD, SERBIA
    Popović, M., Đekić, J., Bjelanović, J., Velicki, R.
    Novi Sad, Serbia

33. HPLC METHOD FOR DETECTION AND QUANTIFICATION OF THE METABOLITES RELATED TO THE NICOTINIC ACID DEGRADATION PATHWAY
Rozinka, P., Bencsik, O., Hamari, Zs., Bokor, E., Vágvölgyi, Cs., Szekeres, A.
Szeged, Hungary

34. CONTENTS OF ESSENTIAL AND TOXIC ELEMENTS IN BABY FOOD AVAILABLE IN SERBIAN AND SPANISH MARKET
Škrbić, B., Živančev, J., Mrmoš, N., Cvejanov, J.
Novi Sad, Serbia

35. DIFFERENT METHODS FOR OBTAINING OF SOME COMPOSITE MATERIALS WITH DENTAL USE
Stefănuț, M. N., Căta, A., Ienașcu, I. M. C., Tănasie, C., Sfirloagă, P., Ursu, D., Miclau, M.
Timişoara, Romania

36. FRUCTOSE AND METABOLIC DYSFUNCTION
Tornas, A. N., Papp, A.
Szeged, Hungary

37. RESPONSE OF HUMAN MACROPHAGES FOR INFECTIONS WITH CURVULARIA STRAINS
Tóth, E. J., Hoffmann, A., Boros, É., Nagy, I., Papp, T.
Szeged, Hungary

38. GENETIC DETERMINANTS OF THE "BUBBLE" ANTIFUNGAL PROTEIN IN THE GENUS *NEOSARTORYA*
Tóth, L., Virágh, M., Vágvölgyi, Cs., Galgóczy, L.
Szeged, Hungary

39. PRODUCTION OF *MUCOR CORTICOLUS* HYDROLASES USING CORNCOB GRANULES AS SUBSTRATE
Vágvölgyi, Cs., Tóth, M., Das, A., Mondal, K.C., Papp, T., Takó M.
Szeged, Hungary

40. EFFECTS OF ENVIRONMENTAL EPIGENETIC FACTORS ON COGNITIVE BEHAVIOR OF RATS
Vezér, T., Várhelyi, Z., Ivitz, E., Horváth, K., Horváth, T., Lukács, A., Szabó, A., Papp, A., Fekete, S. Gy.
Szeged, Hungary

ABSTRACTS

Oral sessions

PRESENCE OF G-TYPE AFLATOXIN PRODUCING *ASPERGILLUS* SPECIES IN CENTRAL EUROPE

Baranyi, N., Kiss, N., Kocsubé, S., Palágyi, A., Szekeres, A., Bencsik, O., Kecskeméti, A., Vágvölgyi, C., Varga, J.

Department of Microbiology, Faculty of Science and Informatics, University of Szeged, Szeged, Hungary

Global warming can be affect the presence of fungi with potential mycotoxin producing abilities in our foods and feeds. This phenomenon has recently been observed in the occurrence of aflatoxin producers in Europe, with consequent aflatoxin contamination in agricultural commodities in several European countries which have not faced with this problem before. Aflatoxins are among the economically most important mycotoxins produced by various *Aspergillus* species mainly belonging to *Aspergillus* section *Flavi*. The economically most important producers of aflatoxins are *A. flavus, A. parasiticus* and *A. nomius*. While *A. flavus* produces B-type aflatoxins, *A. nomius* and *A. parasiticus* are also able to produce G-type aflatoxins. Recently we have published the first occurrence of G-type aflatoxin producers in Central Europe. In this study we examined the aflatoxin producing abilities of *A. nomius, A. pseudonomius, A. parasiticus* and *A. flavus* strains isolated in these studies under different conditions. Among the strains examined, *A. nomius* was isolated from cheese and *A. pseudonomius* came from maize. We have found some differences in the ratio of produced B- and G-type aflatoxins. Further studies are in progress to examine these differences under various conditions (different media and temperatures).

Acknowledgements. Part of the work presented was supported by OTKA grant No. K84077, and by the European Union through the Hungary-Serbia IPA Cross-border Cooperation Programme (ToxFreeFeed, HU-SRB/1002/122/062). This research was realized in the frames of TÁMOP-4.1.1.C-12/1/KONV-2012-0014. The project was subsidized by the European Union and co-financed by the European Social Fund.

INFLUENCE OF DIET IN GASTROESOPHAGEAL REFLUX AND DYSPEPSIA

Chirila, I.[1, 2], Morariu, I. D.[1], Barboi, O. B.[1, 3], Drug, V. L.[1, 3]

[1]Grigore T. Popa University of Medicine and Pharmacy, Iasi, Romania, [2]National Institute of Public Health – RcoPH, Iasi, Romania, [3]Department of Gastroenterology and Hepatology, Sf. Spiridon University Hospital, Iasi, Romania

The aim of the present study was to evaluate the type of diet associated with gastro-esophageal reflux and dyspepsia. The prevalence of dyspepsia overlaps partially with gastro-esophageal reflux disease (GERD) and this may suggest common pathogenic mechanisms. Recent papers highlighted the role of diet in dyspepsia and GERD, but its role remains uncertain and under-studied. Although many patients recognize the impact of certain food in symptom occurrence, few population-based studies evaluated the role of diet in dyspepsia or GERD.

Methods. A representative sample of the general population living in an urban area was taken randomly from the family doctors' patient lists and selected subjects were invited for interview in the family doctors' office. An interview-based questionnaire was delivered to all subjects to diagnose functional dyspepsia and GERD (using Rome III and Montreal criteria, respectively) and to evaluate eating habits and the frequency of food intake.

Results. 184 subjects (106 women, 78 men, mean age 49.4±15.4, range 20-80 years) participated in a four month study. Functional dyspepsia was present in 7.6% (3.8% for women and 12.8% for men, $p<0.05$) and GERD was present in 31.0% (33.0% in women and 28.2% in men). The overlap of the two diseases was 22.4% among subjects with upper gastrointestinal disorders. Using a multivariate regression analysis, the predictors for dyspepsia were: a low educational level (22.44, 3.356-150.1, $p=0.001$), consumption of canned food (2.38, $p<0.05$) and the use of alcoholic drinks at least weekly (5.4, 1.23-23.61, $p=0.025$). Predictors for GERD were advanced age (1.086, 1.052-1.122, $p<0.001$) and the use of canned food (13.94, 3.612-53.98, $p<0.001$) or fast food (4.646, 1.773-12.177, $p=0.002$).

Conclusions. The mechanisms by which diet influences gastrointestinal disorders are not fully elucidated, but the findings suggest the need for extensive research and specific strategies tailored to each specific population to promote healthy eating and lifestyle habits.

HEALTH SYMPTOMS RELATED TO INDOOR AIR QUALITY IN ROMANIAN SCHOOLS

Cirnatu, D., Varvari, L., Nicolescu, L.

Department of General Medicine, Vasile Goldis Western University of Arad, Arad, Romania

In the modern urban setting, most individuals spend about 80% of their time indoors and are therefore exposed to the indoor environment to a much greater extent than to the outdoors. The quality of air in the indoor environment can be altered by a number of factors: release of volatile compounds from furnishings, floor and wall coverings, and other finishing materials or machinery; inadequate ventilation; poor temperature and humidity control; re-entrainment of outdoor volatile organic compounds; and the contamination of the indoor environment by microbes. From the educational standpoint, the indoor air quality and ventilation in school buildings may affects the health of the children and indirectly affects learning performance.

During 2012-2013 period, chemical and microbiological indoor air pollutants were monitories using passive samplers, in 20 schools and kindergartens, 3 class each. Formaldehyde, particulate matter, NO, CO, and bioaerosols were the measured pollutants. In order to investigate the health problem associated, a questioner was applied to the legal responsible for each child from the investigated classes.

Most of the performed chemical measurements were complaint. Microbiological pollutants are of particular concern, 75% of the determination revealed the presence of high number of colony forming units. The predominant bacteria and moulds isolated from investigated air samples were Staphylococcus spp., Enterococcus spp., Serratia spp., Aspergillus spp., Penicillium spp. The most frequent health problems identified were the conjunctivitis, asthma, and acute respiratory disease.

This investigation makes clear that more research is justified to investigate the specific causes of IAQ problems within schools and to quantify the specific benefits that are recognized from providing a desirable indoor air environment.

GENETIC AND EPIGENETIC BIOMARKERS IN THE NONINVASIVE DIAGNOSIS OF ORAL CANCERS

Dumache, R.[1,2], Popoiu, C.[1], Andreescu, N.[1], Chioran, D.[1], Puiu, M.[1], Negru, S.[1]

[1]Victor Babes University of Medicine and Pharmacy, Timisoara, Romania, [2]Institute of Forensic Medicine, Timisoara, Romania

Oral cancers are the result of a series of molecular and cytogenetic events that lead to activation of different oncogenes and loss of function for different tumor suppressor genes and is considered a complex multistage process.

Oral cancer represents the 6th cancer as frequency from the total of human cancers. Oral carcinomas with squamous cells (OSCCs), represent 90% of the total oral cancers. It was estimated that the annual number of deceases due to OSCCs is about 128.000 globally.

In Romania, oral cancer represents 5% of the total number of cancers. The onset of the OSCC is usually the middle age and predominantly affects males. The evolution of the oral cancers is poorer as compared with other cancers, the survival rate at 5 years is approximately 50%.

The etiology of oral cancers is complex and still has unknown mechanisms. It is considered that genetic but also environmental factors play an important role in oral cancer onset and progression. Smoking and alcohol consumption are correlated with development of oral cancers. Other environmental factors associated with oral cancers are: micro lesions, chronic irritations, nutritional factors, infections, immune deficiency and chronic immunosuppression. It is estimated that almost 75% of OSCCs are caused by carcinogens such as: tobacco and alcohol, the rest of 25% being determined by papillomaviruses (PVs).

In the last 10 years in the field of epigenetics the microRNAs have become important for their properties as potential biomarkers in the noninvasive diagnosis of cancers from body fluids, including saliva too.

MicroRNA(miRNA), are short noncoding RNA molecules, which have 19 to 24 nucleotides in length. They are involved in different activities such as: cellular differentiation, proliferation, regulation of cell cycle. They are differently expressed in various types of cancers, including oral cancers too.

In the noninvasive diagnosis of oral cancers they can aid in the early diagnosis and prognosis, being associated with the clinical outcomes.

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HUMAN PAPILLOMA VIRUS INFECTION AS A RISK FACTOR OF CERVICAL CANCER - KNOWLEDGE OF SECONDARY SCHOOL STUDENTS IN SOUTH-EAST HUNGARY

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Background: Cervical cancer is the second most common type of cancer among women. Persistent infections with high-risk human papilloma viruses (HPV) are associated with the development of invasive cervical cancer. Studies have shown that 20-46% of all sexually active women are infected by HPV at any given point of time depending on the population observed and the techniques used for detection. The highest incidence of infection occurs in sexually active young adult women between 18 and 28 years of age. Unfortunately, 1200-1300 new cases of cervical cancer are diagnosed every year in Hungary, and nearly 500 women die as a consequence of this illness.

The aim of this study was to analyze the knowledge of secondary school students about the role of HPV infection in cervical cancer and its primary prevention (vaccination).

Methods: A self-administered questionnaire-based, cross-sectional study was carried out among secondary school students (N=371) chosen from three county towns of South-East Hungary (Szeged, Kecskemét, Békéscsaba). The questionnaire contained questions on socio-demographic characteristics, health behavior, and knowledge about HPV and cervical cancer. Descriptive statistics and chi-square tests were performed by using SPSS 17.0 for Windows.

Results: Most of the students knew that cervical cancer is preventable, although the difference between men and women was significant; 90.8% of women vs. 67.6% of men reported that cervical cancer is preventable. 56.3% of the students have heard about HPV infection as a risk factor of cervical cancer; gender differences were also remarkable also here.

