The Book of Abstracts

National Scientific Conference
"Knowledge - Key to Success"
4rd edition

wiedza
kluczem do sukcesu

18.01.2020 Toruń

Cykl konferencji interdyscyplinarnych

National Scientific Conference
„Knowledge – Key to Success”
IV edition

The Book of Abstracts

Toruń, January 18, 2020

Organizer:
Promovendi Foundation

Editor:
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Graphics:
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Promovendi Foundation Publishing

Address:
17/19/28 Kamińskiego st.
90-229 Łódź, Poland

KRS: 0000628361

e-mail: fundacja@promovendi.pl
www.promovendi.pl

ISBN: 978-83-955366-6-3

Circulation: 150 copies

CONFERENCE INFORMATION

The National Scientific Conference „Knowledge – Key to Success”
is organized especially for you.

The Conference has an interdisciplinary character. It is addressed to young scientists, starting with first and second degree students, through Ph.D. students, to people who have obtained a doctoral promotion in the last 3 years.

Our initiative aims to create opportunities for exchange of experiences and good scientific practices by representatives of the scientific community. Additionally, it aims to underline the important role of young researchers in the development of Polish science.

In the Conference, two types of participation are possible: passive or active, with active participation giving the opportunity to choose an oral presentation or poster. The conference materials will be published in the form of the Book of Abstracts and Book of Conference Articles with assigned ISBN numbers.

Scientific part of the Conference is supervised by Scientific Committee which contains of doctors and independent research workers from various Polish and foreign universities and industry representatives.

CONFERENCE PLACE

The Hotel Heban is located in two historic tenement houses built in the 17th and 19th centuries in the heart of Toruń's Old Town.

From here, you are just a few steps from charming streets, gothic monuments, museums, places associated with the most famous Toruń astronomer Mikołaj Kopernik and delicious gingerbread. Arranging our interiors, we tried to combine modernity with the historic character of both buildings, so that guests can fully feel the atmosphere of the Old Town.

Hotel Heban has two fully equipped conference rooms that can accommodate up to 50-60 people and a small chamber room for up to 20 people, ideal for smaller business meetings or trainings.

CONFERENCE SCHEDULE

HOTEL HEBAN

MAŁE GABARY 7, 87-100 TORUŃ

JANUARY 18, 2020

08:00 – 15:00	**Registration** *(Reception)*	
08:45 – 09:00	**Opening of the Conference** *(Hall 3)*	
09:00 – 10:30	**Workshop** *(Hall 3)*	
10:30 – 12:45	**Poster Session** *(Hall 3)*	
P-01	Balcerowska Sara	Assesment of dendritic cells phenotype in peripheral blood of patients diagnosed with heart failure of dilated and ischaemic origin
P-02	Bryła Adrian	New analogs of HC-030031 as TRPA1 channel antagonists – analgesic and anti-inflammatory activity
P-03	Chmielewski Marek Nojek Alicja Wachowski Sebastian	Characterization of fire resistivity of materials used in door frames with the use of mobile setup for high temperature resistance tests
P-04	Dłużniewski Paweł	Role of regulatory B-cells in regulation of gastritis associated with Helicobacter pylori infection in children
P-05	Isbrandt Marek	Chemical recycling of PLA as a way to extend the life cycle of this material
P-06	Isbrandt Marek	Selected properties of RPU/PIR foams based on the product of chemical recycling of PLA
P-07	Jędrzejczyk Iwona Rewers Monika	Flow cytometry as a tool in plant research
P-08	Juszczak Michał	Evaluation of CORM-2 antioxidant properties in human peripheral blood mononuclear cells (PBMCs) and HL-60 cells
P-09	Kajdanek Jakub	The effect of novel dressing materials in the form of chitosan sponges on blood coagulation pathways
P-10	Kluska Magdalena	Effect of kaempferol and its glycoside derivatives isolated from lentils (Lens culinaris Medik.) on apoptosis induced by etoposide in HL-60 cells
P-11	Kolańska-Dams Ewelina	Application of thromboelastometry in medicine
P-12	Kolańska-Dams Ewelina	Apelin levels in polycystic ovary syndrome
P-13	Kowalska Magdalena	Evaluation of cardiotoxicity of selected substances using in silico calculation methods
P-14	Kowalska Magdalena	In silico methods as a source of data on drug toxicity
P-15	Kozłowski Szymon	Research on the impact of selected sulphide lubricants on physicochemical and tribological properties of friction material
P-16	Kozłowski Konrad (ENG)	Persin and its potential applications in breast cancer treatment
P-17	Kuczyńska Martyna	Do we have oocyte quality markers?
P-18	Laskowska Dorota Ziółkowska Ewa	3D printing- the future of the medicine?
P-19	Lik Monika	Impact of the technological cycle on the daily activity of the grey meerkat (Suricata suricatta)
P-20	Młoda-Brylewska Klaudia	Determinants of the choice of private labels by consumers
P-21	Ornatowska Anna	A solution for grandma and grandpa?

P-22	Rzeszotarska Magdalena (ENG)	What ernery hydride can be made of stainless steel?
P-23	Soszyńska Anna	The role of Fgf4 and Activin A in regulation of development of the mouse chimeric embryo
P-24	Stec Aleksandra	Synthesis and conformational studies of glycoprotein N homolog of bovine herpesvirus 1 (BHV-1) by using CD, NMR and molecular modeling
P-25	Stelmaszczyk Aleksandra	Hostile takeover at the market
P-26	Stelmaszczyk Aleksandra	Smart Contracts
P-27	Szatkowska Magdalena	The role of microRNA in pathogenesis of cancer
P-28	Szczepanik Szymon	Hollow chitosan-silica nanospheres as carriers in cancer therapy
P-29	Toczek Klaudia	Ethylene – propylene elastomeric materials containing recycled rubber shreds
P-30	Tomczak Katarzyna	Flexible screen printed electrodes on textiles
P-31	Wawrzyniak Dominika	Materials with enhanced mechanical and viscoelastic properties based on elastomers and elastomeric foam waste
P-32	Zając Gabriela	The methylation analysis of the promoter regions of the FAS suppressor gene in people with inflammatory bowel disease
P-33	Zaremba Alicja	Biological activity of new 1,2,4-triazole derivatives with methacrylic acid moiety
P-34	Zielińska Andżelika	Assessment of biological properties of new 1,2,4-triazole derivatives with propanoic acid moiety
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Technical Sciences (TS)		
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10:40 – 10:50	Biziorek Sara (ENG) Maniak Lilianna (ENG)	The use of heuristic methods in the application of design antinomies in the food industries
10:50 – 11:00	Chuchracka Klaudia	Toxic metals in supplements
11:00 – 11:10	Czarnecka Elżbieta	The future of disposable diapers
11:10 – 11:20	Dzeikala Oleksandra	The use of tanning waste to improve the biodegradation of SBR rubber
11:20 – 11:30	Gutmańska Karolina	Quality of surface Waters in the Coastal Landscape Park
11:30 – 11:40	Kalisz Jacek	Surface activity of carbon nanoparticles and molecule of protein in biomedical applications
11:40 – 11:50	Kopczyńska Elżbieta	The influence of graphene oxide presence in food films on the adhesion of food-borne pathogens
11:50 – 12:00	Kornacka Joanna	The influence of nanodiamond on the adhesion of bacterial pathogens in food packages
12:00 – 12:10	Mencel Oskar Pustelnik Adrianna	Prototype of folding footbridge
12:10 – 12:20	Ronda Oskar	Influence of phenol production waste landfills on mushroom consumption safety in the areas around Zachem factory
12:20 – 12:30	Sowik Jakub	ZnO QDs modified with rare earth metals - preparation and charakteristics
12:30 – 12:40	Szulc Marta	Rheological properties of hyaluronic acid, poly (N-vinylpyrrolidone) and their mixtures
12:40 – 12:50	Tomczak Maciej	The impact of the temperature on the operation of mobile devices components

