

**WEST UNIVERSITY OF TIMIȘOARA
FACULTY OF CHEMISTRY, BIOLOGY, GEOGRAPHY
DEPARTMENT OF BIOLOGY-CHEMISTRY**

8th Annual Conference BIOLOGY
Biological processes - theoretical and practical applications

May 13, 2016
Timisoara, Romania

Members of the conference organizing committee

Associate professor PhD Marioara Nicoleta FILIMON - Chair
Professor PhD Adriana ISVORAN
Associate professor PhD Nicoleta IANOVICI
Lecturer PhD Adrian SINITEAN
Lecturer PhD Milca PETROVICI
Lecturer PhD Lucian PARVULESCU

Scientific Session Oral Abstracts of the 8th Annual Conference BIOLOGY

Ciprian-Alexandru GAIU Bambă MOLKA Marioara Nicoleta FILIMON Roxana POPESCU Gabi DUMITRESCU	TESTING ANTIMICROBIAL AND ANTIFUNGAL ACTIVITY OF TETRABUTYLAMMONIUM CHLORIDE IONIC LIQUID	103
Teodora-Raluca BUȚIU Saalani SOUHEIL Marioara Nicoleta FILIMON Roxana POPESCU	ANTIMICROBIAL AND ANTIFUNGAL ACTIVITY OF <i>OCIMUM</i> <i>BASILICUM</i> L. EXTRACTS	104
Lucian PÂRVULESCU Sandra-Florina LELE Adelina GETEJANC Mălina PÂRVU	ADAPTIVE RESPONSE TO EARLY DOMINANCE OF AN ACUTE INVADER	105
Sandra-Florina LELE Adelina GETEJANC Lucian PÂRVULESCU	CHELAE BIOMETRY OF FOUR CRAYFISH SPECIES SUGGESTS PREDOMINANTLY AMBIDEXTROUS HABITUDE	106
Ionela Marilena SLEJIUC Milca PETROVICI	MONITORING OF HERPETOFAUNA FROM BEGA CHANNEL AND BISTRA FOREST AREA (WESTERN ROMANIA)	107

Scientific Session Oral Abstracts of the 8th Annual Conference BIOLOGY

Molka BAMBIA Gabriela IVAN Ciprian GAIU Gabi DUMITRESCU Marioara Nicoleta FILIMON Mihai MITULETU Liliana PETCULESCU CIOCHINA Roxana POPESCU	IN VITRO ACTIVITY OF IONIC LIQUIDS BASED ON TETREBUTYLAMMONIUM CHLORIDE	108
Andreea BOTILA Aurica Elisabeta MOATAR Molka BAMBIA Robert LUCACIU Roxana POPESCU Doina VERDES	MOLECULAR MARKERS OF DRUG RESISTANCE IN HEPG2 RESISTANT CELL LINE	109
Robert LUCACIU Romina Teodora MOLDOVAN Roxana POPESCU Mihai MITULETU Doina VERDES	RNA ISOLATION FROM PARAFFIN EMBEDDED TISSUE IN ORDER TO ESTABLISH THE NEW MOLECULAR MARKERS IN OVARIAN TUMORS	110
Souheil SAALANI Teodora BUTIU Marioara Nicoleta FILIMON Daliborca VLAD Doina VERDES Roxana POPESCU	ANTITUMOR EFFECT OF <i>OCIMUM BASILICUM</i> EXTRACTS	111
Codruta STINGU Robert LUCACIU Mihai MITULETU Doina VERDES Roxana POPESCU	DEVELOPMENT OF 3D MCF7 CELL CULTURE FOR BREAST CANCER MANAGEMENT	112
Xenia-Daiana GLISICI Adrian SINITEAN	STRUCTURE AND COMPOSITION OF BENTHIC DIATOMS COMMUNITY FROM BEGA CHANNEL	113
Raluca Codruța MARCHIȘ Adrian SINITEAN	FLORISTIC SIMILARITIES AMONG COMMUNITIES OF EPILITHIC DIATOMS WITHIN THE HYDROGEOLOGICAL SYSTEM JIUL DE VEST – CERNA – CERNIȘOARA	114
Ioana-Andreea MAIER Nicoleta IANOVICI	PRELIMINARY STUDY ON THE VEGETATIVE ORGANS BIOMASS OF AMBROSIA ARTEMISIIFOLIA	115
Denisa VOICULESCU Adriana ISVORAN	COMPUTATIONAL STUDY OF THE HUMAN CYTOCHROME 2C19 INTERACTIONS WITH PHTHALATES	116
Miruna GUG Luiza CONSTANTIN Adriana ISVORAN	ADME-TOX PROFILES OF SOME USUAL DRUGS	117