Conclusion: The present study showed low level of knowledge almost in all aspect of cervical cancer and HPV. The gender difference was significant, the knowledge of women was better than men. Education of the young generation about the major risk factors of cancer is very important because their knowledge about this topic is at present insufficient.

This study was supported by ETT 217–08/2009.

ANTIFUNGAL RESISTANCE OF CLINICAL CANDIDA ISOLATES AND POTENTIAL ALTERNATIVE MEANS OF THERAPY

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The majority of human Candida infections are still caused by C. albicans, however, the incidence of candidosis due to certain non-albicans Candida species, such as C. glabrata, C. parapsilosis, C. krusei and C. tropicalis has increased substantially during the latest decades. Primary and secondary (acquired) resistance to antifungal drugs is an important virulence factor of Candida strains. The aim of this study was the determination of the susceptibility of clinical isolates of C. albicans, C. glabrata, C. parapsilosis, C. krusei and C. tropicalis to certain antifungal drugs used in clinical practice as well as testing the potential antifungal activity of certain natural substances. The minimal inhibitory concentration/MIC of each substance was determined by broth microdilution assay. All tested strains showed high level of resistance to fluconazole (with MIC values ranging between 32 and 2048 µg/mL) and 5-fluorocytosine (MIC: 8-256 µg/mL), while they were found to be more susceptible to amphotericin B and caspofungin (MIC: 0.5-16 and 0.125-16 µg/mL, respectively). Azole-resistance of the isolates appeared not to be specific to fluconazole but more extensive, expressed as tolerance to other azole compounds, such as itraconazole, ketoconazole and miconazole. From the wide range of different plants and mushrooms tested, crude extract of Solanum nigrum was found to inhibit the growth of C. glabrata and C. parapsilosis with MIC values of 25 and 6.25%(v/v), respectively; while extract of Amanita phalloides had inhibitory activity on C. krusei (MIC: 50%). The highest antifungal effect was detected in the case of propolis tincture, which inhibited all examined Candida isolates with the minimal fungicidal concentration of 0.2-6.25%(v/v). Our findings suggest that these natural substances themselves or in combinations with antifungal drugs may be useful in the treatment of infections caused by the abovementioned Candida species.

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ESSENTIAL OILS AS NATURAL PRESERVATIVES: INHIBITION OF BACTERIAL BIOFILM FORMATION AND QUORUM SENSING

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Biofilms represent a continuous source of contamination in the food industry leading to lowered shelf-life of products and food-borne diseases. These structures are more resistant to disinfectants than the planktonic forms. Therefore it is a priority for food-processing industries to apply well cleaning and preserving strategies to minimize the risk of biofilm contamination. Investigation of bacterial quorum sensing (QS) has become a major issue because it regulates the production of virulence factors, bacterial resistance and biofilm formation. The inhibition of QS would be a breakthrough regarding antimicrobial agents. Essential oils (EOs) have gained widespread interest in the search to identify alternatives for microbial growth control because of their antiseptic qualities. The present study focuses on the anti-biofilm forming and anti-QS effect of six EOs (cinnamon, clary sage, juniper, lemon, marjoram and thyme) and their main components (cinnamaldehyde, α-pinene, limonene, linalool, terpinene-4-ol and thymol). For biofilm formation food spoilage bacteria and a food borne pathogen Listeria monocytogenes were used. The anti-QS effect was determined by paper disc diffusion assay with the model organism Chromobacterium violaceum. The structural changes of the biofilms after treatment were observed with scanning electron microscope. Lab-on-a-chip technique was used to investigate the changes in the outer membrane protein content of E. coli and Pseudomonas putida after treatment. EOs showed good anti-biofilm forming effect and inhibited QS in most cases. SEM images showed the disappearance of biofilm-specific structures. Quantitative changes could be observed in the protein profile of both bacteria after treatment. In conclusion, the EOs tested are good candidates as natural preservatives and could be used as alternatives to chemical additives.

Cs. Vágvölgyi thanks the visiting professor program, Deanship of Scientific Research at King Saud University, Riyadh.

IS IT NECESSARY TO IMPROVE HAND HYGIENE AMONG MEDICAL STUDENTS?

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Background: Adequate hand hygiene is the most important factor in the prevention of communicable diseases, as well as of the healthcare associated infections (HCAI). Educational programmes play a significant role in increasing compliance of healthcare workers about hand hygiene procedure. The aim of this study was to assess the knowledge of medical students of University of Szeged before and after a two-hour hand hygiene training.

Method: The self-administered questionnaire based study was done among international 4th year medical students. The questionnaire consisted of three main parts: personal characteristics, practice and knowledge of hand hygiene on the base of the "Five Moments for Hand Hygiene" concept of WHO, and of HCAI.

Results: There were students from different nationalities (Nigeria 20%, Spain 18.3%, Israel 16.7%). From the point of the students' knowledge and hand hygiene compliance several variables were investigated. The complete knowledge of the "five moments" was low. Low compliance rate (66.7%) was found in connection with the "before patient" situation. The most important reason for noncompliance of students was forgetfulness and not availability of disinfecting products. Majority of students had poor knowledge and feel a necessity of hand hygiene training. There were several gaps in knowledge and compliance of medical students which has been slightly improved after two-hour education.

Conclusion: Hand hygiene training is very valuable and important. According to our results we can conclude that a short training may be useful but not sufficient, therefore continuous reminding and educations are necessary for this purpose.

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FEARS ABOUT CANCERS AND THEIR ROLE IN THE UTILIZATION OF SCREENING IN HUNGARY

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Background: Malignant tumours are the second major cause of death in Hungary; hence it is high priority to motivate people to take part in screenings. Fears about cancers may play an important role in the utilization of screening programs, and it indicates their deep analysis. The aim of this study was to explore the role of fears about cancers in the secondary prevention.

Methods: The cross-sectional study was delivered in the adult population of Southern Great Plain in Hungary (N=590). Data collection based on self-administered questionnaire focusing on demographic parameters, the knowledge of risk factors of tumours and attitudes toward and participation in cancer screenings, and costumer types of internet using. Statistical analysis was performed by SPSS 17.0 for Windows. Attitudes were measured by the modified version of the questionnaires used in previous psychosocial studies of cancer screening.

Results: The attitudes toward cancers showed that most people would like to know if they had cancer, but they scared of cancer and they were afraid even to think about cancer. Refusing the diagnosis about cancer was not typical. The respondents did not agree with the following attitudes: “If I had cancer, I would rather not know about it”; “I would not want to know until the very end”; “I would be too embarrassed to have a cancer examination”.

Conclusions: It seems that, increasing knowledge may reduce negative public perceptions of cancers and improve the number of participants in screening.

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SMOKING AND SECONDHAND TOBACCO SMOKE EXPOSURE AMONG PREGNANT WOMEN IN SOUTHERN HUNGARY

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Background: Active smoking is a well-known risk factor of some chronic diseases and it impairs every stage of the reproductive process. Exposure to secondhand tobacco smoke (SHS) is also responsible for the development of a wide range of adverse effects including the reproductive and developmental processes, too. The aim of this presentation is to analyse the prevalence of smoking and SHS exposure among pregnant women parallel with the risk of preterm birth.

Methods: A retrospective interviewer administered questionnaire-based study was conducted among mothers who delivered a baby between 1 January and 31 December 2012 in the Southern Hungary (Csongrád and Békés county). The questionnaire included standardized measures of demographic, socioeconomic, and lifestyle characteristics. Informed written consent was obtained from all participants.

Results: Nearly one third of women were smoker before pregnancy (29% in Csongrád, and 35% in Békés county); half of them stopped smoking after the notification of pregnancy. Every fourth and fifth women were exposed by SHS in closed places, and every tenth of them at home by their husband. The prevalence of preterm birth (PTB) was 6.1% in Csongrád, and 8.0% in Békés county; significant associations were found between active smoking during pregnancy and PTB, and SHS exposure and PTB, too.

Discussion: In Hungary, as a consequence of the Act XLI of 2011 on the protection of non-smokers in public and working places the major sources of SHS exposure are eliminated, so the primary remaining source of SHS exposure is smoking in private homes. Our findings reinforced the importance of education focusing on the harm caused by active smoking and SHS exposure among women of childbearing age and their partners.

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INFLUENCE OF THE RESIDENCE ENVIRONMENT ON THE SEXUAL BEHAVIOUR OF YOUNG ROMANIAN PEOPLE

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It is worldwide accepted there are many risks associated to the sexual life. In this context we have run a study on the sexual behaviour of young people, including the influences that residence environment, educational level and gender generate on this behaviour.

Subjects and methods. A number of 118 females and 79 males, living in Craiova (the 7th biggest Romanian city) or in the rural proximity, aged 18–25, answered a 13-itemed questionnaire regarding the first intercourse, the number of sexual partners, the use of contraception. The results were statistically analysed using the SPSS program.

Results. At the interview moment, 152 subjects (77.16%) had started their sexual life, most of them at 14–18 years of age. Girls were older than boys at the first intercourse (differences statistically significant, $p<0.01$, $\chi^2=38.74$). Only 70 (46.05%) sexually active subjects used a contraceptive method during the first intercourse, respectively the condom (98.68% out of them); most of these subjects came from the city, were males (differences statistically significant comparing to women, $p<0.01$, $\chi^2 =15.97$) and with an academic educational level. „Unexpected intercourse" and „ignoring the risk" were the most frequent reasons for not using protection during intercourse. About half of the sexually active subjects (53.29%; N=81) had only one sexual partner by the time of the interview; educational level and gender seem to make the differences between the subgroups (differences statistically significant, $p<0.01$, $\chi^2=30.38$, respectively $\chi^2=79.40$).

Conclusions. The results of the study suggest some risky features of the sexual behaviour of young people. Efficient preventive actions to promote sexual health among young people are necessary.

THE BURDEN OF ENVIRONMENT RELATED DISEASES ON HEALTH IN EU

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Among issues often discussed among public health professionals and politicians is the extent of certain diseases impact population. Environment related diseases represent a group of diseases where specific methodological issues should be taken into account.

The burden of diseases represents an important concept for public health and for other professions interested in the societal impact of ill-health, including injuries and disabilities. Use of indicators that integrate the societal burden caused by both death and morbidity allows for the comparison of the burden due to various risk factors or diseases. Sophisticated methodologies used in global burden of disease studies enable the combined measurement of mortality and non-fatal health outcomes, and provide comparable and comprehensive measures of population health across countries. They are also relevant to investigate the costs, efficacy, effectiveness, and other impacts of major health interventions applied in diverse settings.

The burden may be expressed as composite indicators, such as Lost Healthy Life Years (HeaLYs), Disability-Adjusted Life Years (DALYs), or Quality-Adjusted Life Years (QALYs). To include the social dimension and self reported health status one could combine those indicators with information derived from the European Health Interview Study (EHIS). This was conducted between years 2006 and 2009 and it is foreseen to be run every 5 years in the countries of EU. Very similar approach was implemented in the US under the title of National Health Interview Survey (NHIS). Both studies collected background variables on demography and socio economic status such as sex, age, household type, etc. Main focus was on health status data, such as self-perceived health, chronic conditions, limitation in daily activities, disease specific morbidity, physical and sensory functional limitations, etc. This was accompanied with indicators of health care services, such as hospitalizations, consultations, unmet needs, use of medicines, preventive actions, etc. Finally, health determinants such as height and weight, consumption of fruits, smoking, alcohol consumption, etc. were collected, too.

The presented work will demonstrate how this approach could be used in studies of environment related diseases.