13:00 – 13:50	**Dinner TS**	
Natural Sciences (NS)		
13:00 – 13:10	Drzyzga Alina	STING protein as an anticancer therapy target
13:10 – 13:20	Franczyk Marcin	State and opportunities for the development of the tourism in Bieszczady
13:20 – 13:30	Góralczyk-Bińkowska Aleksandra (ENG)	Characterization and toxicity of azo dyes
13:30 – 13:40	Iwański Damian	Optimalization of Dionaea muscipula propagation in in vitro cultures
13:40 – 13:50	Kolasińska Anna	How many grasslands do we really have? The problem with grassland mapping in Poland
13:50 – 14:00	Litwin Anna (ENG)	Prospects of using entomopathogenic fungi to remove residues of harmful substances from the natural environment
14:00 – 14:50	**Dinner NS**	
15:00 – 15:10	Liudvytska Oleksandra (ENG)	The presence of rhubarb in the diet may support the cardiovascular health
15:10 – 15:20	Machała Paulina	Biological properties of extracts from bark and leaves of Fraxinus excelsior L.
15:20 – 15:30	Sułek Marianna	Prospects for the development of the packaging market in Poland
15:30 – 15:40	Mironenka Julia (ENG)	Antibiotic peptides from Trichoderma species
15:40 – 16:00	Nocoń Zofia	Application of rising plate meter for assesing mountain pasture productivy
16:00 – 16:10	Nowak Monika	4-n-nonylphenol biodegradation by genus Metarhizium
16:10 – 16:20	Piekarska-Radzik Lidia	Dedicated probiotics and prebiotics – human skin
16:20 – 16:30	Piekarska-Radzik Lidia	Identification of Staphylococcus bacteria isolated from human skin
16:30 – 16:40	Radziuk Hanna	Soil aggregate stability of young moraining hummocky plateau soils in north poland
16:40 – 16:50	Rudziak-Tałałaj Anna	A research on the use of modern thermal imaging techniques in the assessment of contamination of plant products
16:50 – 17:00	Rudziak-Tałałaj Anna	Monitoring of microbiological quality of selected meat products with using a thermal imaging camera
17:00 – 17:10	Sas Karina	Molecular evidence of widespread prevalence of intracellular bacteria Cardinium in parthenogenetic females of an ostracod Heterocypris salina (Brady, 1868)
17:10 – 17:20	Skonieczna Joanna	The rabbit's urethra as a model in urogenital researches – morphology and morphometry
17:20 – 17:30	Ścieszka Sylwia	Evaluation of selected bioactive components algae Chlorella vulgaris
17:30 – 17:40	Ścieszka Sylwia	Survival of lactic acid bacteria in soy drink with the addition of algae
17:40 – 17:50	Urbańska Magdalena	Gamification in soil science - an educational implications
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Humanities Sciences (HS)		
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10:40 – 10:50	Blacha Marek	The historical wheel of fortune(?)
10:50 – 11:00	Janiszewska-Szczepanik Agnieszka	"The Jonah complex" - unheralded factor inhibiting creative self-realization
11:00 – 11:10	Kopcińska Beata Dagmara	The role of an authority in the Territorial Defence Forces

11:10 – 11:20	Kopcińska Beata Dagmara	Development of Territorial Defence Forces in Poland - assumptions and current state
11:20 – 11:30	Kurzaj Anna	The definition of adjectives regarding German-Polish contastive grammar
11:30 – 11:40	Majka Aleksandra	The metalinguastic awareness of the 3rd grade primary school children in the light of verbal comedy
11:40 – 11:50	Mrozek Michał	Labour market in the voivodeships of the macroregion of the Eastern Poland in 2016-2018
11:50 – 12:00	Pańka Daria (ENG)	The influence of English on the Polish corporate language used on Facebook
12:00 – 12:10	Pazder Przemysław	The European Union and Belarus
12:10 – 12:20	Wilczak Marcelina	Freeganism – anti-consumption lifestyle or a fad?
12:20 – 12:30	Zarębska Kinga	Sustainable development in the opinion of students of the Maritime University in Gdynia
12:30 – 12:40	Czeczotko Maksymilian	Organic private labels of retail chains as an example of price competitiveness on the Polish market
13:00 – 13:50	**Dinner HS**	
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Medical Sciences (MS)		
13:00 – 13:10	Belcarz Maria	Infecion of surgical sites as an adverse event in patient care
13:10 – 13:20	Dudzińska Katarzyna Wilczyńska Elżbieta	Wicker production as a local product of the niżański poviat
13:20 – 13:30	Durślewicz Justyna	Is the use of molecular biology technique necessary to suport immunohistochemical staining for cases assessed as equivocal or non-specific?
13:30 – 13:40	Dyńka Damian	The impact of coffee consumption on the human organism
13:40 – 13:50	Gonkowski Ignacy	The correlation between tobacco smoking and obesity
13:50 – 14:00	Gonkowski Ignacy	Impact of prolonged tobacco smoking on achieving of potential growth
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15:10 – 15:20	Karaś Karolina Petrovets Vasylyna	Tourist potential and opportunities for the development of dukla municipality in the opinion of residents
15:20 – 15:30	Kozioł Paulina	Motives for participation in physical activity of students of the university of the third age in siedlce
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15:40 – 15:50	Makówka Aneta Muzyczka Anna Pelc Barbara	The contraception among youth - awareness of choice
15:50 – 16:00	Manicki Krystian	Speech disorders in adult neurological patients
16:00 – 16:10	Markiewicz Marlena	Selected markers of inflammation and their role in assessing the risk of lung cancer
16:10 – 16:20	Nuszkiewicz Jarosław	Melatonin – a molecule with antioxidant properties in the aspect of the influence of ionizing radiation on living organisms
16:20 – 16:30	Rzeszot Janina	Movement in the fresh air as a great way to fight menopausal ailments
16:30 – 16:40	Sitek Martyna	Modern Perception of Human Body on the Example of Body Fitness
16:40 – 16:50	Stachurski Przemysław	The evaluation of the occurrence of overweight and obesity among the city and country youth and their impact on subjective physical fitness

16:50 – 17:00	Stachurski Przemysław	The impact of smoking by parents and other factors leading to a smoking habit among the youth
17:00 – 17:10	Veresklia Anastasiia Dudycz Natalia	The popularity of extreme tourism among students of the University of Rzeszów at the faculty of Physical Education
17:10 – 17:20	Wiśniewski Karol	Myo-inositol and its potential therapeutic uses
17:20 – 17:30	Wiśniewski Karol	Toxicity induced by myo-inositol on Zebrafish embryos
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POSTER SESSION

ASSESMENT OF DENDRITIC CELLS PHENOTYPE IN PERIPHERAL BLOOD OF PATIENTS DIAGNOSED WITH HEART FAILURE OF DILATED AND ISCHAEMIC ORIGIN

Sara Balcerowska* (1), Małgorzata Wiese-Szadkowska (1), Małgorzata Wyszomirska-Gołda (1), Anna Helmin-Basa (1), Lidia Gackowska (1), Jarosław Pietrzak (2), Grzegorz Grześk (2), Jacek Michałkiewicz (1)

(1) Department of Immunology, Nicolaus Copernicus University, Collegium Medicum in Bydgoszcz
(2) Department of Cardiology, Jan Biziel University Hospital No. 2 in Bydgoszcz

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A few words about the author:

Biotechnology graduate and currently a laboratory medicine student. Interested in human immunology and genetics.

Abstract:

Heart failure is one of the most common causes of death these days. Its patogenesis is a complex process. Research conducted in recent years linked the development of heart failure to immunity and inflammation. Dendritic cells are key inductors of tolerance and immunological response, but their role in heart failure is still yet unknown. Because of their function, they recently became an interesting target of study in immunotherapy against heart failure.

This study's objective was to assess the phenotype and maturation of dendritic cells in dilated cardiomyopathy (DCM) and ischaemic cardiomyopathy (ICM) and try to find a correlation between those characteristics and the aetiology of heart failure.

This study used peripehrial blood of DCM and ICM patients, who made up the treatment group and healthy subjects, who made up the control group. The phenotype assessment was conducted based on subpopulation markers: CD11c, CD123 and maturation markers: CD86, CD83.

No statistically significant differences in subpopulation distribution were detected between the treatment groups or compared to the control group. There were differences in expression of maturation markers between the treatment groups and compared to the control group.

Presented results, may suggest that there is a connection between heart failure and the phenotype of dendritic cells, but the essence of it is not clear. Predominance of mature DC may indicate autoimmunologic origins of HF. Further tests are required.

Keywords:

dendritic cells, heart failure, cardiomyopathy

NEW ANALOGS OF HC-030031 AS TRPA1 CHANNEL ANTAGONISTS – ANALGESIC AND ANTI-INFLAMMATORY ACTIVITY

Adrian Bryła* (1), Marietta Ślusarczyk (2), Małgorzata Zygmunt (1), Grażyna Chłoń-Rzepa (2), Grzegorz Kazek (1)

Jagiellonian University, Medical College, Cracow, Poland
(1) Department of Pharmacological Screening
(2) Department of Medicinal Chemistry

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A few words about the author:

Adrian Bryla is a PhD student of Pharmacy at Jagiellonian University, Medical College. During specialization in clinical pharmacy. Pharmacist working in wards at one of Cracow's hospitals. Interested in pharmacology and optimizing pharmacotherapy.

Abstract:

The rapid acquistion of analgesic tolerance, addiction to opioid analgesics and numerous side effects are the reason of searching for new effective analgesics with greater safety. One of such research directions is research in the group of compounds affecting the TRPA1 ion channel which can perform an important function in pain (including neuropathic pain) and inflammation for example in asthma and other chronic respiratory diseases.

Our research (among purine-2,6-dione derivatives) have enabled the selection of a number of derivatives with analgesic and anti-inflammatory activity. Their mechanism of action was related with antagonizing of TRPA1 channel.