TESTING ANTIMICROBIAL AND ANTIFUNGAL ACTIVITY OF TETRABUTYLAMMONIUM CHLORIDE IONIC LIQUID

Ciprian-Alexandru GAIU^{1,2}, Bambia MOLKA³, Marioara Nicoleta FILIMON^{1,2}, Roxana POPESCU³, Gabi DUMITRESCU⁴

¹West University of Timisoara; Faculty of Chemistry, Biology, Geography; Department of Biology-Chemistry; Romania

²West University of Timisoara, Laboratory of Advanced Researches in Environmental Protection, Romania

³University of Medicine and Pharmacy “Victor Babes”, Department of Cellular and Molecular Biology, Romania

⁴Banat’s University of Agricultural Sciences and Veterinary Medicine “King Michael I of Romania” from Timisoara, Faculty of Animal Science and Biotechnology, Timisoara, Romania

*Ionic liquids are a type of solvents formed exclusively out of ions that have the capacity to show little toxicity towards different levels of biological structures. The antimicrobial and antifungal properties can express different degrees of toxicity resulted from the interaction with proteins that are included in various cell structures and involved in metabolic activities by suppressing them. Ionic liquid having the following concentrations: 0.85 mg/ ml, 1.36 mg/ ml, 1mg/ ml, 1.7 mg/ ml, 3.4 mg/ ml, 6.8 mg/ ml, were tested against Gram-positive bacteria (*Staphylococcus aureus*, *Streptococcus pyogenes*, *Enterococcus faecalis*), Gram-negative bacteria (*Escherichia coli*, *Pseudomonas aeruginosa*, *Legionella pneumophila*, *Salmonella enteritidis*) and a fungus (*Candida albicans*). Nutrient agar was the culture media used for this study. The Kirby Bauer method was used for determining the inhibition zones, so the minimum inhibitory concentration (MIC). Sterilized filter paper discs were impregnated with 10 μ l of different concentrations of chitosan solutions in DMSO. The bacterial plates were incubated at 37 °C for 24 h and 48 h. Using a scale, the inhibition zone was then measured and the antimicrobial and antifungal activities were calculated. The antimicrobial and antifungal effect decreases in the case of the species of microorganisms analyzed as follows: *Candida albicans* > *Escherichia coli* > *Streptococcus pyogenes* > *Staphylococcus aureus* > *Enterococcus faecalis* > *Legionella pneumophila* > *Pseudomonas aeruginosa* > *Salmonella enteritidis*. The antimicrobial and antifungal activities are solvent dependent with concentration. Studies confirm the antibacterial and antifungal effects of ionic liquid solutions.*

ANTIMICROBIAL AND ANTIFUNGAL ACTIVITY OF *OCIMUM BASILICUM* L. EXTRACTS

Teodora-Raluca BUȚIU^{1,2}, Saalani SOUHEIL³, Marioara Nicoleta FILIMON^{1,2}, Roxana POPESCU³

¹West University of Timisoara; Faculty of Chemistry, Biology, Geography; Department of Biology-Chemistry; Romania