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HEAVY ELEMENTS AND PHTHALIC ACID ESTERS IN RICE SAMPLES COLLECTED FROM THE SERBIAN AND CHINESE MARKET

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Human exposure to phthalic acid esters (PAEs) and heavy elements mainly occurs via food ingestion and can cause adverse health effects. This study is carried out to the presence of six PAEs – dimethyl phthalate (DMP), diethyl phthalate (DEP), di-n-butyl phthalate (DBP), benzylbutyl phthalate (BBP), di(2-ethyl-hexyl) phthalate (DEHP), di-n-octyl phthalate (DOP), and ten heavy elements – arsenic (As), lead (Pb), cadmium (Cd), nickel (Ni), cobalt (Co), chromium (Cr), manganese (Mn), iron (Fe), copper (Cu), tin (Sn) in 13 commercial rice samples collected from the Serbian and Chinese market in 2014. For the determination of PAEs, suitable extraction technique with organic solvent is used, while in the case of heavy elements, microwave digestion of samples is applied. The instrumental analysis of PAEs and heavy elements is performed by gas chromatography with mass spectrometry and atomic absorption spectrometry with a graphite furnace, respectively. The results showed that a wide variety of PAEs concentrations was found in the analyzed sample (from 0.0008 to 0.9471 μg/g). The average PAEs concentrations were in the following order: DEHP>DMP>DBP>DEP>BBP>DOP. Among the determined essential elements, Mn had the highest concentration in both types of samples followed by Fe and Cu. Heavy elements As, Pb, Cd, Cr and Sn were below the limit of detection in the majority of the analysed samples. In addition, PAEs and heavy element intakes through consumption of rice were estimated for average adult consumers based on the levels of these contaminants in the analyzed samples and then compared with the reference dietary points.

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OCCURENCE OF EMERGING POLLUTANTS IN WATER SAMPLES

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Emerging pollutants are defined as synthetic or naturally occurring chemicals that are not commonly monitored in the environment but which have the potential to enter the environment and cause known or suspected adverse ecological and/or human health effects. They do not need to persist to negatively affect the exposed organisms, since their introduction into the environment is continuous, especially those belonging to the pharmaceutical group. Nowadays, more than 700 emerging pollutants, their metabolites and transformation products, are listed as present in the European aquatic environment. Emerging pollutants encompass a diverse group of compounds, including pharmaceuticals and personal-care products (PPCPs), drugs of abuse (DoAs) and their metabolites, steroids and hormones, endocrine-disrupting compounds, surfactants, perfluorinated compounds, phosphoric ester flame retardants, industrial additives and agents, siloxanes, artificial sweeteners, gasoline additives, etc. Most of these compounds are not currently covered by existing water-quality regulations. Also, emerging compounds are not included in routine environmental monitoring programs and may be candidates for future legislation due to their adverse effects and/or persistency. Identification of emerging pollutants is challenging, due to the vast number of compounds, the complexity of the matrices and their often low concentrations, requiring highly selective and sensitive techniques. Thus, the main objective of the present investigation is to present results on emerging contaminants analysis in various kinds of water samples conducted in the CEFSER Centre. Occurrence of pharmaceuticals, polar pesticides and perfluorinated compounds in fresh water samples collected in Vojvodina Province, Serbia is presented. Additionally, the levels of pharmaceuticals in tap and underground water are also discussed in order to emphasize the importance of the regular monitoring due to their ubiquitous presence. All the presented results are the first of their kinds on the simultaneous occurrence of emerging pollutants in different types of water from Serbia, and this information is necessary and of high priority in order to assess the risk of exposure to these compounds.

Acknowledgement. The results presented here are obtained within the CEFSER Centre and they are part of the contract No 114-451-4567/2013-01 of Secretariat for Science and Technological Development of the Province of Vojvodina.

DEUTERIUM DEPLETION RESULTS IN SEVERAL FOLD INCREASES IN THE MEDIAN SURVIVAL TIME OF CANCER PATIENTS DURING ONCOTHERAPY

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The concentration of deuterium is about 150 ppm (over 16 mM/L) in surface water and 12-14 mM/L in living organisms, which is a relevant concentration considering that the Ca2+ normal value in human blood is only 2.24-2.74 mM/L. In order to reveal the possible role of naturally occurring D in living organisms, the replacement of surface water with deuterium-depleted water (DDW) in a range from 25 ppm to 135 ppm was investigated in cell cultures, animal studies, as well as in prospective blinded and retrospective clinical trials. DDW inhibited cell growth of multiple cancer cell lines in in vitro culturing studies and readily induced tumor xenograft regression in immune compromised mice. Double blind, controlled, human Phase II clinical trial with prostate cancer, in compliance with GCP principles exhibited a significant difference between the control (n=22) and treated (n=22) patients. In the DDW treated group average prostate size was three times smaller (160.3 cm3 (control) vs. 54.0 cm3 (DDW); p = 0.0019) and the one-year survival rate was also higher (2 deaths (DDW) vs. 9 deaths (control); p = 0.034). To gain additional information on DDW efficacy, the data matrix of a n=1827 cancer patient cohort consuming DDW was evaluated in an open label retrospective study. The cumulative follow-up period of patients covers over 6881 years from the diagnosis of the disease, with DDW consumption of 2265 cumulative years. Median survival time (MST) of the n=1827 control patients treated with standard oncotherapy, which represent all major tumor types, was 121.2 months (10.1 years). The median survival time (MST) was 25.9 months in male patients (n=78) and 74.1 months in female patients (n=51) with lung cancer, which is a 3 to 7 fold increase in comparison with control patients receiving conventional oncotherapy. Furthermore, in comparison with conventional therapy, DDW prolonged MST of patients with advanced inoperable pancreatic cancer by approximately 6-fold. Deuterium depletion opens new perspectives in cancer treatment and prevention by offering a safe, non-invasive and effective adjuvant or single treatment modality.

USE OF THE DROSOPHILA SOMA TO DETECT AND QUANTIFY GENOTOXICITY

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There are three basic mechanisms of genotoxic activates: induction of (i) point (gene) mutations, (ii) DNA breakages and (iii) loss or gain of chromosomes. Knowing that every mutagen is carcinogen a need for the so-called mutagenicity test procedures has been around for decades. As the machineries engaged in the maintenance of genome integrity and stability are evolutionary highly conserved genetic model organisms have been used to screen environmental mutagens. Based on the wealth of Drosophila developmental genetics we developed the so-called SMART (Somatic Mutation And Recombination Test) and the CLADS (Chromosome Loss Assay in Drosophila Soma) techniques to detect and quantify the above mentioned three types of genotoxic alterations. The bases of the SMART and the CLADS techniques are (i) the use of wing primordia with their proliferating diploid cells. These cells form the wing blade following metamorphosis and produce a single hair each. (ii) Recessive marker mutations that affect wing hair formation. Genetic alterations in any cell of a wing primordium lead to loss of the wild type allele(s). The ensuing homozygous condition is clonally propagated throughout the oncoming mitoses and leads to the formation of mosaic spots in the emerging wing blade. Elevated mosaic spot frequencies - as compared to the controls - reveal genotoxic ability of the studied (physical, chemical or biological) agent. The genotoxic activity is quantified based on the size and frequency of the mosaic spots (clones). The techniques are in vivo type, sensitive, quantitative, simple, cheap and pretty fast. No wonder why the SMART technique has been extensively used since 1983 and hopefully the same will happen to the CLADS procedure (published in 2014). Besides describing the principles of the two techniques their many uses will also be illustrated through characteristic examples.

NEW NATURAL DISINFECTANTS: ESSENTIAL OILS

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Effective disinfection is required in food industry to avoid cross contamination and to meet the high European food safety standards. Biofilms present a constant hazard because microbes in biofilm are less sensitive to chemicals than free living cells. Eradication of biofilms often needs physical remove and most of the used disinfectants could not guarantee a permanent solution for this problem. There is a need to find new hygiene methods or antibiotic materials. Essential oils are natural compounds with excellent antibiotic effects. The objective of our study was to investigate the biofilm reducing effect of selected essential oils on newly formed and matured biofilms.

In our study cinnamon, clary sage, juniper, lemon, marjoram, and thyme essential oils were used for elimination of Bacillus cereus, Bacillus subtilis, Escherichia coli, Listeria monocytogenes, Pseudomonas putida, Staphylococcus aureus and MRSA biofilms. Minimum inhibitory and bactericide concentrations of EOs were determinated in 96 well microtiter plates with resazurin staining or/and plating on appropriate media. The disinfection time was checked after 10, 20, 30, 60, 120 minutes. The 24 and 168 hours biofilms formed on stainless steel and polypropylene surfaces were treated with essential oil solution containing the bactericide concentration of the EO. Number of survivors was determined by plating.

Our results showed that the used EOs had strong antibacterial effects. Most of the biofilms was eliminated by 100%. Lemon EO had no effect on bacteria even at 100 mg/ml concentration. Most effective EO was marjoram and clary sage showed the weakest bactericide effect. Attaching of bacteria was harder on plastic because of the roughness of the surface. Using essential oils for the elimination of bacterial biofilms in food industry seems to be an effective and green technique of disinfection.

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ABSTRACTS

Poster session

A CASE STUDY OF COMMUNITY INTERVENTION FOR ADOLESCENT SMOKING PREVENTION

Albert-Lőrincz, M.[1], Albert-Lőrincz, E.[2], Bernáth K.[3], Gáspárik, I.[4], Foley L. K.[5], Paulik, E.[6], Szabó, B.[2]

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Background: Tobacco use can be considered as a lifestyle model. Smoking has got a social significance, it is based on models that are specific to various local communities. Therefore, we consider that the intervention must take place within communities, through anti-smoking communication to change smoking behavior. This case study presents the conceptualization of the experiences gathered during organizing community prevention in 38 schools from Harghita and Covasna counties.

Methods: The research encompasses two parts. In the first phase, 1200 teens (mean age: 14.67 years) from 3 counties of Transylvania (Romania) were asked about their attitude and behavior towards smoking. In the second phase of the research, a community intervention model was implemented in the local communities from which the studied adolescents came from.

Results: The prevention program was consisted of 5 interactive activities carried out among students, and of 5 community activities involving parents and teachers from the local communities. A series of community actions were organized and implemented in the framework of this program with the cooperation of local authorities and the media. The intervention program was carried out in 20 schools (comprising more than 300 adolescents) with the help of 76 volunteers. During the common activities adolescents could experience situations in which they were given responsibilities and in which they were supported and appreciated for their effort. We set up a prevention network in the 3 counties included in our project. Each school involved into the project elaborated its own plan for the prevention of smoking in schools. The idea of „smoke-free schools" was promoted, thus, smoke-free areas were created in order to protect students from secondhand tobacco smoke.

Conclusion: Based on the experiences, we have developed explanatory models with regard to the process of the community prevention; these models will be presented in the framework of this presentation.

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IN VIVO EVALUATION OF ANTIINFLAMMATORY EFFECTS OF SPIRULINA PLATENSIS

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Introduction. Spirulina (SP) is a filamentous, spiral-shaped, water blue-green microalga, being widely used for its antioxidant, anticancer, anti-inflammatory, anti-allergic, anti-diabetic and antimicrobial effects. This aim of this study consisted in the evaluation of the anti-inflammatory effect of aqueous solution of SP in 12-O-tetradecanoylphorbol-13-acetate (TPA)-induced mice ears.

Material and method. This experimental study was developed on SKH1 mice that were divided in seven groups (n=5 mice/group): group I (healthy mice), group 2 (mice that received acetone solution), group 3 (mice that received TPA in acetone – 2 µg/20 µL), group 4 (mice treated with indomethacin), group 5 (mice that received water – 20 µL), group 6 (mice treated with aqueous solution of SP 200 µg/mL) and group 7 (mice treated with aqueous solution of SP 1000 µg/mL).

Results. This study showed a significant reduction of ears weight in mice treated with SP in comparison to control group. Moreover, the anti-inflammatory activity proved to be a dose-dependent effect in mice treated with SP (200 µg/mL; 1000 µg/mL).

Conclusions. This study proved the beneficial effect of SP in controlling and, also, in improving the acute inflammation process in mice, being an alternative therapy for treating inflammation diseases.