The aim of this study was to evaluate the analgesic and anti-inflammatory activity of several new series of HC-030031 analogues belonging to nitrogen derivatives of heterocyclic system (xanthine and benzimidazole) with amide and hydrazide moieties as TRPA1 channel antagonists.

For new compounds inhibitory properties of the human TRPA1 channel (hTRPA1) have been determined (in vitro) by fluorescent method by kinetic analysis of calcium ion influx into transfected human HEK-293 cells using Fluo-4. Selected compounds with the highest activity were submitted for in vivo studies to assess their analgesic and anti-inflammatory activity in animal pain models (Writhing test, Phenylbezoquinone induced pain test, Neuropathic pain test) and in animal models of the inflammatory process (Formalin test, Carrageenan edema test).

Keywords:

TRPA1 channels, antagonist, inflammation, pain

CHARACTERIZATION OF FIRE RESISTIVITY OF MATERIALS USED IN DOOR FRAMES WITH THE USE OF MOBILE SETUP FOR HIGH TEMPERATURE RESISTANCE TESTS

Marek Chmielewski, Alicja Nojek, Sebastian Wachowski*

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A few words about the authors:

The authors of this work are the members of a research team funded in 2018 and composed of two material scientists and two constructors. Their aim is to develop innovative safe fire protectiondoors.

Abstract:

Modern requirements of high quality and resistance towards elevated temperatures, i.e. in the case of fire, of household and office doors are rising demands for application of modern technology and new materials in door industry. In order to follow the dynamics of the market, especially in the case of fire protection door, it is essential to seek for novel functional materials. Important part of implementation of new technologies and materials is to develop tests verifying the actual improvement induced by chosen modifications. Morad company, with its R&D team, has devoted efforts to resolve these challenges. We developed a mobile and practical setup for high temperature resistance measurements. With the use of self-constructed device we were able to characterize the changes of the fire resistivity of the whole frame resulting from usage of different filling materials. The work presents results of comparative studies of fire resistivity of different materials used as fillers in door frames.

The work is a part of the project no POIR.01.01.01-00-1149/17 entitled “Development of innovative system of aluminium fire protection profiles”. The project is implemented under Measure 1.1 R&D projects of enterprises Sub-measure 1.1.1 Industrial research and development carried out by the enterprises of the Intelligent Development Operational Program 2014-2020 co-financed by the European Regional Development Fund.

Keywords:

fire resistance

ROLE OF REGULATORY B-CELLS IN REGULATION OF GASTRITIS ASSOCIATED WITH HELICOBACTER PYLORI INFECTION IN CHILDREN

Anna Helmin-Basa, Jacek Michałkiewicz, Paweł Dłużniewski*

Department of Immunology,
Collegium Medicum in Bydgoszcz of Nicholaus Copernicus' University in Toruń

*pdluzniewski@gmail.com

A few words about the author:

I am on a final year of medical laboratory studies and this research is a part of my Master's thesis. I am being supervidsed by Dr. Anna Helmin-Basa and Prof. Jacek Michałkiewicz. It was their suggestion for me to join this conference.

Abstract:

Purpose. To investigate the change in frequency of regulatory B-cells (Bregs) in children affected by gastritis with and without Helicobacter pylori infection. Methods. 13 children were studied; 5 were infected by Helicobacter pylori. The frequency of circulating Bregs (CD24+, CD27+; CD24+, CD38+) was assessed using flow cytometry. Results. Breg frequency was higher in children with H. pylori infection than in non-infected controls. Additionally, there was an even further increase in frequency in children with unsuccessful eradication of the bacteria. Conclusion. This study shows that there is an increase in frequency of anti-inflammatory Bregs in children infected with Helicobacter pylori in comparison to non-infected children. This increase may suggest that these cells suppress inflammatory state associated with this chronic disease. The research was financed by a grant received from Narodowe Centrum Nauki (National Centre of Science) MINIATURA 2 nr 2018/02/X/NZ6/01760.

Keywords:

Bregs, gastritis, Helicobacter pylori

CHEMICAL RECYCLING OF PLA AS A WAY TO EXTEND THE LIFE CYCLE OF THIS MATERIAL

Joanna Paciorek – Sadowska, Marek Isbrandt*, Marcin Borowicz

Kazimierz Wielki University, Institute of Materials Engineering, Department of Chemistry and Technology of Polyurethanes, J. K. Chodkiewicza Street 30, 85-064 Bydgoszcz, Poland

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A few words about the authors:

The authors specialize in obtaining new polyol raw materials derived from chemical recycling (eco-polyols) and from vegetable raw materials (bio-polyols), which have been successfully used for the synthesis of rigid polyurethane foams.

Abstract:

Global production of plastics amounted to 359 million tons in 2018 and increased by 11 million tons compared to the previous year. This proves the rapid development of this branch of industry, which in the future will face a very large amount of polymer waste. Biodegradable polymers will play an increasingly important role, to meet this challenge.

Biodegradation as a process has advantages and disadvantages. Its advantage is the fact, that biodegradable polymers decompose under appropriate conditions into simple chemical compounds, such as water and carbon dioxide. However, its disadvantage is the high cost of building a composting plant. The negative aspect is also fact that biodegradation does not benefit from the possibility of biopolymer recovery and its secondary processing.

Therefore, a method of chemical recycling of pure and waste polylactide from 3D printing was proposed as a form of extending the life cycle of this material. The final products of the glycolysis reaction were an oligomeric polyhydric alcohols. The obtained eco-polyols were subjected to analytical, physicochemical and spectroscopic tests (FTIR, 1H NMR, 13C NMR) in order to confirm its suitability for the synthesis of polyurethane materials. The research results were shown that the new eco-polyols can be an alternative to petrochemical polyols. The presented studies perfectly match the trends of sustainable development doctrine and rules of green chemistry.

Keywords:

chemical recycling, polylactide, eco – polyols, raw materials

SELECTED PROPERTIES OF RPU/PIR FOAMS BASED ON THE PRODUCT OF CHEMICAL RECYCLING OF PLA

Joanna Paciorek – Sadowska, Marek Isbrandt*, Marcin Borowicz

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A few words about the authors:

The authors specialize in the physical and chemical modification of rigid polyurethane/polyisocyanurate (RPU/PIR) foams in terms of environmental protection, using mainly bio-fillers, bio-polyols and eco-polyols of plant origin.

Abstract:

In 2018, the European Union introduced an obligation to implement the Circular Economy Doctrine for Member States. This is related to e.g. the search for innovative solutions in the area of production, recycling and extending the life cycle of polymeric materials.

The production of polyurethanes in Europe is developing very fast. It amounted to 4.04 million tonnes in 2018, and it is higher by 3% compared to the previous year. Statistical data show how important role plays this material in Europe. The furniture and construction industry are the main applications for this material.

Presented research perfectly fits into the strategy of the Circular Economy. Eco-polyols derived from the chemical recycling of pure and waste poly(lactic acid) from 3D printing obtained as a result of glycolysis process were used to synthesis of RPU/PIR foams. The performance properties of the obtained materials, such as flammability (LOI, vertical and horizontal tests), aging resistance (changes of linear dimensions and geometric volume), water absorption, brittleness and mechanical strength, were determined as a result of the tests.

The results of the tests confirmed that eco-polyols based on PLA can be an alternative to petrochemical polyols. The properties of the obtained foams based on eco-polyols had similar properties to those obtained on the basis of petrochemical polyols.

Keywords:

rigid polyurethane – polyisocyanurate foams, eco – polyols, properties of polyurethanes

FLOW CYTOMETRY AS A TOOL IN PLANT RESEARCH

Iwona Jedrzejczyk*, Monika Rewers

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A few words about the authors:

I. Jedrzejczyk specializes is genome size estimation, ISSR and SCoT markers in plants. M. Rewers is interested in endoreduplication and cell cycle analysis in plants, as well as seed biology and plant cytogenetics.

Abstract:

Flow cytometry (FCM) is mostly applied for the genome size and ploidy estimation, and for the analysis of cell cycle activity and endoreduplication. Ease of the sample preparation, fast acquisition and accuracy have made FCM very popular in the plant research. Any tissue/organ (e.g. seed, seedling, leaf, root, flower, pollen grains, dried or frozen tissue) containing intact nuclei can be used for the analysis. Sample preparation includes plant material chopping in a Petri dish with a razor blade in the presence of a nuclei isolation buffer and a fluorescent dye (e.g. PI, DAPI). Obtained suspension of stained nuclei is analyzed using a flow cytometer; thousands of nuclei can be examined within a few minutes. The knowledge of genome size can be useful in plant taxonomy, phylogenetics as well as in molecular research. Analyses of ploidy is important in plant breeding for the control of ploidy stability during micropropagation, screening for haploid plants and interspecific hybrids, and the detection of aneuploidy. FCM analysis can be used to establish mitotic activity in a certain tissue, which often corresponds with the physiological state of a plant or its organ. Therefore, it can be used by seed producers for assessing an optimal harvest time and for following of presowing treatments. FCM is also a very convenient method to detect endoreduplication in different plant organs/tissues. Application of FCM can be helpful in understanding of this phenomenon.