²West University of Timisoara, Laboratory of Advanced Researches in Environmental Protection, Romania

³University of Medicine and Pharmacy “Victor Babes”, Department of Cellular and Molecular Biology, Romania

Some medicinal and aromatic plants can be used as remedies to treat various human pathological conditions. Natural compounds that are found within these certain plants may present antioxidant, antibacterial, antiviral, antifungal, cytotoxic and nutritional properties. The n-hexane and ethanolic extracts, obtained from Ocimum basilicum buds and leaves at different concentrations (lot A ethanolic extract - C1 100 mg/ml, C2 50 mg/ml; lot B n-hexane extract - C3 40 mg/ml, C4 20 mg/ml) were tested against Gram-positive bacteria (Staphylococcus aureus, Streptococcus pyogenes, Enterococcus faecalis), Gram-negative bacteria (Escherichia coli, Pseudomonas aeruginosa, Legionella pneumophila, Salmonella enteritidis) and a fungus (Candida albicans). The culture media - nutrient agar was used during the study. The Kirby Bauer method was used. Sterilized filter paper discs were impregnated with 10 µl of different concentrations of DMSO-diluted extracts. The bacterial plates were incubated at 37 °C for 24 h whereas plates for yeast were incubated at 30 °C for 48 h. The inhibition areas were afterwards measured using a scale and the antimicrobial activity was calculated. Ethanolic and n-hexane extracts did present antimicrobial effects in the case of said concentrations. The antimicrobial effects were determined based on the values obtained by measuring the zone of inhibition, resulting in: Escherichia coli > Candida albicans > Staphylococcus aureus > Enterococcus faecalis > Salmonella enteritidis > Legionella pneumophila > Pseudomonas aeruginosa > Streptococcus pyogenes. The antimicrobial activity is solvent dependent with n-hexane extract being more potent than ethanol extract. Ethanolic and n-hexane extracts of O. basilicum may be used as a potential source for the development of an effective antimicrobial agent.

ADAPTIVE RESPONSE TO EARLY DOMINANCE OF AN ACUTE INVADER

Lucian PÂRVULESCU¹, Sandra-Florina LELE^{1*}, Adelina GETEJANC¹, Mălina PÎRVU¹

¹West University of Timișoara, Faculty of Chemistry, Biology, Geography, Department of Biology-Chemistry, Romania

*The stability of the relationships within a community is established in time and are roughly based on the species' capacity to assume natural resources. A successful invasive species creates significant imbalance by over competing for the same existing resources, and thus, the native species being exposed to the risk of extinction in a lack of adaptive response. We analysed the dynamics of the behavioural relationships between two crayfish species, the native *Astaculepto dactylus*, and the invasive *Orconectes limosus*, in an ongoing invasion process in lower Danube. We tested the species' ability to assess food and shelter in laboratory experiments targeting any possible paired combinations. Our results revealed the most submissive were the individuals of the native species. These confrontations had significant negative consequences, native individuals losing resources in terms of shelter or food. We observed occasional high aggressively individuals of the invasive species literally squashing natives individuals, even in size-balanced confrontation. These results came to explain the biological advantages of the invasive species found in previous study. Still, we believe that the invasion success is strongly emphasised by the carried deadly weapon of crayfish plague. Further genetically investigations may reveal if the natural selection were the driver behind of thriving natural populations of native species in old invaded Danube sectors.*

CHELAE BIOMETRY OF FOUR CRAYFISH SPECIES SUGGESTS PREDOMINANTLY AMBIDEXTROUS HABITUDE

Sandra-Florina LELE^{1*}, Adelina GETEJANC¹, Lucian PÂRVULESCU¹

¹West University of Timișoara, Faculty of Chemistry, Biology, Geography, Department of
Biology-Chemistry, Romania