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B TYPE PROTOCEREBRAL NEUROSECETORY NEURONS OF EISENIA FOETIDA (L.) UNDER THE INFLUENCE OF EXTREMELY LOW FREQUENCY ELECTROMAGNETIC FIELDS

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In modern days, artificial electromagnetic fields present ever growing environmental factor that can be many times stronger and more influential to biota than the naturally occurring geomagnetic field. Extremely low frequency electromagnetic fields (ELF EMF) affect biological systems and induce biological changes ranging from molecular to cell level also in synergistic action of the ELF EMF with a certain chemical or physical agent(s). ELF EMF can influence developmental stability in insects and can induce changes in neurosecretory neurons morphology both in insects and earthworms (Oligochaeta). The neuroendocrine system of Oligochaeta consists of neurosecretory neurons located in the protocerebral ganglion and ventral nerve cord. Many types of neurosecretory neurons are distinguishable by their size, position of their somata, stain affinity as well as by their ultrastructural characteristics. In Eisenia foetida, below the set of neurosecretory peripheral cells are the coarse and medium-sized spindle-shaped cells arranged next to each other. These cells, located in the deeper part of the cerebral ganglia, are defined as protocerebral neurosecretory neurons type B. They are oval or polygonal with a large nucleus and clearly visible nucleolus. An in vivo model was set up to establish morphometric characteristics of B protocerebral neurosecretory neurons of earthworm Eisenia foetida (L.) under influence of homogenous, verticaly orientated ELF EMF (50 Hz, 50 μT, 17 V/m and 50 Hz, 150 μT, 17 V/m, respectively). 90 animals were divided in to 6 groups. Groups 1-4 were exposed to ELF EMF, while groups 5 and 6 were negative control groups (exposed only to natural magnetic field). For acute treatment, the exposure time was 2 and 4 hours, while 24 hours and 4 h/day for 7 days was the exposure time to each specified field strength for chronic treatment. Serial protocerebral ganglion cross-sections of both treated and control animals were stained using the Alcian blue-Periodic-Acid-Schiff-Orange G technique. Surface area and nucleus/cytoplasm (C/N) ratio of B neurosecretory neurons were analyzed using the image processing and analysis system AxioVision Rel. 4.8.1. (Carl Zeiss MicroImaging GmbH, Germany) linked to Axio Imager 1 light microscope. Measurements were performed using Digimizer 4.0.0.0. (MedCalc Software, Belgium) image analysis software. A total of 15 B cells per animal were analyzed.

Depending on the field strength and duration of exposure to the ELF EMF surface area of B cells and their C/N ratio showed significant changes compared to the negative control group. Exposure to 50 μT ELF EMF leads to increase of B cells surface area and increase of neurosecretory products accumulation in their cytoplasm only after acute exposure, 4h/1day. After chronic exposure (4h/day for 7 days) of animals to the 150 μT ELF EMF we have found similar increase in B cell size. C/N ratio shows statistically significant decrease after exposure to the fields, which means that exposure to the field leads to higher activity of the nucles. These kinds of changes are more pronounced after chronic exposure to the ELF EMFs.

Our results indicate that the ELF EMFs induce morphological and morphometrical changes of protocerebral ganglion of B neurosecretory neurons in the earthworm Eisenia foetida (L). Intensity of these changes is primarily due to the length of time and intensity of ELF EMF used for the exposure, but those effects were recorded only in certain “windows” of value of these parameters.

SOCIOECONOMIC STATUS DIFFERENCES IN PHYSICAL ACTIVITY AMONG PREGNANT WOMEN

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Background: Although the positive link between physical activity and maternal health is well documented, physical activity during pregnancy declines. The aim of this study was to examine the associations of socioeconomic status with physical activity in pregnant women.

Methods: The self-administered questionnaire-based study was done among women who had given birth to their babies at the Department of Obstetrics and Gynecology, University of Szeged, during a one-year period. The mothers were interviewed one or two days after the delivery. The questionnaire included questions of demographic, socioeconomic, and lifestyle characteristics. Informed written consent was obtained from all participants. In this preliminary evaluation, data collected in the first six months of 2014 (n=660) have been involved. Statistical analyses were done by IBM SPSS. The study protocol was approved by the Regional and Institutional Human Medical Biological Research Ethics Committee of the University of Szeged.

Results: The mean age of the participants was 31.76±5.09 years. Regarding educational level, 10% of them had basic education (8 years or less at school) and 48% received higher education. The percentage of women participating in competitive sports before pregnancy was 20% among high educated vs. 8% among low educated. Regular physical activity during pregnancy was more prevalent among women with high vs. low education (55% vs. 45%). Attendance of pregnancy gymnastics classes was expressively high among women with university degree (13%) in comparison with those having only primary education (0%).

Conclusion: The results confirm that education is a strong predictor of physical activity in women before and during pregnancy.

HEALTH AND HEALTH BEHAVIOUR AMONG SCHOOLCHILDREN IN PALICS

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Background: Habits formed in young age will follow everyone's life in adulthood. School children will be the foundation of the future society. How children spend their free time has a great impact on their health. As the dietary habits of children are more flexibly adjustable than those of adults, the aim of our study was to reveal whether we can find the dietary risk factors in children, and what is their background.

Methods: In October 2014 we asked 160 school children from the elementary school in Palics, Serbia. The students – aged 10-15 – had to fill in a questionnaire anonymously. The questionnaire focused on the qualitative and quantitative features of how they spend their spare time and also on the various factors in the background of their dietary habits. We asked them about 4 topics such as demographical characteristics, social relationships, overall health status, and health behavior.

Results: According to our findings 40.1% of the interviewed children answered that their health is very good, 45.8% said good enough. Nobody responded that their health is bad or very bad. However, the answers show that they suffer from various types of diseases and other health problems such as allergies, headaches, vision problems, and scoliosis. These problems may be related to their free time activities like the amount of time they spend outdoors (only 21.7% spends more than 2 hours on the fresh air pro day) or sitting in front of the computer (24.1% sit more than 2 hours), eating habits such as how regularly they eat.

Conclusion: To help the children preserve their health in the best state they have to develop healthy habits, not spending too much time with sitting, especially in front of the computer. Furthermore we have to motivate them to choose healthy foods instead of fast food and sodas.

MONITORING OF TOTAL ORGANIC CARBON IN DRINKING WATER

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One of the primary reasons for maintaining low levels of organic carbon matter in drinking water is not related to the toxicity of the organic compounds themselves, but rather to the need to reduce the formation of disinfection byproducts after reacting with disinfectants during water treatment.

The main objective of the present study conducted in the municipality of Novi Sad was monitoring the organic matter content in the finished drinking water by measurement of total organic carbon (TOC). Water treatment plant located in the city of Novi Sad produces and distributes 130000 m3 of drinking water per day to the city and 14 surrounding settlements. Sampling programe resulted with 751 water samples collected in 2012 and 1203 in 2013, evenly distributed over the monitored period (May 2012 - December 2013). Roughly 30% of the samples were taken from the water treatment plant, 37% from the distribution system within the city and 33% from the settlements. Total organic carbon was determined by TOC analyzer using UV/persulfate oxidation method (ISO 8245). Moreover, analysis of trihalomethanes, the main byproduct of water disinfection with chlorine, was performed by GC-MS (ISO 10301).

Regarding the water plant and the whole distribution system, TOC mean value ± standard deviation (SD) and the range of measured values were 1.62±0.62 (0.64 6.05) mg/L in 2012, and 1.49±0.40 (0.71 5.83) mg/L in 2013. When data for Novi Sad city were exctracted, these values were 1.57±0.50 (0.60 3.50) mg/L in 2012, and 1.46±0.28 (0.71 3.48) mg/L in 2013. Range of annual mean values regarding the 14 settlements in 2012 was 1.27 2.26 mg/L, while in 2013 these values were close to Novi Sad annual mean, showing much smaller variability within the range from 1.45 to 1.64 mg/L.

Although there are no legally binding criteria for TOC levels, water utilities have to comply with regulations on disinfection byproducts. Maintenace of TOC below or at the guidance level of 2 mg/L resulted with no exceeding of trihalomethanes maximum level of 0.1 mg/L over the monitored period (overall mean ± SD: 32.5±11.3 and 32.0±10.4 mg/L, maximum: 71.5 and 62.2 mg/L, in 2012 and 2013, respectively). The guideline for TOC is intended as management tool to provide policy direction affecting water quality issues.

SUBCELLULAR LOCALIZATION OF ISOPRENE BIOSYNTHETIC ENZYMES IN MUCOR CIRCINELLOIDES

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Isoprenoids are one of the most diverse groups of natural chemical compounds. They have different biological functions in the cell, such as colorants (e.g. carotenoids), cell membrane components (e.g. ergosterol, cholesterol) or functional groups of certain proteins (e.g. RAS). Isoprenoids are synthesized via the mevalonic acid pathway. The central step of this pathway is the conversion of HMG-CoA to mevalonic acid catalysed by the enzyme HMG-CoA reductase. Mucor circinelloides is a carotene producing zygomycetes fungus, which has been used as a model organism in studies of the carotenoid biosynthesis. In Phycomyces blakesleeanus and Blakeslea tripsora the carotenoids and other isoprenoid derivatives are synthesized in different subcellular compartments.

In this study, we cloned four important isoprene biosynthetic enzymes (three hmgR and a carRP) from M. circinelloides and fused them to gfp gene to analyse their subcellular localization. M. circinelloides genome contains three hmgR genes (hmgR1, hmgR2 and hmgR3) encoding HMG-CoA reductases. CarRP is a key enzyme of the carotenoid specific biosynthetic pathway and has phytoene synthase and lycopene cyclase activities. We would like to investigate the localization of the different isoprenoid biosynthetic pathways in the M. circinelloides. Our results suggest that HmgR3 is an endoplasmic reticulum associated protein, while HmgR2 is localized to the membrane of endoplasmic reticulum and other small compartments. Similarly to HmgR2, CarRP is localized to different subcellular compartments.

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TLC/DENSITOMETRY ANALYSIS OF DIASTEREOMER MIXTURES AS PSEUDO-CERAMIDE PRECURSORS FOR DERMATO-COSMETOLOGY

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The development of biocompatible and biodegradable surfactants, suitable for use in dermato-cosmetic formulations and starting from widespread and cheap natural compounds, represents both a manufacturing and a commercial interest, as well as a scientific challenge through the development of new synthetic strategies. N-acetyl-N-methylglucamine is a compound that can serve as raw material in order to obtain ceramide mimetics. The attachment of benzylidene moieties, followed by enzymatic esterification and removal of the benzylidene groups, leads to amphiphilic derivatives of pseudo-ceramide type. This paper presents the TLC and HPTLC analyses of complex diastereomer mixtures that contain N-acetyl-N-methylglucamine benzylidene mono- and diacetals, establishing the conditions for their isolation on analytical F254 silica gel plates and also the preparative separation parameters for flash chromatography. The relations between diastereomers were evaluated by densitometry measurements. The peak assignment (mono- or disubstituted isomers) was done by GC-EI-MS.

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ALLERGIC RHINITIS

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Rhinitis is defined as inflammation of the nasal membranes and is characterized by the combination of the following symptoms: sneezing, nasal congestion, nasal itching, and rhinorrhea.

The eyes, ears, sinuses, and throat can also be involved. Allergic rhinitis is the most common cause of rhinitis. It is an extremely common condition, affecting approximately 20% of the population.

Although allergic rhinitis is not a life-threatening condition, complications can occur and the condition can significantly impair quality of life, which leads to a number of indirect costs.

The authors intend to bring out to light this new condition that is getting more and more into debate, and to present the therapeutic methods.

CORRELATIONS BETWEEN ENVIRONMENTAL FACTORS AND HYPERTENSION IN PREGNANCY

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Preeclampsia is recognized as the most common complication of pregnancy. Its manifestations include hypertension, proteinuria, and edema. As a syndrome, preeclampsia has yet to be fully understood and described. Its etiology is tied to both genetic and environmental factors. The mother's parity, (number of children) diet, probability of hypertension, and the health of her blood vessels--as well as the health of the fetus and the size of the baby at birth--may all be related to these genetic-environmental interconnections. The pathological mechanism involving PE in women with diabetes is not fully understood. Homeostasis model assessment of insulin resistance (HOMA-IR) levels is used to define the insulin resistance n independent predictor of cardiovascular disease in cardiovascular disease.