Keywords:

DNA content, genome size, ploidy, cell cycle, endoreduplication

EVALUATION OF CORM-2 ANTIOXIDANT PROPERTIES IN HUMAN PERIPHERAL BLOOD MONONUCLEAR CELLS (PBMCS) AND HL-60 CELLS

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A few words about the author:

I am in my second year at the PhD Studies in Molecular Genetics, Cytogenetics and Medical Biophysics at the University of Lodz. My doctoral thesis concerns the biological properties of carbon monoxide releasing compounds (CORMs).

Abstract:

CO releasing molecules have been extensively tested for their anticoagulant, cardioprotective and antiproliferative activity. It was decided to study one of these compounds – CORM-2 (tricarbonyldichlororuthenium (II) dimer), in the active form (CORM-2) and in the inactive form (iCORM-2) in the context of potential antioxidant properties. We studied the effects of CORM-2 and iCORM-2 on the level of oxidative DNA damage induced by hydrogen peroxide (H_2O_2). Moreover, we studied the effect of these compounds on the level of reactive oxygen species in human peripheral blood mononuclear cells and HL-60 cells.

The analysis of DNA damage was performed using the comet assay in the alkaline version. The assessment of the level of reactive oxygen species was carried out using the H2DCFDA probe. We observed a reduction of DNA damage after preincubation of the cells with 40 μM CORM-2/iCORM-2 compared to DNA damage induced by 25 μM H_2O_2 only. The reduction of DNA damage was significant in both types of cells and was clearly greater for CORM-2. The level of reactive oxygen species was tested after preincubation of the cells with 40 μM CORM-2/iCORM-2 followed by treatment with 1 and 5 mM H_2O_2. A reduction in the level of reactive oxygen species was observed in both cell types especially pre-incubated with CORM-2.

The obtained results indicate the existence of the antioxidant potential of CORM-2, especially in the active form, so the role of carbon monoxide in this aspect may be crucial.

Keywords:

antioxidant properties, DNA damage, cancer, CORMs

THE EFFECT OF NOVEL DRESSING MATERIALS IN THE FORM OF CHITOSAN SPONGES ON BLOOD COAGULATION PATHWAYS

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A few words about the author:

I am a PhD student in my 3rd year of study in Department of General Biophysics. Topic of my PhD thesis is examination of the properties of chitosan biofilms enriched with amino acid supplements in the context of their use as wound dressing materials.

Abstract:

The skin is an external organ that covers the whole body, it provides protection against invasive factors. To perform a fulfilling task it is required to maintain its continuity, which could be disrupted by random accidents or necessary operations that result in wounds.

For the wound healing process to be carried out correctly, it is necessary to use dressings that are available as additional protection. Chitosan based structures are a promising dressing material. Physicochemical properties of chitosans, i.e. molecules that belong to the group of polysaccharides (derivatives of chitin), can be used to create a variety of structures, such as sponges, which makes them perfect candidates for the production of wound dressings. They also show the potential to fill the role of the medicinal substance carrier. Moreover, they express excellent bioactive and and antimicrobial activity.

The aim of the study will be to investigate the effect of modified peptide derivatives of chitosan nonwovens as dressing materials during in vitro studies on cultures associated with major fibroblasts and keratinocytes and to investigate its influence on the cell cycle and the way those fibres affect the process of healing.

In this study, the effect of tested chitosan nonwovens enriched with amino acid supplements on the blood coagulation process was examined. Three coagulation pathways were investigated: prothrombin time (PT), activated partial thromboplastin time (APTT), thrombin time (TT).

Keywords:

biopolimer, chitosan, wound dressing, coagulation

EFFECT OF KAEMPFEROL AND ITS GLYCOSIDE DERIVATIVES ISOLATED FROM LENTILS (LENS CULINARIS MEDIK.) ON APOPTOSIS INDUCED BY ETOPOSIDE IN HL-60 CELLS

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A few words about the author:

I am a PhD student of full-time Doctoral Study in Molecular Genetics, Cytogenetics and Medical Biophysics at the University of Lodz. In my PhD thesis, I am investigating the effect of plant compounds on anticancer activity of etoposide.

Abstract:

Polyphenolic compounds, like kaempferol, quercetin, genistein or resveratrol have a number of anticancer properties. These substances inhibit the proliferation of cancer cells, angiogenesis and metastasis. Plant-derived compounds can also modulate the activity of anticancer drugs. We suppose that kaempferol and its glycoside derivatives may have an impact on chemotherapy based on etoposide. Etoposide is a chemotherapeutic agent that acts by inducing free radicals, inhibiting topoisomerase II activity and introducing DNA damage. Etoposide is used to treat many cancers, including acute leukemia.

The aim of our work was to determine the effect of kaempferol and its glycoside derivatives isolated from the aerial parts of lentils (Lens culinaris Medik.) on the level of etoposide induced apoptosis. Our studies were conducted on human acute promyelocytic leukemia cell line HL-60. We determined the level of apoptosis after 24 h incubation with etoposide, kaempferol, kaempferol glycoside derivatives and combinations of these compounds. The level of apoptosis was determined by staining of cells with propidium iodide (PI) and Annexin V. Cell analysis was performed using a flow cytometer. Obtained results indicate that kaempferol does not affect the level of apoptosis induced by etoposide in HL-60 cells. In addition, glycoside derivatives of kaempferol isolated from the aerial parts of lentils reduce the level of apoptosis in these cells.

Keywords:

cancer, apoptosis, kaempferol

APPLICATION OF THROMBOELASTOMETRY IN MEDICINE

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A few words about the author:

I graduated from Collegium Medicum. I am a doctor of emergency medicine and a PhD student at the Department of Pathophysiology. I like nature and documentary films. I would like to visit Europe. Privately, I am a mother of two sons.

Abstract:

Thromboelastometry is one of diagnostic methods of monitoring haemostasis that shows on graphs and numbers not only viscoelastic properties of the clot formation but also fibrynolisis. As the test is performed bedside it allows for real-time assessment of disturbances in coagulation process. Thromboelastometry enables goal-directed therapy of haemostasis disorders in patients with massive bleeding and differential diagnosis. Thromboelastometry is used in many fields of medicine; e.g diagnosis of early coagulation abnormalities in trauma patients, support in cardiac surgery and neurosurgery, an assessment of coagulation in liver transplantation and in the obstetric population.

Keywords:

thromboelastometry, haemostasis, coagulopathy

APELIN LEVELS IN POLYCYSTIC OVARY SYNDROME

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Abstract:

Background: Polycystic ovary syndrome (PCOS) is the commonest endocrine disorder at reproductive age, characterized by heterogeneous presentation of hyperandrogenism, ovulatory dysfunction, and polycystic ovarian morphology (PCOM). PCOS patients are more vulnerable to metabolic disorders: insulin resistance and obesity. Abnormal levels of adipokines are detected in patients with insulin resistance. There are several adipokines whose role has been thoroughly investigated and many that we still know very little about, for example apelin. Apelin is a peptide included to adipokines produced by the adipose tissue.

Objective: The objective of our study was to evaluate serum apelin levels among women with PCOS.

Methods: Case control study enrolled 40 women diagnosed with PCOS and 37 healthy control women. We compared the serum apelin levels in PCOS and control group. We divided the PCOS group into two subgroups (BMI<25 and BMI ≥25) and analyzed the differences in body mass index (BMI) in women with polycystic ovary syndrome.Serum apelin levels (ng/ml) were assessed by ELISA.

Results: In PCOS patients apelin levels were lower than those of the control group. There were no differences in apelin levels depending on BMI index in the group with PCOS.

Conclusions: In many studies, included ours, decreased secretion of apelin in obesity have been linked with development of insulin resistance.

Keywords:

apelin, polycystic ovary syndrome

EVALUATION OF CARDIOTOXICITY OF SELECTED SUBSTANCES USING IN SILICO CALCULATION METHODS

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The authors of the research are employees, PhD student and graduate students of the Department of Organic Chemistry of the Faculty of Pharmacy in Bydgoszcz.

Abstract:

Placing a new drug on the market is a great challenge. The reason for this is the growing safety requirements for the use a potential drug. It is one of the key elements that should be analysed in detail when conducting research on a new compound. Until now, research has focused on checking the potency of the compound's impact on the hERG gene, which is responsible for encoding the potassium channel alpha subunit. To assess toxicity, a group of researchers from the Ion Channel Working Group (ICWG) [1] proposed thorough analysis of the compound's effect on several other ion channels that are important in cardiac activity. The latest research involve the checking the substance interactions of with not only potassium, but also calcium and sodium channels. In the first stages of tests on a new medicine, the assessment of its toxic effect on the above-mentioned channels is determined emploing in silico calculation methods.

In this discussion, molecular docking studies of batrachotoxin were carried out to the three most important ion channels proposed by ICWG: the hNav1.5 sodium channel, the hCav1.2 calcium channel and the hKv11.1 potassium channel. The obtained results confirm the literature data - batrachotoxin is a strong sodium channel inhibitor.