*Over the millions of years of evolution, some decapod crustaceans have developed specialized anthropomorphic-like appendages called chelae from the first pair of pereopods. Chelae increase their survival rate in nature through the multitude of activities the crayfish can use them for: defending themselves from other predators and other animals, helps them win in agonistic encounters with other crayfish and intimidating them, creating burrows in which some species live most of their lives, and even catching living prey. Our goal is to investigate the role of the chelae in feeding and agonistic encounters, analyzing whether there are preferences for one chelae over the other. We analyzed both biometrical data and video recordings of crayfish behaviour regarding chelae, in correlation with body size and approximated age of two species: *Astacus leptodactylus* and *Orconectes limosus*. Data which includes only biometrical analysis include two species: *Astacus astacus* and *Austropotamobius torrentium*. Preliminary results revealed 42% of the investigated species individuals present a preference for a simultaneous use of chelae, 33% of the observations the individuals used the left chelae and 25% prefer using the right one sowed by video analyses. Regarding biometrical statistics, 41% have almost equally chelae, 31% have a longer left chelae and 28% longer right chelae. We can suppose that equally using both chelae maximize their survival chances, since in nature if crayfish lose one, they are already adapted to efficiently using the remaining one. In case both chelae are lost, surviving is not compromised as they can successfully use pereopods II and III, as can be seen in our video recordings too.*

MONITORING OF HERPETOFAUNA FROM BEGA CHANNEL AND BISTRA FOREST AREA (WESTERN ROMANIA)

Ionela Marilena SLEJIUC¹, Milca PETROVICI¹

¹West University of Timișoara, Faculty of Chemistry, Biology, Geography, Department of Biology-Chemistry, Romania

*The present study shows the results of monitoring actions on herpetofauna from the Bega Channel and Bistra forest (Timisoara area), from March 2014 until May 2015, following herps composition, phenophases and species distribution, as well as information on anthropic influences limiting species distribution in the studied area. Mostly, with a bimonthly frequency, we monitored using transect method (transect length = 8 km) more areas with different levels of anthropic influence; thereby, we studied the next segments: S1-area under big anthropic impact caused by constructions and heavy traffic; S2 - area with moderate anthropic impact caused by the presence of gardens and frequently mowed land and S3, S4, S5 - 3 areas with weak anthropic impact. We identified a total of 14 species, of which 8 species of amphibians (*Lissotriton vulgaris*, *Bombina bombina*, *Bufo bufo*, *Bufotes viridis*, *Hyla arborea*, *Pelophylax ridibundus*, *Pelophylax esculentus*, *Rana dalmatina*) and 6 species of reptiles (*Emys orbicularis*, *Anguis colchica*, *Lacerta agilis*, *Natrix natrix*, *Natrix tessellata*, *Coronella austriaca*) and we noted the differences in the herpetofauna diversity from areas under varying degrees of anthropic influences. As a result of field observations we made a series of recommendations for the management of herpetofauna species, especially those identified in forest habitat, which is part of the Bistra Forest Natural Reservation.*

IN VITRO ACTIVITY OF IONIC LIQUIDS BASED ON TETREBUTYLAMMONIUM CHLORIDE

Molka BAMBIA¹, Gabriela IVAN², CIPRIAN GAIU³, GABID UMITRESCU², Marioara Nicoleta FILIMON³, Mihai MITULETU¹, Liliana PETCULESCU CIOCHINA², Roxana POPESCU¹

¹V.Babes University of Medicine and Pharmacy, Timisoara, Romania

²USAMVB, Timisoara, Romania

³West University of Timișoara, Faculty of Chemistry, Biology, Geography, Department of Biology-Chemistry, Romania