The purpose of this study was to determine the environmental factors with influence on subsequent preeclampsia in pregnant women who addressed to Arad County Hospital from 2012 to 2013. In our multivariate modeling, the main outcome measures were preterm delivery, low Apgar score (6 min.) small for-gestational-age, fetal death, asphyxia, Cesarean delivery, body mass index, socio-economical status and educational background. Insulin resistance was calculated by the homeostasis model assessment of insulin resistance (HOMA-IR) and the quantitative insulin sensitivity check index. The patients were randomly selected, stratified by age and habitat, hypertension (HTA) and diabetes during pregnancy. Finally 183 women were included in this study. Patients were considered to have HTA if they had a mean systolic blood pressure >140mmHg and/ or diastolic pressure >90mmHg or if they use antihypertensive medication. Insulin resistance was calculated by the homeostasis model assessment of insulin resistance (HOMA-IR) and the quantitative insulin sensitivity check index.

Our study is in accordance with other small population studies that have demonstrated that HOMA-IR index in gestational diabetes is highly variable (1,6-25). The low social and economical conditions of most patients that address to our clinic is also influential upon weight control and healthy lifestyle.

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DEVELOPMENT OF *IN VIVO* MELANOMA MODELS

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Malignant melanoma is considered one of the most aggressive types of cancer, with a high rate of mortality after metastasis installs. The process involved in the metastasis occurrence is not fully elucidated and it aroused a high interest among the researchers involved in the discovery of a curative treatment for this disease.

The purpose of this study was to develop an animal model of melanoma for the elucidation of the melanoma development and the metastasis underlying mechanism.

The animals used in this study were Balb/c athymic mice (12-14 weeks old). The human melanoma mouse model was obtained by inoculation of a human melanoma cells (A375) suspension (1X107 cells/100 µL PBS/mouse) subcutaneously into the mice. The mice were divided in two groups (n=6/group): control group that were inoculated with PBS and the cancer group that received the cancer cell suspension. Tumors were measured using calipers and samples of primary tumor and organs (skin, liver, spleen, kidney and lung) were harvested and prepared for histopathological analysis.

At day 10-12 post-inoculation it was observed the development of the primary tumor. The mice were sacrificed when the tumors attained the recommended dimensions for sacrifice (10 mm) and the histopathological analysis confirmed the presence of melanoma as primary tumor. In addition, there were detected melanoma cells in spleen and lungs, and represent a marker of metastasis.

This melanoma model is a reproducible one and might be considered an important source of information for the understanding of the mechanism involved in the development of melanoma and, also, for testing the antitumor effects of different agents.

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THE EFFECTS INDUCED BY THE INORGANIC PHASE OBTAINED VIA COSORB PROCESS ON SKIN PHYSIOLOGICAL PARAMETERS

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The cuprous aluminum chloride - $CuAlCl_4$ is a compound used to capture carbon monoxide during the COsorb process in order to separate this gas from other gases. During the COsorb process results an organic and an inorganic phase. The inorganic phase consists of: copper and aluminum (as major components), and other heavy metals (zinc, iron, chrome). It is known that these metals have noxious effects in the organism at high concentrations, and an increased value of copper was detected to the patients with psoriasis.

The objective of the present study was to assess the effects of the inorganic solution obtained during COsorb process at skin level by measuring the physiological skin parameters (melanin, erythema and transepidermal waterloss-TEWL).

In the present study were used SKH1 hairless mice. The inorganic phase solution (100 µL) was applied on the dorsal area of the mice twice a week for 5 weeks. The skin parameters (melanin, erythema and TEWL) were measured using non-invasive techniques (mexametry and tewametry). Samples of the skin treated with the inorganic phase solution were analyzed histopathologically.

Our data indicated that the application of the inorganic phase solution induced a significant increase of the skin parameters (erythema and TEWL) values, what might be correlated to the first signs of toxicity at skin level. Moreover, the histological analysis confirmed the non-invasive results. Further studies will be developed in order to verify the systemic effect of this solution after topical application.

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CLINICAL MANIFESTATIONS OF NOROVIRUS DIARRHEA IN CHILDREN

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Background. Norovirus infection is less known in Romania, due to lower accessibility of identification tests.

Purpose. To outline the main clinical elements of Norovirus diarrheal disease in children.

Material and method. The lot consisted of 20 children hospitalized in the Department of Pediatrics II Arad County Hospital between 01.10.2014-31.03.2015 with the diagnosis of acute gastroenteritis which it identifies the Norovirus in stool by ELISA reactive Ridascreen third generation. Questionnaires were developed for parents about the symptoms and a personalized medical record study was completed by physicians.

Results. The predominated age groups were between 3-6 years - 30%, 6-16 years old - 50% compared to 0-1 years - 10% and 1-3 years - 10%. The clinical picture was dominated by watery stools 90%, diffuse abdominal pain 70%, headache 35%, myalgia 35%. Other clinical factors were encountered in the studied group - bloody stools 10%, vomiting 20%, runny nose 15%, low grade fever 15%. Only 20% of the children presented a mild/moderate acute syndrome of dehydration. The evolution of the cases was favorable with an average of 4.5 days of hospitalization.

Conclusions. Norovirus infection has emerged mainly in the age group over 3 years.

The introduction of Elisa rapid tests for Norovirus could be useful to avoid performing the coprocultures and initiation of antibiotic therapy and thus lowering hospital costs.

The clinical picture is dominated by abdominal pain and watery stools, vomiting and dehydration are less often encountered.

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REDUCTION OF GROWTH AND MYCOTOXIN PRODUCTION OF FOOD-SPOILAGE AND MYCOTOXIN PRODUCING FUNGI USING ESSENTIAL OILS

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Foods and grains are often contaminated with various molds. The greatest risks are the reproduction and mycotoxin production of fungi during crop production, transport and storage. To avoid mold contamination synthetic fungicides are used but natural substances with antifungal effects like essential oils could represent a green alternative.

In this study the growth and mycotoxin production inhibition effects of five essential oils (cinnamon, clary sage, juniper, lemon and marjoram) were tested against Fusarium and Aspergillus species (Aspergillus awamori, A. albertensis, A. parasiticus, A. nomius, A. westerdijkiae, A. longivesica, Fusarium graminearum, F. culmorum, F. verticillioides and Cochliobolus hawaiensis).

Using different amounts of EOs (5 mg, 10 mg, 20 mg, 40 mg EO/Petri dish) the growth rate (mm/day) of colonies and the antifungal index (%) were determined by the reversed Petri-dish method. Aflatoxin production of A. parasiticus was monitored by thin layer chromatography (TLC). EOs influenced their growth rates and had antifungal effect against mold species in a concentration depending manner. Cinnamon EO was the most effective; using 10 mg EO/Petri dish total inhibition of growth of F. graminearum, F. culmorum, F. verticillioides, A. westerdijkiae, A. longivesica and Cochliobolus hawaiensis was observed. Lemon and juniper EOs were the least efficient; in low concentration (5 mg EO/Petri dishes) they even have stimulated the growth of A. parasiticus and A. nomius. Treatments with lemon or juniper EOs have not significantly affected aflatoxin production of A. parasiticus. At the same time, marjoram and clary sage EOs proved to be effective. Best results were noticed with EOs containing alcohols and aldehydes as main components.

Our results showed that EOs may be potential antifungal and anti-aflatoxin agents.

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CHILDREN NUTRITION BETWEEN TRADITION AND MODERNITY

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Human biological being at birth, the child becomes a social being through education. The socialization process begins in the family, where the child is being looked after, where he develops his hygiene skills and the human behavior. Then the process continues at all school levels.

The process of educating a child as a social being needs to ensure, among other things, the acquirement of normal behaviors that can allow him to adapt to society's needs. In a continuously rushing world, with a fast pace, it is hard to develop a healthy lifestyle. If it is not adequate, our nutrition can represent for all of us a risk behavior regarding our health. This applies even more to children and adolescents whose bodies are growing and developing.

The present study sought to identify risk behaviors for the health, in a group of medium and high school children in Craiova City. It consisted of a questionnaire regarding whether they respect or not the main meals of the day and the type of preferred food. The data collected was correlated with a number of anthropometric and physiometric parameters determined by specific methods.

It was found that subjects with a healthy diet have a number of anthropometric and physiometric parameters with higher values compared to subjects who prefer eating fast food.

THE CORRELATION BETWEEN THE PHENOLIC CONTENT AND ANTIOXIDANT ACTIVITY OF SOME HERBS FROM CLUJ COUNTY, ROMANIA

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Antioxidant activity and phenolic content of some alcoholic extracts obtained from some plants grown in Cluj County, Romania, were established. For comparison, the antioxidant capacity expressed as TEAC was determined using three chemical methods, 1,1-diphenyl-2-picrylhydrazyl (DPPH) assay, 2,2-azinobis-(3-ethyl benzthiazoline-6-sulfonic acid (ABTS) assay and ferric reducing/antioxidant power (FRAP). The phenolic content was established using the Folin–Ciocalteu assay. Total antioxidant activity ranged from 0.928 to 31.425 mM trolox/L plant extract (DPPH), from 0.402 to 34.856 mM trolox/L plant extract (ABTS) and from 1.111 to 31.869 mM trolox/L plant extract (FRAP). S. alba exhibited the highest antioxidant activity (DPPH: 31.425 mM trolox/L plant extract; ABTS: 34.856 mM trolox/L plant extract; FRAP: 31.869 mM trolox/L plant extract), followed by T. vulgaris (DPPH: 22.751 mM trolox/L plant extract; ABTS: 25.262 mM trolox/L plant extract; FRAP: 24.729 mM trolox/L plant extract). The total phenolics varied in plant materials from 1023.694 to 5853.650 mg GAE/L plant extract. The highest content of phenolics was found in Salix alba, while the lowest was in Lycopodium clavatum. There is a good correlation between the antioxidant activity and the phenolic content (DPPH: R2=0.9170; ABTS: R2=0.9436; FRAP: R2=0.9626), meaning the phenolic constituents are responsible for antioxidant activity of these plants.

ESSENTIAL OILS AS NATURAL FOOD PRESERVATIVES IN FRUIT JUICES

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In this study the anti-yeast activity of lemon essential oil (EO) in natural grape juice and in commercial non-carbonated orange fruit drink was studied. Homemade grape juice was treated with lemon essential oil in MIC concentration (0.5 ul/ml) with or without heating to 55°C. Commercial orange juice was pasteurized and aseptically packaged. After opening the packaging lemon EO was added in 0.25 ul/ml concentration. Treated fruit juices were stored at 25 and 4 oC. Essential oil and heat treatment enhanced the shelf life of natural grape juice but lemon essential oil had no effect on commercial orange juice. When orange juice was artificially contaminated with Sacharomices cerevisiae yeast lemon EO reduced the cell number with one order of magnitude retarded for 3 days at 25 oC. There was no different in the yeast number of refrigerated orange juice with or without lemon EO. In practice EOs can enhance the shelf life of fruit juices.

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ISCHEMIC STROKE, A POSSIBLE CAUSE FOR D-DIMERS ELEVATION

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D-dimers represent end products of fibrin catabolisation. Their amount is found increased in plasma any time degradation of fibrin mesh exceeds normal values: increased production of fibrin (clots) or enhanced fibrinolysis process (disseminated intravascular coagulation). The ususal culprit for the first case is represented by pulmonary clot, sintesized in deep veins and migrated in pulmonary circulation, producing chest pain, severe shortness of breath and, sometimes, death. Among other, rare, causes of increased plasma values of D-dimers, are conditions with exacerbated clot production, including ischemic stroke.

Present study investigates the incidence of increased values of D-dimers among patients with ischemic stroke, at the presentation in the emergency department of Arad County hospital, whose other causes for elevated plasma D-dimers were excluded. Final results are under processing but the initial values suggests a direct correlation between the size of the clot (and extension of the neurological deficit) and the augmentation of the D-dimers increase.