The results of the studies also proof the usefulness of in silico methods in tests on a new drugs.

Keywords:

batrachotoxin, in silico tests, ion channels

IN SILICO METHODS AS A SOURCE OF DATA ON DRUG TOXICITY

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A few words about the authors:

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Abstract:

Before a medicine can be registered, it must be tested for a behavior of an active substance in a living body. Most of medications has side effects, so the safety assessment plays a crucial role in registration process. Advanced calculation algorithms are useful in prediction of the side effects. Determination and analysis of numerical values of toxicity parameters of the test substance gives the possibility of a preliminary assessment of its toxicity.

In recent years the methods of cardiotoxicity testing have changed. In the last decade of the twentieth century it was found that KV11.1 plays a crucial role in cardiac repolarization. According to the guidelines of the Comprehensive in vitro Proarrhythmia Assay (CiPA) it is important to check also the toxic effects of the new drugs on the two additional ion channels: NaV1.5 and CaV1.2 . Voltage gated ion channels are largely responsible for the electrophysiological activity of the heart. These channels shaping the cardiac action potential.

In the present study the cardiotoxicity of tiagabine caused by ion channel effects has been assessed. The tests were carried out using the ProTox II software and AutoDock Tools. The results obtained for tiagabine were compared with those for nifedipine - a strong CaV1.2 inhibitor.

Tests have shown that in silico methods are a useful source of data on drug toxicity. The obtained results confirmed the literature reports regarding the safety profile of tiagabine

Keywords:

tiagabine, cardiotoxity, in silico methods

RESEARCH ON THE IMPACT OF SELECTED SULPHIDE LUBRICANTS ON PHYSICOCHEMICAL AND TRIBOLOGICAL PROPERTIES OF FRICTION MATERIAL

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Szymon Kozlowski is now on master course of Chemical Technology and he is an active member of scientific club SKN "NANO". Maciej Szlitching is a manager of research and development team in TOMEX company.

Abstract:

The first disc brakes were invented in 1902 by the English engineer Frederick Lanchester. Brake pads are an integral part of these brakes. Over the years, scientists have modified brake pads. Their composition, process parameters and processing were changed. The goal is still to achieve high braking power values, good control during braking, while maintaining the optimal price for one brake pad, the pad cannot also squeak during braking because it significantly affects driving comfort. Brake pads are such a good solution that they still leave a lot of room for improvement in terms of braking power obtained, it is estimated that cars of the future will continue to use this solution.

One of the very important components of brake pads are solid lubricants. These are metal compounds capable of forming so-called tribological film on the friction surface. This is to stabilize the friction coefficient at elevated temperatures. Metal sulphides and graphite are most often used.

Antimony trisulphide is currently the most commonly used. However, it is suspected of being carcinogenic, which is why research is being conducted to find other compounds that will achieve a compromise between price and properties, and will also be environmentally friendly.

Keywords:

solid lubricants, brake pad, environment, health

PERSIN AND ITS POTENTIAL APPLICATIONS IN BREAST CANCER TREATMENT

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A few words about the author:

Young student of Chemical and Biochemical Engineering in Technical Unviersity of Lodz, here to show his interests and put them to fruitful discussion.

Abstract:

Persin is an organic compound derivative from fatty acid (direct deoxy-derivative from glyceride, due to structural homology) commonly found in leaves, seeds and fruits of the avocado tree (latin. persea americana), which is harmless to humans, but can be harmful to domestic animals such as cats, dogs and especially birds when the toxin is ingested. Is was also observed that the lactating animals such as cows experience a decrease in their milk production capabilities from their mammary glands. This effect encouraged scientist to futher research this compound.

On this poster possible application in medicine will be reviewed: treatment of breast cancer by inducing apoptosis in cancer cells.

Keywords:

avocado, persin, breast cancer, apoptosis

DO WE HAVE OOCYTE QUALITY MARKERS?

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Biotechnology engineer, graduate of the Wrocław University of Technology. Currently during the second degree studies in the field of Medical Biology at the University of Gdańsk.

Abstract:

The growth and quality of the oocyte largely depends on signals, growth factors and components from granular cells. Furthermore, oocytes manipulate the proliferation and differentiation of granular cells. This communication is largely via signaling SCF-cKit. The present study aimed to explore whether the levels of stem cells factor (SCF) in serum and follicular fluid can be used as a potential marker for predicting oocyte developmental potential. The results of patients with normal ovarian reserve, reduced ovarian reserve and endometriosis were compared.

Keywords:

oocyte, SCF, marker, fertility, in vitro

3D PRINTING- THE FUTURE OF THE MEDICINE?

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Abstract:

The spatial printing (3D printing) is one of the methods of additive manufacturing, which consist of the production of physical objects by adding material layer-by-layer. The essence of the process is build a real elements based on virtual geometry developed in the computer system. There are several 3D printing methods. The main division criteria are the way to applied the layer and the type of construction material.

The purpose of this article is to present the procedure that allows making the physical models using the additive (incremental) printing techniques (3D printing) based on computed tomography (CT) images.

Keywords:

3D printing, implants, prostheses, preoperative planning, medical care

IMPACT OF THE TECHNOLOGICAL CYCLE ON THE DAILY ACTIVITY OF THE GREY MEERKAT (SURICATA SURICATTA)

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Dominika Gulda – PhD, animal behaviorist, vice chairwoman of the Zoo's Scientific and Didactic Council.
Natalia Lisiecka – zookeeper.

Abstract:

The aim of this study was to assess the degree of behavioral adaptation of meerkats kept in the Bydgoszcz zoo to the technological cycle associated with procedures adopted at the zoo (e.g. all cleaning works, a preparation and administration of food, a behavioral training). The observations of a herd of meerkats grey were carried out using a video recorder with a motion sensor and daily protocols for behavioral observation conducted by a zookeeper. The meerkat gray leads the daily living, but thanks to the presence of an infrared camera activated by a moving animal, increased activity of meerkats between 2 and 4 am was also recorded. Regardless of the strength of the stimulus, motivator in the form of additional food recognized as so-called the delicacy, or making available the possibility of a longer time of using the outer meerkats' run, could not be stimulated to be active in variable time intervals. The animal day ritual was strongly associated with the rhythm of the zookeeper's work.

Keywords:

meerkat grey, technological cycle, behavior, motivator

DETERMINANTS OF THE CHOICE OF PRIVATE LABELS BY CONSUMERS

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A few words about the author:

PhD, Scientific Department of Natural Science and Quality Assurance, Poznań University of Economics and Business.

Abstract:

Nowadays, private label are one of the most characteristic elements of retail trade that the consumer encounters. Their expansion on the global, and above all on the European market is very dynamic. In Poland, private labels have been created, in particular, by foreign retail chains and although they systematically gain more and more space on store shelves, they still arouse a lot of controversy. This article pays special attention to directions and trends in the context of consumer perception in relation to private label products of various commercial networks. Thus, the overriding goal of the work is to verify the knowledge and level of satisfaction with private label products for 4 years. The tool used to achieve this was the questionnaire survey. The time range of the tests included December 2015 and December 2019. The obtained results allow to indicate the strategy and potential development directions of private label products that retailers have a chance to follow.

Keywords:

private label, brand, consumers

A SOLUTION FOR GRANDMA AND GRANDPA?

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A few words about the author:

I am a second year student of Nanotechnology at Lodz University of Technology. From more than a year I am active in the students research club of Nanotechnology.

Abstract:

A solution for grandma and grandpa?

Although our body is a precisely designed system, there are times when we it needs our help. Such a case could be the use of a special bandage when the bone is broken.

The bandage captures and keeps the healing adenosine in the place of the fracture. Usually adenosine, which is naturally sent to bone injuries, is quickly metabolized by the body. Scientists from Duke University in North Carolina led by prof. Shyni Varghese, began to wonder whether maintaining high levels of adenosine could aid the healing process.

The problem was, however, that adenosine occurs in low concentrations throughout the body and is responsible for many important functions that have nothing to do with bone healing. In order to avoid unwanted side effects, you would have to find a way to hold adenosine in the area of injury, at the right concentration.

With this in mind, scientists designed a bandage applied directly to the fracture site which contains boronate particles, capable of capturing adenosine. Afterwards, adenosine is slowly released.

When speaking about the future, scientists emphasize that they still have a lot of work to do. Bandages need to be improved in order to capture and retain adenosine more effectively. They also have to be checked for any side effects.

Keywords:

bandage, adenosine, bone injuries

WHAT ERNERY HYDRIDE CAN BE MADE OF STAINLESS STEEL?

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A few words about the author:

I am a PhD student. My faculty is Material Engineering. My research area is hydrogen storage, especially in solid phase. My interests are mainly science (materials science, chemistry, mechanics) but also sport and an active and healthy lifestyle.

Abstract:

Hydrogen is currently considered one of the alternative energy sources. However, its use in the energy industry is not as simple and obvious as it may seem. Hydrogen must be properly stored to be an energy source. Solid hydrogen storage is one such method.