Ionic liquids (ILs) are organic salts in liquid state. Recently, various studies reported the pharmacological effects of ILs including anti-arrhythmic, anti-tumor and cytotoxicity properties, immunological enhancement, antiseptic and central nervous system excitation properties. The aim of our work was to evaluate the effects of IL base on tetrabutylammonium chloride in normal and cancer cell lines. We used the HCT116 cell line (Human colon tumor cell line) to evaluate the antitumor properties, and H9C2 (cardiomyoblast normal cell line) to highlight the biocompatibility of IL. Briefly, the cells were seeded as monolayers in a specific medium: DMEM supplemented with 10% penicillin/streptomycin, 10% heat inactivated FBS (fetal bovine serum) at 37°C in an atmosphere of 5% CO₂. 5x10⁵ cells/ml were seeded in 96 wells and 24 wells plates, and after 24h different concentrations were added. IL base on tetrabutylammonium chloride was solubilized in the medium. Cells were grown in medium containing different final concentrations of the IL base on tetrabutylammonium chloride: 1,36 mg/ml, 0,65mg/ml, 0,325mg/ml, and 0,16mg/ml. Cytotoxicity test was performed at 24h using Vybrant® MTT Cell Proliferation Assay Kit. The MTT (3 - (4,5 dimethyl thiazol-2-yl) -2,5-diphenyl-tetrazolium bromide). To evaluate the molecular effects, total DNA was purified using Invitrogen assay. We analysed the DNA fragmentation, and p53, caspase 3 and caspase 8 expressions. IL base on tetrabutylammonium chloride does not significantly affect normal cell line H9C2. We noticed the inhibition of cancer cells proliferation (HCT) at 1,3 mg/ml, 0,65mg/ml. At lower concentration (0,325mg/ml, and 0,16mg/ml), the cell growth and multiplication showed no significant changes. In the H9C2 line, cell proliferation was not significantly inhibited. The different concentrations used did not determine DNA fragmentation or modification of p53, caspase 3 and caspase 8 gene expressions. Our preliminary results highlight the cytotoxic effect of higher concentration of IL base on tetrabutylammonium chloride on colon cancer cells. Also, the applied concentration did not affect normal cardiac cell proliferation.

MOLECULAR MARKERS OF DRUG RESISTANCE IN HEPG2 RESISTANT CELL LINE

**Andreea BOTILA¹, Aurica Elisabeta MOATAR¹, Molka BAMBIA¹, Robert LUCACIU¹,
Roxana POPESCU¹, Doina VERDES¹**

¹Victor Babes University of Medicine and Pharmacy, Timisoara, Romania

Liver cancer represents a major public health problem worldwide. The purpose of the study was to develop a liver cancer cell line resistant to treatment and to identify molecular markers that may be involved in the resistance and or disease progression. The cells were seeded in 75cm² flask and cultured in specific medium DMEM:F12 supplemented with 10% penicillin/streptomycin, 10% heat inactivated FBS (fetal bovine serum) at 37°C in an atmosphere of 5% CO₂. HepG2 resistance cell line development was carried out following the protocols of specialized literature, and the cell line was cultured in the presence of 5 fluorouracil, using ethanol in parallel as vehicle. We assessed the resistance markers to the treatment process (PGP, MRP2) by PCR. After drug exposure, the cells were collected by trypsinization, and DNA extraction was performed using PureLink® Genomic DNA kit. After extraction, the genes of interest were amplified using specific primers. As a result of drug exposure, in the initial stage the cell growth rate was low. Subsequently, the cells were adapted to the new environment, forming sublines HepG2 R (resistance to treatment). We used a HepG2 cell line parental as control. HepG2 R cells were differentiated compared with the parental cell line HepG2, by changing their proliferation capacity. A over expression of Pgp and MRP2 in resistance line versus control and parental cell line was highlighted. The study allowed the development of resistant cell lines to 5-fluorouracil, which allowed cell passage and viability of cells in culture.