THE OVEREXPRESSION OF GHRELIN GENE IN SEVERELY OBESE PATIENTS

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Obesity is defined as an excess of body fat and has proven to be a risk factor in numerous diseases. Ghrelin is a hormon secreted mainly in the stomach and in the upper intestinal tract. This hormon is the only known circulating orexigenic factor that plays a role in the regulation of energy balance and attenuates leptin-indurec reduction in food intake and body weight.

The lack of information regarding the various levels of expression for ghrelin gene in severely obese patients was the main objective of this study. Therefore, we wanted to see the expression of ghrelin gene in the gastric mucoasa using the Real-Time PCR technique. As a reference gene we used the glyceraldehyde 3-phosphate dehydrogenase gene (GAPDH).

55 patients with severly obesity and one normal pacient were analysed. For all 55 samples an overexpression of ghrelin gene was observed when compared to the healthy sample. The relative quantification values were between 3x10-14 and 2,157. These results conclude that there is a relationship between the overexpression of ghrelin gene and this type of disease. This is a preliminary study that will be continued on other patients.

LABORATORY DIAGNOSIS OF BLASTOCYSTIS SPECIES BY TRADITIONAL AND MOLECULAR METHODS

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Blastocystis species are world-wide distributed enteral protozoons capable of parasitizing both animals and humans. Isolates from human samples can be categorised into 9 subtypes (ST) based on the sequence analysis of small subunit rDNA, with ST1-ST4 and ST6 causing human disease. Certain STs could also be isolated from wastewater, as well as from cats and swine (ST3), which is not surprising as both contaminated drinking water and domestic animals play roles in the transmission of disease. The routine diagnostic detection of Blastocystis sp. is performed by microscopic examinations with/without culturing. Due to the polymorph nature of the pathogen, standardization of these methods is difficult, and both recognition and identification of the pathogen require substantial expertise. The aims of this study were to optimize the traditional procedures and to develop a sensitive, specific PCR-based molecular detection method. Traditional methods include light microscopic examination of native and Lugol-stained preparations from stool at 40× magnification, as well as culturing at 37°C in Boeck-Drbohlav-Locke medium containing serum and egg, and Jones' medium. Based on the examination of 100 random samples, the efficiency of both media were similar to each other, and to the direct microscopical examinations. For development of the molecular method, DNA was isolated from Blastocystis-positive stool samples. A PCR method based on the primers RD5 (5'-ATCTGGTTGATCCTGCCAGT-3') specific for eukaryotes and BhRDr (5'-GAGCTTTTTAACTGCAACAACG-3') specific for the genus Blastocystis was developed. Sequence analysis of the amplified fragments confirmed that the developed method is a specific and sensitive protocol with the potential to be applied for routine laboratory diagnostics both in the case of humans and animals, as well as for monitoring the presence of Blastocystis sp. in environmental samples.

EFFECTS OF SUBCHRONIC ACRYLAMIDE TREATMENT OF RAT COLON MORPHOLOGY

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Humans are exposed to acrylamide from industrial production, water treatment, cigarette smoking and diet. The principal route of human exposure is through the diet because acrylamide is formed during the cooking of many common starchy foods (bread, French fries, coffee...). Acrylamide has different subcellular target sites, it causes peripheral neuropathy in laboratory animals and humans, reproductive disorders, and is carcinogenic in multiple tissues of chronically exposed rodents. The present study investigate the effects of acrylamide on colon structure of peripubertal male Wistar rats. Experiment was performed on two animal groups. The first group was given acrylamide per os in a dose of 25 mg/kg/day, from 23 to 42 postnatal day five days a week. The second group was the control group. After the experiment was terminated, colon tissue samples of treated and control rats were processed for routine paraffin embedding and HE staining protocol. The results of stereological analysis showed a statistically significant increase of the tunica mucosa and the lamina propria volume densities ($p<0.05$) and statistically significant decrease of volume density of the tunica submucosa ($p<0.01$). The present data point to distinkt morfological alterations of the rat colon after exposure to acrylamide. Subsequently, these effects might result in a various health complications.

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MUC2 EXPRESSION IN COLON MUCOSA AFTER ACUTE ACRYLAMIDE TREATMENT

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Acrylamide (AA) is ubiquitous in the human diet, and more than one-third of the calories we take in each day come from foods with detectable levels of acrylamide. MUC2 is the major secreted mucin expressed in the small and large intestine. Aberrant expresion of MUC2 are found in inflamatory bowel diseases, in ulcerative colitis patients and in intestinal infections. Aim of the study was to determine the effect of acrylamide on colon goblet cells MUC2 mucus secretion. Wistar rats, aged 23 days were treated per os with 25 mg/kg/day or 50 mg/kg/day of acrylamide via gavage. The control groups received distilled water. Animals received single oral dose of acrylamide and were sacrificed after 24h. In order to estimate the number of MUC2 positive goblet cells in colon mucosa the immunohistochemistry staining protocol was applied using the polyclonal rabbit anti-rat MUC2. Linear reduction of the MUC2 positive goblet cells was noticed between groups in both crypt regions, but with more prominent changes in the upper crypt region. The number of MUC2 positive goblet cells was statistically significant decreased in group treated with a higher dose of AA comparing to control group ($p<0.01$) in both colon crypt regions. In the upper crypt region statistically significant decrease ($p<0.05$) of the number of MUC2 positive goblet cells between the group treated with 50mg/kg AA and the group treated with 25mg/kg AA was noticed. It is evident that AA exert decreasing production of MUC2 mucins in rat colon goblet cells, what is reason that we must pay full attention on acrylamide and its content in our diet.

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CASPASE 3 IMMUNOPOSITIVITY IN THE LIVER OF ACRYLAMIDE-INTOXICATED JUVENILE RAT

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Acrylamide (AA) is a food-borne contaminant, present in baked, grilled and roasted carbohydrate-rich food. It is spontaneously formed during Maillard browning reaction between reducing sugars (glucose or fructose), and free amino acids (mainly asparagine). The children and young people, in general, are expected to be more exposed to AA due to their dietary habits. All implications regarding its hazardous effects on the liver, especially in a young organism, are still poorly understood. The study aimed to examine the presence of immunopositivity for Caspase 3 (known apoptotic marker) in the liver of AA-intoxicated juvenile rats. Experiment was performed on 30 juvenile male rats divided in three groups. Two groups received 25 or 50 mg/kg per body weight of AA, while third group served as control and received distilled water. Animals were treated orally, 5 days a week, during 3 weeks. After the treatment, liver samples were fixed in formalin, routinely processed for paraffin embedding, cut into 5-μm thick tissue sections, and immunohistochemicaly stained for Caspase 3. The control samples expressed rare Caspase 3-imunopositivity, mainly localized in liver parenchyma. The liver samples from all AA-treated rats were characterized with prominently reduced amount of Caspase 3 positive-hepatocytes when compared to the control. Also, in AA-treated groups, majority of Caspase 3 positive-hepatocytes expressed nuclear positivity. At the same time, all AA-treated rats had increased Caspase 3-positivity in non-parenchymal cells, predominantly in the Kupffer cells. These cells expressed Caspase 3-positivity in both cytoplasm and nucleus. Present findings point to the liver non-parenchymal cells as a population of cells more prone to apoptotic events after AA intoxication. However, present results pinpoint the necessity for further examination.

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COMBINED APPLICATION OF TRICHODERMA, STREPTOMYCES AND AZOTOBACTER STRAINS IN THE SOIL CONDITIONER BIOEGO

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There is an emerging need for environment-friendly soil inoculants with favorable effects on crop plants. We aimed to develop BioeGO, a fungal-bacterial consortium-based soil inoculant ensuring increased nitrogen fixation, phosphorous mobilization, stem degradation and humus production on the treated fields and providing protective effects against phytopathogenic fungi. Nitrogen-fixing component was selected from bacteria based on growth capabilities in nitrogen-free medium. Phosphorous-mobilizing and stem-degrading component was selected from Trichoderma strains based on cellulase- and phosphatase-producing abilities. Humus-producing component was selected from bacteria based on peroxidase-producing abilities, while biocontrol component was selected from Trichoderma strains based on in vitro antagonism towards phytopathogenic fungi. An Azotobacter vinelandii strain is the nitrogen-fixing component of the soil inoculant with the potential to provide excess nitrogen for crops. Phosphorous mobilization and stem degradation are ensured by a Trichoderma harzianum strain producing cellulose-degrading enzymes in the absence of stem residues, while this ability is increased 10-15 fold in the presence of grinded maize stem. It also produces large amounts of enzymes liberating organically bound phosphorous. A Streptomyces albus strain with excellent peroxidase-producing abilities was selected as the humus-producing component, while a Trichoderma asperellum isolate with outstanding antagonistic abilities towards Fusarium, Phoma, Alternaria, Botrytis and Rhizoctonia strains is the biocontrol component of BioeGO. Microbial components of the consortium do not have negative effects on each other, thereby all beneficial effects can occur simultaneously, complementing each other.

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ONSET OF THE PERIOD AND ITS EFFECTS ON SEXUAL AND SMOKING BEHAVIOUR OF ADOLESCENTS

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Background: Several studies have shown connection between age at menarche and risk behavior (tobacco use and sexual activity) of adolescents. In Hungary there has been a little evidence about this. The aim of this study was to assess these relationships among Hungarian teenagers.

Methods: A self-administered questionnaire-based study was carried out in the Pediatric Gynecology Centre of the Department of Obstetrics and Gynecology between the spring of 2009 and 2010. The participants were 14-18 years old girls. With regard to socio-demographic characteristics, age, place of residence, educational level, and financial background was measured, as well as onset and parameters of their periods, and risk behaviour (smoking, sexual activity).

Results: 27.3% of the girls were regular smokers, and 45.2% of them were sexually active. Being sexually active meant more than 8-fold odds of being a regular tobacco user ($P<0.001$, OR: 8.31, CI: 5.40–12.77). Our results show that both the onset of smoking and sexual activity was at significantly younger age in girls who had their first period earlier.

Conclusion: Our findings may also be relevant in regard of prevention programmes for Hungarian school-aged children; taking into account that earlier menarche is in connection with risk taking behaviour.

THE WORKING ENVIRONMENT FOR HEALTH SCIENCE AND NON-HEALTH SCIENCE FACULTIES AT THE UNIVERSITY OF SZEGED

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Background: The quality of working environment influences the efficiency of work, motivation, and has importance in promotion and maintenance of health of the employees. The aim of this research was to explore the working environment and conditions of the higher education staff.

Methods: Our research was carried out at 10 faculties of the University of Szeged, including health and non-health science faculties. Data collection was made by using a self-administered online questionnaire. Besides the demographic data, questions concerned the employee's duties and working conditions, faculty regulations related to health promotion introduced to increase the efficiency of task performance.

Results: The 45.6 % of the 215 participants' were working at a health science, 54.4 % at a non-health science faculty. They have spent daily 10 to 10.5 hours with their duties, even overtime, after working hours; each of them considered their work primarily mentally demanding. The basic negative characteristics of their work were the permanent stress, the short deadlines and the frequent overtime. But they felt to have the opportunity for independent decision-making and knowledge-utilization. The fear of losing job showed up at 37.2% of the professionals. They could carry out their work in an appropriate working atmosphere (e.g., having good relationships with colleagues). It is to be regretted that still there were professionals (22.3% of the sample) at the university who did not have the opportunity to adjust their work equipment to their anthropometric parameters. It was emphasized especially at the health science faculties that the university was not really committed to promote and improve the employees' health.

Conclusion: More effective information is squarely necessary on the available recreational activities connected to the university employees' health preservation and improvement, promoting increasingly their participation, considering the professionals' financial recognition.

A NOVEL METHOD TO OBTAIN COPPER(II) POLYHYDROXOLACTATE THROUGH OXIDATION OF PROPYLENE GLYCOL WITH COPPER(II) NITRATE

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The oxidation of 1,2-propanediol (propylene glycol) with $Cu(NO_3)_2 \cdot 3H_2O$ in weak acidic solutions was investigated. A new copper(II) homopolynuclear coordination compound, which contains the lactate anion (the oxidation product of propylene glycol) as ligand, was thus obtained. This compound was investigated regarding its composition and physical-chemical properties. It can be a precursor of copper(II) oxide, which is obtained from it by thermolysis at relatively low temperatures and which has multiple uses, including applications in the drug industry. A mechanism for the oxidation reaction of 1,2-propanediol to lactic acid, which involves the nitrosonium (NO^+) ion as the active oxidizing agent, is also proposed.