There are many different ways in which you can efficiently store hydrogen using this technique. Most often this happens with the use of solid materials in the form of powder, which are characterized by high ability to absorb hydrogen. One example of such a material is Mg_2FeH_6 ternary hydride. This material is usually made of iron of very high purity and magnesium hydride (MgH_2) or pure magnesium. This compound owes its popularity to very high volume density of hydrogen and gravimetric density of hydrogen.

This work demonstrates the possibility of producing this valuable compound from steel powder - austenitic stainless steel. The iron contained therein, unlike pure iron (alpha), occurs in the form of austenite (gamma iron). The use of steel powder instead of pure iron has many advantages, among others acceleration of the synthesis reaction, reduction of reaction costs as well as a positive ecological aspect (steel powder can be obtained in a very simple way by recycling).

Keywords:

hydrogen storage, stainless steel, ternary hydride, magnesium-iron hydride, Mg_2FeH_6

THE ROLE OF FGF4 AND ACTIVIN A IN REGULATION OF DEVELOPMENT OF THE MOUSE CHIMERIC EMBRYO

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A few words about the authors:

Aneta Suwińska is a habilitated doctor in the Department of Embryology, University of Warsaw and Anna Soszyńska is a PhD student in the same Department.

Abstract:

Mammalian embryogenesis is highly regulative and can be reflected by experimentally produced chimeras. Nevertheless, mechanisms responsible for the plasticity of mammalian embryos, especially those involving interactions between cells of host embryos and ESCs in chimeras, are not fully unraveled. We postulate that Fgf4 and Activin A secreted by ESCs are key players in the process of early development of mouse chimeric embryos. We showed that injection of ESCs into 8-cell stage embryos causes reduction in number of inner host cells of chimeric embryos and their differentiation toward PrE lineage which suggests the existence of a mechanism coordinating both number and developmental fate of the host embryo cells. Moreover, we demonstrated that the presence of exogenous Fgf4 increases efficiency of obtaining chimeric embryos with EPI derived entirely from ESCs up to 100%. Such chimeras upon transfer into reproductive tracts of recipients successfully undergo embryogenesis culminating in birth of fully ESC-derived mice. Additionally, using Fgf4 knockout ESCs we revealed that ICM of such chimeras is composed mainly of EPI cells, which hinders proper embryogenesis. We also showed that downregulation of Activin A signaling in chimeric embryos results in an increase in the number of EPI cells at the expense of TE and PrE cells and severely disrupts the process of segregation of EPI and PrE precursor cells, which is a prerequisite for the embryo to develop properly after implantation.

Keywords:

early mammalian embryo development, chimera, embryonic stem cells

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SYNTHESIS AND CONFORMATIONAL STUDIES OF GLYCOPROTEIN N HOMOLOG OF BOVINE HERPESVIRUS 1 (BHV-1) BY USING CD, NMR AND MOLECULAR MODELING

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A few words about the authors:

The authors' interests will focus on the spatial structure analysis of various viruses.

Abstract:

UL49.5 protein is a key player in the immune evasion strategies of viruses like BHV-1. During viral infection UL49.5 exerts dual activity: it serves as a chaperone for viral glycoprotein M and, in its gMunbound form, acts as an inhibitor constraining the transporter TAP. The UL49.5/gM complex formation is required for the maturation and proper trafficking of both viral proteins.In the absence of gM, UL49.5 blocks transport of antigenic peptides by TAP and their MHC I-restricted presentation. The molecular mechanism of UL49.5 activity still remains elusive. In order to investigate the structural requirements for biological function UL49.5 study was conducted using CD, NMR and Molecular Dynamics methods. The data confirmed the presence of an alpha-helix structure, formed preferentially in the presence of DPC micelles as a membrane like environment. In order to determine the three-dimensional structure of UL49.5 protein in the present work its NMR solution structure in the presence of membrane-like environment was performed. The NMR data were used as a set of restraints for a simulated annealing protocol that generated 3Dstructures of the peptides in DPC micelles.The calculation of spatial structure and "assembling" of the whole protein from the obtained peptide structures were performed by using molecular dynamics of the protein in the fully hydrated POPC.The obtained structural model may contribute to identification of UL49.5 active sites and elucidation of its mode of action.

Keywords:

TAP, bovine herpesvirus-1, CD, NMR

HOSTILE TAKEOVER AT THE MARKET

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A few words about the author:

My name is Aleksandra Stelmaszczyk, am a law student from University of Rzeszów. This year I was taking part in the programme Erasmus. I had a pleasure to study in Lisbon. I am full of positive energy and r I am really into new technologies in law.

Abstract:

In business everything changing very fast, the same at stock exchange. Many companies which are lasting for many years in the market must follow the development and try to face the new requirement. Many of them join a big “fish” and selling their brands because of many reasons.

The most common reason they just no longer enjoy the business and want to move on to something else. Often though, the lessened enjoyment is tied into declining revenues and the discouragement it engenders in business owners, and that blow to morale and motivation can be difficult to overcome. For example, perhaps they don’t want to admit they’re simply burned out. However, we often change plans or set off on different paths because new and better opportunities come our way, so it’s also true in many cases.

There are several reasons why a company might want or need a hostile takeover. They may think the target company can generate more profit in the future than the selling price. If a company can make $100 million in profits each year, then buying the company for $200 million makes sense. That's why so many corporations have subsidiaries that don't have anything in common -they were bought purely for financial reasons. Currently, strategic mergers and acquisitions are more common. In a strategic acquisition, the buyer acquires the target company because it wants access to its distribution channels, customer base, brand name, or technology.

Keywords:

takover, business, brands

SMART CONTRACTS

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My name is Aleksandra Stelmaszczyk, am a law student from University of Rzeszów. This year I was taking part in the programme Erasmus. I had a pleasure to study in Lisbon. I am full of positive energy and r I am really into new technologies in law.

Abstract:

Recently at every level of business and cooperation between enterprises, starting from the smallest ones and ending with large corporations or companies, we can observe a significant disappearance of cash transactions. Exchange of money and receivables are carried out electronically. This type of settlement of liabilities has dominated the market. I devoted special attention to the youngest blockchain product, the so-called Smart Contracts, which soon may completely change the system of concluding contracts in civil law transactions, and thus the law that regulates them. Intelligent contracts that are automatic, independent and self-executing constitute a completely new form in the area of contractual obligations. This revolution is a real challenge for legislative bodies.

Keywords:

blockchain, smart contracts, law

THE ROLE OF MICRORNA IN PATHOGENESIS OF CANCER

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I am PhD student at Full-time doctoral studies in Molecular Genetics, Cytogenetics and Medical Biophysics in University of Lodz. My PhD thesis is associated with a role of RAD51 paralogs in cancer cells.

Abstract:

MicroRNAs represent a class of small non-coding RNA molecules that play a role in post-transcriptional regulation of protein expression. Their important role is demonstrated in both normal and pathological cellular processes. MicroRNAs (miRNAs) are non-coding and highly conserved 20-25 nucleotides-long single-stranded RNA molecules that regulate a gene expression through highly specific binding to messenger RNA (mRNA). One RNA molecule can target many genes, thereby regulating the expression of several proteins. Moreover, miRNA can simultaneously interacts with several important cellular processes, such as differentiation, cell cycle progression, and apoptosis. A growing body of evidence indicate that modulation of miRNA expression may be related to tumor pathogenesis. Impaired miRNA expression in cancer cells is usually associated with a change in the number of miRNA copies and changes in the genomic location of miRNAs as a result of amplification, deletion or translocation. Current data indicate that researcher identified miRNAs responsible for silencing the expression of genes that act as a tumor suppressor and miRNAs whose reduced expression leads to develop of oncogenes in various types of cancer. In response to these observations, efforts are underway to develop safe and effective miRNA-based therapeutic agents in hope for effective fight against cancer.

Keywords:

microRNA, gene expression, anticancer therapy

HOLLOW CHITOSAN-SILICA NANOSPHERES AS CARRIERS IN CANCER THERAPY

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A few words about the author:

Student at faculty of Nanotechnology in Lodz University of Technology.

Abstract:

Simple explanation of how do chitosan-silica carriers work. Synthesis of hallow nanospheres. Examples and exmplanation of application chitosan-silica nanospheres in other aspects. Comparison to other carriers and conclusion that includes what we can improve.

Keywords:

nanospheres, chitosan-silica, carriers

ETHYLENE – PROPYLENE ELASTOMERIC MATERIALS CONTAINING RECYCLED RUBBER SHREDS

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A few words about the authors:

Klaudia Toczek - Second-degree student in Chemical Technology. I am active in the POLIMER research club. Magdalena Lipińska - Employee of the Institute of Polymer and Dye Technology of the Lodz University of Technology. I take care of students as part of diploma theses.