RNA ISOLATION FROM PARAFFIN EMBEDDED TISSUE IN ORDER TO ESTABLISH THE NEW MOLECULAR MARKERS IN OVARIAN TUMORS

Robert LUCACIU¹, Romina Teodora MOLDOVAN², Roxana POPESCU¹, Mihai MITULETU¹, Doina VERDES¹

¹Victor Babes University of Medicine and Pharmacy, Timisoara, Romania

²Conty Hospital Arad, Romania

Ovarian cancers represent one of the most common causes of cancer death among women in the whole world. Although shows significant importance in medical practice, due to the high mortality rate and low survival, etiopathogenesis and molecular mechanisms involved in the initiation, disease progression and resistance to treatment are less known. The purpose of the study was to purify RNA from paraffin blocks to use biological material for the detection of new molecular markers which serve in the management of ovarian tumor process. The NFKB (nuclear factor kappa B) and XIAP (X-linked inhibitor of apoptosis) expressions were studied. The study material was represented by cytological samples included in paraffin. The histological diagnosis was made after staining the slides with hematoxylin and eosin (HE). Analysis of molecular markers was done after the extraction of nucleic acids from paraffin block and amplification with RT-PCR using TaqMan assays for genes of interest and GAPDH as control. The results obtained have been reported to GAPDH (Glyceraldehyde 3-phosphate dehydrogenase). The quality of the RNA was performed using the NanoDrop system. After (HE) staining we established the diagnosis of histopathological evidence. We identified 18 cases with benign ovarian tumors and 32 cases of malignant ovarian tumors. For the appreciation of the purity of RNA we analyzed the optical density (OD) at 260/280nm. 50 samples taken in the study we have obtained after the extraction of RNA with optimal purity in 34 of the cases, 10 of the samples showed a purity of the RNA from 1 -18, and in 6 samples the ratio 260/280nm it was less than 1. Of the 34 samples on which the amount of RNA it was situated in the optimum limits, 6 cases represented benign tumors and 28 malignant tumors. The values obtained from the reverse transcription and amplifications have been reported at the value of gene control GAPDH. After analyzing the results, the expression of NFKB was higher in malignant tumors compared with benign tumors. In the malignant tumors studied we have highlighted an overexpression of XIAP gene, compared with benign tumors. The result of the study suggests that the RNA purification from paraffin embedded tissue can be used for determinations of molecular semi-quantitative method by RT-PCR.

ANTITUMOR EFFECT OF *OCIMUM BASILICUM* EXTRACTS

**Souheil SAALANI¹, Teodora BUTIU², Marioara Nicoleta FILIMON², Daliborca VLAD¹,
Doina VERDES¹, Roxana POPESCU¹**

¹Victor Babes University of Medicine and Pharmacy, Timisoara, Romania

²West University of Timișoara, Faculty of Chemistry, Biology, Geography, Department of
Biology-Chemistry, Romania

*Current concerns of the medical and pharmaceutical industry are to develop new adjuvant therapeutic strategies with low-costs for cancer patients. Besides the cytotoxic potential on tumor cells, the plants compounds develop protective effects for healthy cells and can be used successfully as adjunctive therapy along standard therapy. The aim of this study was to optimize the extraction method of biologically active compounds of *Ocimum basilicum* (OM), and also to highlight the antiproliferative potential of these extracts on a panel of four types of cells lines. The plant product was represented by aerial parts of the plant. The biological material used to test the extracts was represented by normal cell line (H9C2 cardiomyocytes cell line) and cancer cell lines (HCT116 human colon tumor), K-562 human acute myeloid leukemia, U-937 human lymphoma). The plant material extraction was carried out by two solvents: 70% ethanol and hexane. After weighing, the extracts of OB in hexane and ethanol were resuspended in DMSO in the following final concentrations: 20mg/ml and 40mg/ml (hexan extract), and 50 mg/ml and 100 mg/ml (ethanol extract). In parallel, a control culture was used, to which no extract was added. Cells were seeded overnight at a density of 5×10^4 cells per well, in 96 well plates. In 24 hours from cultivation, the extracts were added in a quantity of 10 μ l to 90 μ l medium. After application of the extract, at 24 h, MTT cell proliferation test was performed. The OB extracts in ethanol solvent proved superior cytotoxicity to those obtained in hexan. The ethanol solvent allowed the extraction of an increased quantity of chlorophyll, which could produce false negative results. Anti-proliferative effect was visible on cells in adherent cell culture compared to the cells in the suspension. The proliferation rate was significantly reduced in HCT line in a manner dependent on the concentration of the extract. The OB extracts did not have antiproliferating character in H9C2 and U937 cell line. A low inhibition of proliferation rate was observed in K562. OB plant could be the source for different active compounds with potentially therapeutic effect.*