EXPRESSION OF Δ9 AND Δ6 FATTY ACID DESATURASE GENES INVOLVED IN POLYUNSATURATED FATTY ACID BIOSYNTHESIS UNDER DIFFERENT CULTURING CONDITIONS IN MORTIERELLA AND UMBELOPSIS STRAINS

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Mortierella and Umbelopsis species are oleaginous microorganisms particularly active in polyunsaturated fatty acid (PUFA) synthesis. PUFAs are elemental structural components of biological membranes and precursors of prostaglandins, leukotrienes and hydroxy-fatty acids. Fatty acid desaturases, which can form double bonds in the carbon chains are important enzymes in PUFA biosynthesis.

The aim of our work was to investigate the expression of the genes encoding Δ9 and Δ6 fatty acid desaturases in some Mortierella and Umbelopsis strains under different culturing conditions. Seven strains with different PUFA yield and profile were investigated. Mortierella strains produced mainly arachidonic acid, whilst Umbelopsis strains produced γ-linolenic acid, linoleic acid and oleic acid. The isolates of Mortierella wolfii and Mortierella simplex produced linoleic acid instead of arachidonic acid. The partial sequence of the Δ9 and Δ6 desaturase encoding genes as well as the actin gene, which are used as control in the expression studies, have been identified in these strains. In some isolates 2 copies of Δ9 or Δ6 desaturase genes were identified. The effect of different culturing conditions, such as cultivation time, temperature and medium composition on the expression of desaturase encoding genes was investigated. The highest fatty acid production was observed after 7 or 8 day incubation, whereas the expression of desaturase genes was maximal on the 4th or 5th day. When the effect of temperature was investigated, the fatty acid production was the highest on 20 and 25°C, and PUFAs containing two or three double bonds are preferentially produced on lower temperature. The expression of the Δ9 and ω9 desaturase genes was the highest on 20 and 25°C as the fatty acid yield, whilst the expression of the Δ6 desaturase gene increased with the increasing temperature. The effect of medium composition on the PUFA production was also investigated. However, the biomasses were the highest in MEA and GY, the PUFA production and the expression of desaturase genes was the highest in YNB and PDB medium. The investigation of external fatty acids and different plant oils on fatty acid desaturase expression is also in progress.

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TOXICOLOGICAL EVALUATION OF THE EFFECTS INDUCED BY DEODORANTS WITH ALUMINUM CONTENT ON SKIN PHYSIOLOGICAL PARAMETERS BEFORE AND AFTER THE EXPOSURE AT UV IRRADIATION

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The purpose of this work was to study the effects of ten various cosmetics, with aluminum in their composition, after topical application and UV irradiation, on skin physiological parameters, including: melanin, erythema, transepidermal water loss (TEWL) and skin hydration.

The deodorants was applied on the dorsal area of SKH1 hairless mice (10-14 weeks old) daily for 4 weeks. After application the animals were exposed to UV radiation. The physiological skin parameters (melanin, erythema, TEWL and hydration) were evaluated by the means of non-invasive techniques (mexametry, tewametry and corneometry) using MPA5 System from Courage-Khazaka. The UV-exposed dorsal skin of each mouse was photographed twice a week for 4 weeks. Samples of skin exposed to the commercial cosmetics were analyzed histopathologically.

The application of the cosmetics led to significant changes regarding the skin parameters studied. The values of erythema and TEWL measured were higher in the group that received the topical application as compared to the control group. The chemical compounds present in the cosmetics, especially aluminum, induced a decrease of the skin hydration, change that became more significant starting with the second week of experiment. The histopathological analysis revealed the presence of inflammation process.

Our preliminary study indicate that the constituents of the cosmetics tested induce skin toxicity by disturbing the physiological skin parameters status, which represents the first signs of skin pathology. To elucidate the mechanism involved further studies are necessary.

DETERMINATION OF CYTOTOXICITY AND GENOTOXICITY OF AEROSOL SAMPLES WITH SIMPLE MICROTITER PLATE METHODS

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Toxicological investigations were performed with filters derived from various air sampling sites. A gentle sample pre-processing method was applied, which ensured, that besides bulk of the toxic compounds get to solution from the filter and the samples become germfree. The filter extracts were processed in Eppendorf-tubes with sterile beads in a high frequency Eppendorf-tube shaker. An important task was the removal of the heat- and radiation-resistant Bacillus spores which were present in substantial amount on the surfaces of the air filters. Instead of heat or radiation treatments – which other ways could cause undesired chemical reactions with the toxic compounds – the extracts were centrifuged through spin columns containing cellulose acetate membrane (0.22 micron pore size). Cytotoxicity investigations were performed with this germfree extracts and a Pseudomonas putida test strain in a microplate-based cultivation system. The growths of Pseudomonas cultures were followed via turbidimetry with a microtiter plate photometer. We worked out and evaluated a simple Ames test system for the genotoxicological measurement of air samples. Two tester Salmonella typhimurium strains were employed: TA98 detects mutagens causing frameshift mutations while TA1535 detects base substitution mutations. In our new approach of Ames test, we washed the cells in minimal liquid medium, resuspended them in the same medium and from this suspension 107 cells were pipetted in 150 µl volume to the wells of a sterile microtiter plate (with lid). To the cell suspensions, 50-50 µl of the sterile filtered environmental samples were added. The optical density of the mini-cultures was measured at 620 nm immediately and after 48 hours of incubation at 35 °C. The increase in absorbance at 620 nm reflects the mutagenicity of the samples. A strong positive correlation was found between the cytotoxicity and genotoxicity data series.

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WATER QUALITY SURVEY OF STREAMS FROM RETEZAT MOUNTAINS, ROMANIA

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A series of samples from creeks located in Retezat Mountains (Romania) was analyzed using the chemical methods stipulated in the Romanian Pharmacopoeia to assess their levels of heavy metals and other ions, both cations and anions. The results were compared and supplemented with those obtained by microwave plasma atomic emission spectrometry (MP-AES) for specific elements, namely aluminium, cadmium, cobalt, chromium, copper, iron, magnesium, manganese, molybdenum, nickel, lead and zinc. The cation levels found were compared with the Romanian national standards regarding surface water quality. A high purity with respect to the ion levels was found for the analyzed Jiul de Vest tributaries.

THE IN VITRO ACTIVITY OF RUTIN FATTY ACID ESTERS

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Most of the medicinal plants owe their therapeutic qualities to certain compounds found within their composition, such as flavonoids. The protective effects of flavonoids in biological systems are attributable to their ability to transfer the free radicals electrons, to bind metal ions, to activate antioxidant enzymes, to reduce α-tocopherol radicals, and to inhibit oxidases.

The aims of the study were: (i) to obtain derivatives of rutin via enzymatic esterification in the presence of Novozyme 435, (ii) to encapsulate the new derivatives in cyclodextrins and (iii) to evaluate their in vitro antiproliferative effect against SK-BR-3 (human breast cancer) cell line.

The rutin esters were obtained via enzymatic esterification in the presence of saturated and unsaturated fatty acids in order to obtain bioconjugates with hydrophobic character and increased biological activity. In addition, the bioconjugates obtained were complexed with α- and β-cyclodextrins. The antiproliferative activity of the new compounds was tested using Alamar blue assay for the determination of cells viability.

The formation of the rutin bioconjugates was confirmed by different techniques as: TLC, HPLC, FT-IR, NMR, and the complexes were characterized using Karl-Fisher titration, DSC and SEM analysis.

The in vitro results showed that the rutin bioconjugates dissolved in DMSO induced a mild antiproliferative effect.

THE CASE OF SCOMBROID SYNDROME ASSOCIATED WITH CONSUMPTION OF CANNED SARDINES IN PUBLIC KINDERGARTEN IN NOVI SAD, SERBIA

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The scombroid syndrome is common fish poisoning, mostly underreported because of mild nature of the illness. Histidine decarboxylating bacteria convert histidine or other amino acids present in spoiling fish, to histamine and other biogenic amines mostly if not stored properly. Eating fish with high levels of histamine usually cause: head and neck redness, urticaria, hypotension, headache, abdominal cramps, diarrhea, vomiting, itching associated with the rash etc.

In January 2014, an outbreak of scombroid fish poisoning traced to commercially canned sardines (Sardinella spp.) occurred at a large kindergarten mass catering in Novi Sad, Serbia. Central kitchen distributes meals for over 15.000 kids aged from 1 to 6 in 65 different facilities. That day, 8856 kids consumed incriminated breakfast, consisted of sliced bread and spread made of sour cream and canned sardine (Sardinella spp.). Edible weight of fish was approximately 15 g for younger (1-3 y) and 22 g for older age groups (4-6 y).

Shortly after breakfast started nurses immediately reported first symptoms occurred among 41 kids of total 1689 exposed from 11 facilities. Epidemiological investigation showed that the onset of facial and neck flushing was rapid, within 5-15 minutes after consumption, mostly in group 1-3y (86.4%). Parents of additional 3 kids reported diarrhea and nausea during afternoon. Antihistamine treatment was prescribed in 13 (29.55%) cases. All patients recovered within next 12 hours, no died or hospitalized.

Laboratory testing (HPLC method) of canned fish confirmed presence of histamine in concentration above limits: in one of nine controlled units over 400 mg/kg (451 mg/kg) and in three sample units between 200 mg/kg and 400 mg/kg (214 mg/kg, 331 mg/kg and 332 mg/kg).

It is important to strictly follow good hygiene practice, from primary production to consumption. Rapid cooling of the fish after caught and a rigorous maintenance of the cold chain is essential becouse of termostability of released histamine. Regarding vulnerability of children and sensitivity to small concentration of histamine in food, even fish and fish products are good sources of high quality proteins, vitamins and minerals, it is necessary to reassess risks and benefits of usage of this kind of high risk fish products in mass catering facilities.

HPLC METHOD FOR DETECTION AND QUANTIFICATION OF THE METABOLITES RELATED TO THE NICOTINIC ACID DEGRADATION PATHWAY

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Pyridine-related compounds are widely used in pharmaceutical and pesticide industry as intermediates. One of the important members of these compounds is the nicotinic acid (NA), which is a carboxylic acid and the basic component of NADP playing an essential role in living organisms. The microbial degradation of NA was described only in prokaryotes, which are able to grow on a media containing this substance as the sole carbon and nitrogen source. In the microbial metabolism, the initial step is the introduction of a hydroxyl group at C6-position of the pyridine ring (6-hydroxynicotinic acid, 6-HNA) and next is the formation of 2,3,6-trihydroxypyridine through an oxidative decarboxylation (2,5-dihydroxypyridine, 2,5-DHP) or hydroxylation (2,6-dihydroxynicotinic acid) followed by ring cleavage and formation of maleamic acid. The biochemical pathways involved in the degradation of this N-heterocyclic aromatic compounds have been used as a source of novel and unusual enzyme activities, thus it is worth to monitor the presence and quantity of the intermediers during different prokaryotic and eukaryotic fermentations carried out on NA. In this study a HPLC method was developed for detection and quantification of some known metabolites involved in the microbiological degradation of NA. The separation was carried out on the reverse phase column using a diode array detector, which allows the detection of both the pyridine ring and the resulted aliphatic compounds. The effects of a mobile phase composition and pH were investigated and optimized for the best resolution of the available standards including NA, 6-HNA and 2,5-DHP. Using an organic-aqueous buffer solution as a mobile phase, a baseline separation was achieved. Under the optimal conditions the linearity was tested and the limit of detection and quantitation were determined.

Our results provide a good basis for investigation of unexplored microbial pathways of NA metabolism.