Abstract:

Ethylene 1 - octene thermoplastic elastomers are materials that due to the architecture of their macromolecules can be processed as thermoplastic materials. The presence of the crystallizable segment that performs the function of internal reinforcement allows to obtain at room temperature materials with adequate tensile strength. At the same time, these types of materials exhibit elastic properties like typical ethylene-propylene rubber elastomers. Unlike ethylene propylene EPM and ethylene propylene diene EPDM, these materials do not need to be crosslinked. In the work, as an additive to the EPM and EPDM rubbers and thermoplastic elastomers type Engage 8180, 8411, 8452 the rubber foam waste was used. The foam shreds were obtained by grinding of waste elastomeric foams. The grounded material was introduced into the elastic matrix at a different weight ratio. The density of the obtained materials was tested. The effect of the shreds addition on processing parameters, including the viscosity of obtained mixtures was determined. The resulting mixtures were further crosslinked with dicumyl peroxide. The effect of shreds adding on mechanical properties during stretching and viscoelastic properties during shearing was investigated. The Payne effect was determined for the received vulcanizates. Using the optical microscope, the structure and morphology of the obtained blends were characterized.

Keywords:

viscoelastic properties, foam shred, recycling, ethylene-propylene rubber, thermoplastic elastomers

FLEXIBLE SCREEN PRINTED ELECTRODES ON TEXTILES

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A few words about the author:

Nanotechnology student.

Abstract:

Development in medicine allowed for detection numerous cardiac diseases by analysing its irregular contractions. During electrocardiographic examination (ECG) the electrodes are placed onto the patient's skin, which register changes in skin surface potential made by current causing heart contraction. Standard tests lasting few minutes go often without problems. However, long-term examinations or test performed during physical activities are problematic. Electrodes can dry of gel which can irritate the skin, peel off the patient and cause incorrect readings. To improve the performance and negate problems of such tests flexible screen printed electrodes were developed on textiles.

Keywords:

flexible electrodes, texties, ECG

MATERIALS WITH ENHANCED MECHANICAL AND VISCOELASTIC PROPERTIES BASED ON ELASTOMERS AND ELASTOMERIC FOAM WASTE

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A few words about the authors:

Dominika Wawrzyniak is a student at the Chemical Department in Lodz University of Technology. Dr Magdalena Lipińska is an employee of the Institute of Polymer and Dye Technology and provides scientific supervision over students' diploma theses.

Abstract:

Currently, elastomers are used in many areas of technology due to their unique properties. Flexible materials are applied for the production of many articles, including flexible foams used in construction as lagging providing the appropriate protective and thermal properties. After use, this type of material should be recycled and reused because of environmental reasons. Mechanically ground waste of flexible elastomeric foams were used as a component of rubber mixtures. For this purpose the elastomers such as NR, NBR, SBR rubbers were applied. Flow rates and viscosity of prepared elastomeric mixtures as a function of temperature and shear rate were determined. The reinforcing effect of added foam waste on the properties of vulcanizates, tensile strength, elongation at break, hardness was observed. The influence of additives on the relaxation and morphology of obtained new materials was investigated. Potential areas of application for this type of materials have been identified.

Keywords:

styrene-butadiene rubber, acrylonitrile-butadiene rubber, natural rubber, material recycling, foams

THE METHYLATION ANALYSIS OF THE PROMOTER REGIONS OF THE FAS SUPPRESSOR GENE IN PEOPLE WITH INFLAMMATORY BOWEL DISEASE

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A few words about the authors:

Gabriela Zajac, a presenting person, is a student of Master of Science in Genetics at the University of Lodz. Mr Tomasz Poplawski is a Professor, Post-doctoral degree in the Department of Molecular Genetics at the University of Lodz.

Abstract:

Inflammatory bowel disease (IBD) is an autoimmune disease of the digestive tract with unsatisfactory understood etiology. The pathogenesis of CRC associated with IBD remains unclear. Methylated CpG dinucleotides are observed in the promoter regions of the suppressor genes of tumor cell. The hypermethylation of a promoter is a process that usually precedes the development of cancer, which makes it a inestimable marker for early detection of cancer. Our study group comprised a total 20 patients, 10 healthy controls and 10 patients with IBD. All participants were recruited from Medical University of Lodz. Colorectal tissue DNA samples were extracted using a Genomic Mini Kit. Sodium bisulfite conversion of genomic DNA was performed on isolated DNA using a CiTi Converter DNA Methylation Kit, according to the manufacturer's protocol. To analyze CpG island methylation status of promoter regions of the FAS gene has used the MS-PCR. Obtained results confirmed that the analysis of CpG islands in the FAS gene promoter revealed that the FAS promoter was significantly hypermethylated in bowel tissues of patients with IBD compared to normal samples. Our data indicates that decreased expression of the FAS gene due to hypermethylation of its promoter may act as an important step during development of colorectal cancer in patients with IBD. Therefore, FAS promoter methylation levels may be used as an early detection biomarker for colorectal cancer in patients with IBD.

Keywords:

DNA methylation; MS-PCR; FAS; inflammatory bowel disease

BIOLOGICAL ACTIVITY OF NEW 1,2,4-TRIAZOLE DERIVATIVES WITH METHACRYLIC ACID MOIETY

Alicja Zaremba* (1), Andżelika Zielińska (1), Anna Helmin-Basa (1), Renata Paprocka (2), Bożena Modzelewska-Banachiewicz (2), Jacek Michałkiewicz (1), Małgorzata Wiese-Szadkowska (1)

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A few words about the authors:

Alicja Zaremba and Andżelika Zielińska are students of final year of Medical Laboratory studies. Małgorzata Szadkowska-Wiese and Anna Helmin-Basa are research supervisors. Renata Paprocka synthesized examined triazole derivatives.

Abstract:

The aim of study was to exhibit the anti-inflammatory activity of a group of newly synthesized 1,2,4-triazoles derivatives with a methacrylic acid moiety, differing in substituents in the R1 and R2 positions.

Research goals: 1) toxicity assessment of compounds (S,T,U,W); 2) assessment of anti-inflammatory activities of compounds.

Material for the research were peripheral blood mononuclear cells taken from healthy blood donors. Techniques and methods used in research: 1) cell cultures, i.a. 24-h culture allowing for assess of cell viability after stimulation with compounds, 1-day culture allowing for assessment of inhibition of pro-inflammatory cytokine production induced by LPS; 2) flow cytometry technique to assess a cell viability; 3) ELISA allowing for assessment of cytokine concentration in culture supernatants.

Results: 1) New derivatives of 1,2,4-triazoles with a methacrylic acid moiety have low cytotoxic properties (cell viability in the range of 95-96%); 2) T and U compounds most strongly inhibited LPS-induced pro-inflammatory cytokine production of both early and late inflammatory phase (i.e. TNF-alpha, IL-6 and IFN-gamma respectively).

Research results have proved that the new 1,2,4-triazoles derivatives have low cytotoxicity and showed dependence between nature of substituents and anti-inflammatory activity. Compound T, which had phenyl at both R1 and R2 positions was selected as the most active among examined new derivatives of 1,2,4-triazole.

Keywords:

triazole, anti-inflammatory, cytokine

ASSESSMENT OF BIOLOGICAL PROPERTIES OF NEW 1,2,4-TRIAZOLE DERIVATIVES WITH PROPANOIC ACID MOIETY

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A few words about the authors:

Andżelika Zieińska and Alicja Zaremba are students of final year of Medical Laboratory studies. Małgorzata Wiese-Szadkowska and Anna Helmin-Basa are research supervisors. Renata Paprocka synthesized examinated triazole derivatives.

Abstract:

We still looking for new chemical compounds which have low level of toxicity and are effective in anti-inflammatory therapy. Many researchers have showed that triazoles derivatives have antifungal, antibacterial, anti-inflammatory and anti-cancer s activity. Therefore in this study the influence of new 1,2,4-triazole derivatives were experimentally evaluated, The aim of this study was to evaluated the influence of new triazoles on the level of cytokine production by LPS induced human peripheral blood mononuclear cells.

The new synthesized 1,2,4-triazole derivatives with a propanoic acid group, differing in substituents in the R1 and R2 positions(AA-AE, X, Y). Whole blood was collected from healthy donors. Techniques and methods: 1) 24h PBMCs culture allowing of assessment of cell viability after stimulation with new 1,2,4-triazole derivatives, 24h PBMCs culture with LPS and triazols - evaluation of of antiinflammatory properties of studied compounds 2) flow cytometry technique to assess a cell viability (Annexin V Apoptosis Detection Kit I) 3) ELISA that allow the asses of cytokine concentration in culture supernatants.

Results: New 1,2,4-triazoles derivatives with propanoic acid moiety showed low toxicity (the cell viability range 95-96%);Compounds AC, AD and Y have the strongest anti-inflammatory potential (inhibited production of IL-6, TNF-alfa, IFN-gamma.)The new synthesized 1,2,4-triazole derivatives showed immunomodulatory activity. Further research is needed.