DEVELOPMENT OF 3D MCF7 CELL CULTURE FOR BREAST CANCER MANAGEMENT

**Codruta STINGU¹, Robert LUCACIU¹, Mihai MITULETU¹, Doina VERDES¹, Roxana
POPESCU¹**

¹ Victor Babes University of Medicine and Pharmacy, Timisoara, Romania

Although numerous anticancer therapeutic strategies show satisfactory results in vitro on monolayer cell culture or animal models, they do not produce the desired effects in clinical trials. In vitro monolayer cell culture does not present complex organisation of extracellular matrix environment of the cancer tissue, and animal models do not provide accurate results. The purpose of this study was to develop 3D cell aggregates of MCF7 cell line and to highlight the P450 cytochrome expression following administration of cisplatin. MCF7 cell line (human breast adenocarcinoma cell line) were cultured in specific medium DMEM supplemented with 10% penicillin/streptomycin, 10% heat inactivated FBS at 37°C in an atmosphere of 5% CO₂ in the incubator. Cells in the exponential growth phase were collected by trypsinization and seeded in 24 wells plates coated with agarose 1%, 10⁴ cells/well. Drug cytotoxicity test was performed after 72h incubation of mature aggregates (6th day) with different doses of cisplatin. Cell proliferation was observed by an increase in cluster size. Compact organotypic cultures were observed at 2-3 days. Size and morphology were assessed through optical microscopy. In 3D cell systems, P450 cytochrome is involved in drug metabolism, expression being lower than in 2D systems because of the decrease in contact surface between drug and cells. 3D systems are easy to obtain and they mimic the in vivo conditions. They also allow various genomics and proteomics tests, offering results that can be extrapolated to humans.

STRUCTURE AND COMPOSITION OF BENTHIC DIATOMS COMMUNITY FROM BEGA CHANNEL

Xenia-Daiana GLISICI¹, Adrian SINITEAN¹

¹West University of Timișoara, Faculty of Chemistry, Biology, Geography, Department of
Biology-Chemistry, Romania

Bega Channel represents the lower course of Bega river, that crosses the city Timișoara and it is the first functional waterway in Romania. The sampling was done in autumn and spring of 2014 and 2015 from all benthic domains: epilithic, epipellic, epipsamic and epiphytic. The qualitative analysis shows off the presence of 224 diatom species, and the quantitative analysis allowed us to calculate different indices related to the structure of communities (as Shannon Wiener diversity index, which was found to be moderate and the alluvial index with a quite moderate results).

**FLORISTIC SIMILARITIES AMONG COMMUNITIES OF EPILITHIC
DIATOMS WITHIN THE HYDROGEOLOGICAL SYSTEM JIUL DE
VEST – CERNA – CERNIȘOARA**

Raluca Codruța MARCHIȘ¹, Adrian SINITEAN¹

¹West University of Timișoara, Faculty of Chemistry, Biology, Geography, Department of
Biology-Chemistry, Romania