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CONTENTS OF ESSENTIAL AND TOXIC ELEMENTS IN BABY FOOD AVAILABLE IN SERBIAN AND SPANISH MARKET

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The levels and distribution of essential (copper (Cu), iron (Fe), manganese (Mn), cobalt (Co) and chromium (Cr)) and heavy elements (arsenic (As), cadmium (Cd), lead (Pb), nickel (Ni) and tin (Sn)) in a total of 51 different baby food items (infant and follow on formulas, vegetables and meat porridges, fruit porridges, etc.) collected from the Serbian and Spanish market in 2012 were determined in order to provide information on the health risk to children through the consumption of these products. The concentrations of elements were measured by atomic absorption spectrometry with a graphite furnace (AASGF) after microwave digestion of the analysed samples. Considering the mean value obtained for Spanish samples, the highest was found for Fe (44.10 mg/kg) followed by Cu (0.62 mg/kg) and Mn (0.26 mg/kg). In the case of Serbian samples, the highest mean value was determined for Fe (48.24 mg/kg) followed by Mn (0.74 mg/kg) and Cu (0.73 mg/kg). Concerning the presence of toxic elements the following was observed. The concentrations of As, Pb, Ni and Sn in different baby food items available on the Spanish market ranged from <LOD to 0.89 mg/kg, <LOD - 0.28 mg/kg, <LOD to 0.08 mg/kg and <LOD to 0.25 mg/kg, respectively. The content of As and Pb were below the limit of detection in commercial baby food products collected from the Serbian market, while Ni and Sn were found at concentration levels of <LOD to 0.21 mg/kg and <LOD to 0.37 mg/kg, respectively. Additionally, the daily intakes of these elements were estimated through consumption the investigated baby food items and compared with the relevant data from the literature.

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DIFFERENT METHODS FOR OBTAINING OF SOME COMPOSITE MATERIALS WITH DENTAL USE

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In modern dentistry and maxillofacial surgery, for replacement and reconstruction of bone tissue, different materials are used. The demand for bone substitute materials has increased in recent years due to increased number of road and rail accidents, loss of teeth due to poor nutrition and stress, the emergence of new trauma and tumors, and bone reconstructive surgery due to development. The aim of this work was to create new nanomaterials from food wastes. Two methods are performed for hydroxyapatite extraction from bovine bones: hydrothermal process with water at subcritical and supercritical conditions (200-400°C) and microwave technology. Type I collagen from pig skin was extracted under stirring, using pepsin and acetic acid 0.5M at 4°C. A collagen-hydroxyapatite composite material for dental uses has been made by physical mixing of components in an ultrasonic field. The obtained nanomaterials were characterized by TEM-EDX and X-ray diffraction techniques.

FRUCTOSE AND METABOLIC DYSFUNCTION

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Most people would agree that a high intake of table sugar (sucrose) is not good for your health. Both health professionals and the general public would probably tell you that sugar might lead to tooth decay and weight gain. However, what most people do not know is that the biochemical metabolism of the fructose part of the sucrose molecule can lead to serious metabolic dysfunction due to its unregulated metabolism. The metabolism of fructose yields high energy substrates favoring de novo lipogenesis, intrahepatic fat deposition, uric acid production, insulin resistance, formation of reactive oxygen species, advanced glycation products and disturbance of the energy homeostasis in the brain.

Consumption of fructose was insignificant in the early years of human history until the 18th century when sugar became vastly popular. The intake of sugar has since increased significantly, especially the last 30 years with an increase by 46%. The current sugar intake is roughly 23 kg per capita on average, with great variation from 8 kg per capita to 66 kg.

Reduction of fat content in food items was followed by an increase in sugar content to make up for the lack of taste and palatability. Sugar is found today as a food additive in almost any processed food, making it easy to unwillingly ingest a significant amount of sugar. Furthermore, soda, candy and cake consumption has become a daily habit for many due to their low prices, easy availability and pleasurable taste.

The prevalence of obesity and metabolic diseases such as hypertension, non-alcoholic fatty liver disease, dyslipidemia, diabetes and metabolic syndrome has all increased significantly, parallel to the increase in fructose consumption, in both developing and developed countries. It is currently estimated that one quarter of the world's population suffers from metabolic syndrome, the number of diabetics is 347 million and the number of overweight individuals has surpassed 1.4 billion. It is urgently important to identify and apply preventive measures to our current endemic of metabolic diseases.

Our current consumption of fructose poses a significant challenge to global health, contributing to premature morbidity, mortality, and to significant healthcare expenditures. The complete awareness of fructose's effects on the human body is generally not well known even in professional communities; however, the link between fructose consumption and metabolic dysfunction has been demonstrated in numerous studies on both human and animal models.

The contents of this poster are based upon numerous publications found in printed journals and PubMed.

RESPONSE OF HUMAN MACROPHAGES FOR INFECTIONS WITH CURVULARIA STRAINS

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Opportunistic fungal diseases constitute a continuously increasing problem, because of the increasing population with underlying conditions, difficulties of diagnosis and the high antifungal resistance of certain fungal agents. Members of the genus Curvularia (Ascomycota, Pleosporales) are saprotrophic or plant parasitic fungi. However, some species have been recovered from human infections known as pheaohyphomycoses. Manifestations of these mycotic infections can include fungal keratitis, sinusitis, cutaneous lesions or invasive infections with the involvement of the central nervous system.

In the present study, we investigated the cytokine and chemokine response of the human monocyte-macrophage cell line, THP1 to three clinical isolates of the genus Curvularia, C. lunata and C. spicifera isolated from human eye infections and C. hawaiensis from a systemic infection and the closely related Cochliobolus carbonum isolated from plant leaf. Relative transcription levels of IL10, IL8, IL6, TNF-α and CXCL10 were measured by real-time, quantitative reverse transcription PCR in response to the conidial and mycelial forms of the strains. In case of the conidia phagocytosis could not be detected. Therefore, the role of melanin in the conidia was started to examine by infecting the cell line with melanin synthesis blocked conidia.

GENETIC DETERMINANTS OF THE "BUBBLE" ANTIFUNGAL PROTEIN IN THE GENUS NEOSARTORYA

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From the second part of the 1990s several proteins with similar structure to the β-defensins have been isolated from Ascomycetes. Although they are very different in their amino acid sequences, conserved homologous regions can be identified at the flanking amino acids of cysteines. Based on these regions, they can be divided into two groups: proteins which contain the Penicillium brevicompactum “bubble” protein (BP) cluster and proteins with the P. chrysogenum antifungal protein (PAF) cluster. BP-cluster proteins effectively inhibit the growth of yeasts. This protein group has only two characterized members from P. brevicompactum and P. chrysogenum. However, based on genomic data further homologous have been supposed in Ascomycetes. For example N. fischeri “bubble” protein (NFBP) can be identified in the genome of the Neosartorya fischeri NRRL 181. The aim of the present study was to isolate further homologous to nfbp from different Neosartorya species.

To amplify the DNA fragments of the putative NFBP encoding genes, PCRs were performed with primers designed to the up- and downstream regions of nfbp.

Genes homologous to the nfbp were isolated from the following Neosartorya isolates: N. botucatensis SZMC 2035; N. fennelliae SZMC 1378, SZMC 1379, SZMC 2044, SZMC 2045; N. ferenczii NRRL 4179; N. fischeri A-7223, NRRL 181, NRRL 4075, NRRL 4161, NRRL 4585; N. glabra NRRL 3434; N. spinosa NRRL 3435. The putative proteins encoded by the nfbp homologous genes show 79.6-100% similarity to each other.

Our results provide further data for the widespread presence of “bubble” antifungal protein in the genus Neosartorya. The isolation and characterization of the encoded proteins are in progress.

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PRODUCTION OF MUCOR CORTICOLUS HYDROLASES USING CORNCOB GRANULES AS SUBSTRATE

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High amount of corncob residues are generated as plant-waste during the corn processing technologies each year. However, these by-products can be managed industrially in which different particle-size granules are produced from the woody and spongy part of the cob. These granules can be utilized for many industrial purposes like absorbents, carriers, cleaning components and thermal insulation materials. Moreover, their high cellulose and hemicellulose content provides opportunities for high-yield enrichment of biomass-degrading microbial hydrolases which is an alternative approach to exploit of these renewable and inexpensive resources. The goal of our present project was to evaluate the cellulase and xylanase production of the zygomycete Mucor corticolus on different particle-size corncob products, in conjunction with the examination of the applicability of the granules for fermentation in solid-state conditions. Experimental studies were conducted with 5 g of substrate under 80% moisture content set by distilled water. Each culture were incubated at 25 °C up to 8 days, and total cellulase, endoglucanase, cellobiohydrolase, β-glucosidase and xylanase activities were determined using standard procedures appropriate for detection. The applied fungal strain grew well on each granule because they contain high amount of carbon sources, and the mineral salt needs of the fungus is also effectively supported. Intensive cellulase production could be detected both on spongy and woody substrates, especially on which having average particle size of 180 and 560-710 μm, respectively. Spongy granules were better substrates for β-glucosidase production presenting at least three times higher activity than measured on woody medium. Some corncob granules proved to be suitable also for M. corticolus xylanase production; however, high activity could rather be observed in the first phase of the fermentation.

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EFFECTS OF ENVIRONMENTAL EPIGENETIC FACTORS ON COGNITIVE BEHAVIOR OF RATS

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Human epidemiological studies and animal experiments show that regular sport or moderately strenuous physical activity can diminish the development of lifestyle- and stress-dependent chronic (e.g. neurodegenerative) diseases by initiating molecular adaptive mechanisms and pathways. Other epidemiological studies point to the, still partly controversial, fact that rhythmic, melodic, pleasant musical stimuli can be successfully used in the therapy of cognitive impairments in some neuropsychiatric disorders (dementia, depression, Alzheimer's disease, epilepsy). However, the combined effects on cognitive functions of these environmental epigenetic factors, assumed to act via reward mechanism, have not yet been investigated.

In this experiment, the rats' spatial learning and memory performance was tested in an 8-arm radial maze, and their spontaneous exploratory activity was investigated in an open field (OF) apparatus. Altogether 60 rats, divided into 5 groups (12 animals/group), were used in the 10-week experiment. The "music" group listened to Mozart's piano sonata in D major (K 448) transposed higher by two octaves (rodentized sonata), at 60 dB loudness, once daily for 80 minutes, while the positive control group was exposed to white noise of identical parameters. The „trained" animals performed treadmill exercise, once daily for 12 minutes, and the fourth ("trained music") group received rodentized musical stimuli plus treadmill exercise as above. The negative controls received neither musical stimuli nor treadmill exercise. Defecations by the rats during the OF test on the 5th and 10th week were recorded individually, and body weight was measured daily. At the end of 10th week, peripheral blood was taken for blood count and biochemical tests. Weight of the removed brain, thymus, spleen and adrenals was measured during dissection.

The performance of the rats in the "music" group was significantly improved compared to both control groups in short- and long-term and long-lasting working memory and recall. Treadmill exercise had alone no effect, but combined with musical stimuli increased the long-term and long-lasting spatial memory. Rats in the "music" group spent significantly less time with rearing in the central zone of the OF, and showed immobility fewer times, in the 5th week than those in the negative control. Their current emotional status then indicated eustress but this disappeared by the 10th week. In the 10th week, these rats spent significantly more time with rearing and locomotion in the OF central zone than negative controls, indicating increased level of arousal. Body weights in "music", "trained" and "trained music" groups were significantly higher at the end of the experiment than in either of the control groups. In the same three groups, brain-related relative thymus and adrenal weights, as well as lymphocyte count in the peripheral blood smear and total plasma proteins, indicated no chronic stress, although blood glucose level was elevated.

To summarize, rodentized Mozart's sonata, applied regularly over the 10 weeks, was able to improve hippocampus-dependent spatial learning, and short- and long-term and long-lasting working memory performance in rats. Treadmill exercise had positive effect on spatial memory only with music exposure from 6th week on. Music, moderate intensity treadmill exercise, and their combination did not cause chronic stress or anxiety to the animals, but the musical stimuli on the 5th week induced temporary eustress that promoted learning process and memory fixation.

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