*Cerna's springs represents the biggest carst spring in Romania, which arises through the summing of some subterranean water flows originated in Jiul de Vest and Cernișoara. By collecting and processing epilithic samples of diatoms (which are certified bioindicators of many chemical and physical parameters in lotic ecosystems) from the three streams, we are trying to establish whether if in the composition and structure of the analyzed communities a greater role has the common origin of the water flows or the specific abiotic factors of each stream. Until now we identified a number of 88 taxons (77 species, two subspecies, eight varieties and one form) and we characterized the benthic diatoms communities installed on the three streams by the point of view the specific relative abundance, floristic similarity (Jaccard index), specific diversity (Shannon index). Beside the identified taxons from the three streams, the others processings have highlighted the dominant species, which is *Achnanthes minutissima* Kützing in all the samples, followed by other characteristic species of the mountain streams, a low floristic similarity between the three analyzed streams, respectively low levels of specific diversity.*

PRELIMINARY STUDY ON THE VEGETATIVE ORGANS BIOMASS OF AMBROSIA ARTEMISIIFOLIA

Ioana-Andreia MAIER, Nicoleta IANOVICI

¹West University of Timișoara, Faculty of Chemistry, Biology, Geography, Department of
Biology-Chemistry, Romania

*In this study were investigated on *Ambrosia artemisiifolia*, the collected samples being unbloomed, unbranched, exposed to sun and located close to the road traffic. Populations of which samples were made varies by geographical location, those being: Northern Italy (14 samples), Slovenia (16 samples), Hungary (25 samples). We determined the biomass of the dry substance from the vegetative organs by the gravimetric method. We performed the Statistical analysis using the ANOVA technique. Our data indicate that between the three populations there are significant differences concerning the biomass of the vegetative organs.*

COMPUTATIONAL STUDY OF THE HUMAN CYTOCHROME 2C19 INTERACTIONS WITH PHTHALATES

Denisa VOICULESCU¹, Adriana ISVORAN¹

¹West University of Timișoara, Faculty of Chemistry, Biology, Geography, Department of Biology-Chemistry, Romania

Human cytochrome 2C19 (CYP2C19) metabolizes about 10% of the clinically used drugs and represents a monooxygenase that belongs to the family P450. Its structure was determined by X-ray crystallography and it allows molecular modeling studies. Within this study we analyze the interactions of the human cytochrome 2C19 with phthalates by using the method of molecular docking. Phthalates are chemical compounds used as plasticizers and they are largely found in cosmetics, food packaging, furniture, paint and dyes. Such as, they are present in the environment and induce a high level of toxicity leading to many diseases. Phthalates considered in this study are: bis (2-ethylhexyl) phthalate (DEHP), dibutyl phthalate (DBP) and diethyl phthalate (DEP). Molecular docking study revealed that phthalates are able to bind to the enzyme CYP2C19, the strongest interaction being exhibited by diethyl phthalate ($\Delta G = -9,924$ kcal/mol). The results obtained in this study must be taken into consideration especially when some drugs that are metabolized by the enzyme CYP2C19 are administrated, because phthalates may inhibit the metabolism of drugs.

Acknowledgments: This work was supported by a grant of the bilateral Romania-France cooperation program, project PN-II-CT-RO-FR-2014-2-0002, "Modelling of drugs side effects: combination between in silicoprotein structure based approach with QSAR modelling".

ADME-TOX PROFILES OF SOME USUAL DRUGS

Miruna GUG¹, Luiza CONSTANTIN¹, Adriana ISVORAN¹

¹West University of Timișoara, Faculty of Chemistry, Biology, Geography, Department of
Biology-Chemistry, Romania

ADME-Tox profile describes the absorption, distribution, metabolization, excretion and toxicity of a chemical compound with therapeutic potential. The aim of this study is to produce the ADME-Tox profiles of a few usual drugs: acetylsalicylic acid, ibuprophen and caffeine using the online computational tool FAFDrugs3. The obtained results reveal a good oral bioavailability for all these drugs and reduced degrees of toxicity for acetylsalicylic acid and ibuprophen, caffeine being safety from the point of view of toxicity.