Keywords:

immunology , new 1,2,4- triazole derivatives

TECHNICAL SCIENCES

AN INNOVATIVE, COMPLEX AND PRECISE SYSTEM FOR DYNAMIC, FAST AND AUTOMATIC WASTE WEIGHING, INCREASING THE SAVINGS IN THE PUBLIC SECTOR

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A few words about the author:

MSc Eng. Robert Palka obtained his professional title at the University of Technology and Agriculture in Bydgoszcz at the Faculty of Telecommunications and Electronics. Technical Director at TELDAT responsible for managing all departments.

Abstract:

In the time of growing technological progress, the amount of waste generated is significantly increasing. The control of its management is a very important aspect. To increase the effectiveness and the accuracy of waste management, it is necessary to implement an adequate system for their control and monitoring. According to the National Regulation of the Minister of Environment, by the year 2020, the level of recycling, preparation for re-use and recovery of other municipal waste fractions by other methods, must reach 70%. Moreover, the control of waste transport from their collection point to its delivery place which is Regional Municipal Waste Processing Installation, will also be required. To achieve that, it is necessary to close all loopholes in the Waste Management System. Current systems do not give that possibility and are very expensive in implementation. The only possible and low-cost solution is the precise weighing and cataloging the type of collected waste from a given location.

Keywords:

automatic scale, waste weighing, public sector

THE USE OF HEURISTIC METHODS IN THE APPLICATION OF DESIGN ANTINOMIES IN THE FOOD INDUSTRIES

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A few words about the authors:

The authors are the group of students and PhD candidates from the Faculty of Engineering Management at Poznan University of Technology. They are the members of scientific association called ,,Progress" mostly intrested in ergonomic activities.

Abstract:

This article presents the use of ergonomic analysis methods to propose improvements to a cutting machine that is part of the kitchen equipment. The first part presents a review of the literature related to similar solutions (including patent analysis), then the REBA, QEC, Strain Index and Nasa TLX methods were used based on the example. The results were used to propose improvements to the workplace, consisting in its reorganization and technical retrofitting of the device. The result of the research was confirmation that the use of heuristic methods is conducive to the ergonomic design of workstations, an example of which is the presented solution that meets user requirements and has the features of novelty in comparison with solutions developed by other authors.

Keywords:

ergonomic design, safety improvement, accident prevention, human centred design

TOXIC METALS IN SUPPLEMENTS

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A few words about the authors:

Klaudia Chuchracka – student, Grzegorz Schroeder – professor.

Abstract:

5 supplements: B-complex, Sinavet, Vitotal dla mężczyzn, Sesja andCera Nova have been analised qualitatively with x-ray fluorescence, in order to check whether there are any toxic metals in them. The samples were mashed in mortars, moved to vessels and irradiated by Rhodium lamp, using Aluminium filter, that allowed to remove peaks from elements with atomic number lower than 13, thus marking the organic structures was impossible. Measurement for each sample lasted 600 seconds, with volatge 20 kilovolts; intensity of the current was selected by device.

Keywords:

toxic metals, supplements, XRF

THE FUTURE OF DISPOSABLE DIAPERS

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A few words about the author:

Elżbieta Czarnecka – a second year student of PhD implementation in chemistry at the Faculty of Chemistry, Nicolaus Copernicus University in Toruń. He works at Plastica Sp. z o.o. producing medical and hygienic products.

Abstract:

There are tremendous variations in diapering practices, reflecting varying cultural practices and regional difference. Around the world, more than 134 million babies are born each year, a rate of 255 births per minute or 4.3 births each second. The disposable baby diapers are multilayer structures consisting of layers of different materials. The disposable diapers are comprised of a polypropylene top cover stock, an absorbent layer, a polyethylene back sheet and elastic bands. The middle portion is a super absorbent polymer which helps to hold the urine away from the skin and faecal enzymes. The diapers back/bottom-most sheet is hydrophobic nonwoven films made up of polypropylene fibers.

Due to the phenomenon of global warming and the ever-increasing amount of plastic garbage, work began on obtaining a fully biodegradable diaper for children and adults with the problem of incontinence or developing an ecological method of recycling used products.

Keywords:

biodegradation, disposable diaper, absorbent hygiene product

THE USE OF TANNING WASTE TO IMPROVE THE BIODEGRADATION OF SBR RUBBER

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A few words about the author:

Student at faculty of nanotechnology in Lodz University of Technology.

Abstract:

The aim of the study was to use waste resulting from the tanning process of the skin in the form of chromium dust to improve the biodegradation of styrene butadiene rubber (SBR). Chromium dust was introduced into the SBR rubber in an amount of 5 to 30 parts by weight to obtain composites. Biodegradability and thermo-oxidative aging were tested for these compositions. The introduction of a filler into the SBR rubber structure resulted in an increase in mechanical strength due to an increase in polymer binding efficiency. The addition of a protein filler also improves the color fastness compared to pure SBR rubber.

Keywords:

buffing dust, biodegradation, styrene-butadiene rubber (SBR), polymer composites

TEMPERATURE MEASURMENTS FROM HIVE BASED ON IOT TECHNOLOGY PREVENTS THE EXTINCTION OF BEES

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A few words about the author:

Inventor of the Intelligent Hives. A graduate of Telecommunication and Computer Science, currently a second degree student of Computer Acience and Management. Finalist in the national Student Nobel Prize competition.

Abstract:

According to British beekeepers, over 80% of European plant cultivation, depend on bees'participation in pollinating flowers. Unfortunately problem of Colony Collapse Disaster and so-called "Empty Hives Syndrome", particularly in North America and most of Europe is still growing. The aim of this article is to conduct a research on available literature and summary of the own studies. In order to propose technological solutions for prevention of bee's colony reduction based on temperature measurements from hive. In addition, in order to better understand the problem, a survey of beekeepers was conducted. The electronic equipment developed for the study confirmed the effectiveness of the proposed algorithms in this article for detecting anomalies inside the hive. Presented result can help prevent the extinction of bees using IoT Technology.

Keywords:

IoT, bees, algorithms, swarming detector, machine learning

QUALITY OF SURFACE WATERS IN THE COASTAL LANDSCAPE PARK

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Karolina Gutmańska, Oskar Ronda and Maciej Fabich - Scientific Circle of Chemistry Students of Gdańsk University of Technology; Emilia Bączkowska - Scientific Circle of Students of the Gdańsk University of Technology Microbiology in Environmental Engineer.

Abstract:

As a result of human activity the natural environment constantly degrades. A particularly important topic for protection of the ecosystem is the pollution of the oceans, seas and inland waters, which require constant monitoring. The purpose of research carried out for several years in the Coastal Landscape Park is to establish quality, status and to classify inland waters. The survey carried out in October 2019 composed of determination of basic physicochemical properties quantity analysis of selected ions determination of COD and coliforms in samples from 40 measurement points. Chemical parameters were determined using spectrophotometry methods and ionic chromatography. Based on obtained results it was found that in 95 percent of samples pollutant content exceeds quality standards and the overall water status can be described as poor.

Keywords:

water pollution, quantity analysis, spectrophotometry methods

SURFACE ACTIVITY OF CARBON NANOPARTICLES AND MOLECULE OF PROTEIN IN BIOMEDICAL APPLICATIONS

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A few words about the authors:

I am a PhD student at the Koszalin University of Technology. I deal with topics related to biomedical engineering, in particular about carbon materials (unmodified and modified) used in medicine, cosmetology and the food industry.

Abstract:

The ability to study surface activity at the molecular level has allowed us not only to better understand the nature of nanomaterials themselves, but also to explore their interactions with biological materials. Widely used carbon-based nanomaterials are used not only as diffusion barriers to undesirable phenomena occurring on the surfaces of metal implants, but are also carriers molecules of proteins, gens or drugs. Their surface activity depends not only on their composition and internal structure, surface development and modification, but also on the properties of the target. Despite many advantages, carbon-based materials are also characterized by nanotoxicity, which can damage cell walls, lead to cells apoptosis(which, can be used to fight against cancer), or open the path of microorganisms to the inner cell. The big advantage of proteins is their subcellular size and biocompatibility with tissues and their versatility in modification, but limited by their low bioavailability, resulting from low stability to proteolytic and hydrolytic degradation and low permeability over barriers and a short biological half-life in the circulatory system. Each one separately or combined can be used in therapeutic or diagnostic processes. By attaching the appropriate ligands to the surface of the nanoparticles, we are able to direct it to the desired place, which not only improves therapeutic effectiveness, but also allows us to reduce the amount of drugs, and minimizes side effects.

Keywords:

surface activity, carbon nanopraticles, protein molecules, biomedical appclication

THE INFLUENCE OF GRAPHENE OXIDE PRESENCE IN FOOD FILMS ON THE ADHESION OF FOOD-BORNE PATHOGENS

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A few words about the author:

Elżbieta Kopczyńska is a doctoral student at the Koszalin University of Technology, Faculty of Mechanical Engineering. The subject of scientific work is graphene oxide in food packaging applications.

Abstract:

Food packaging should adequately protect food from the penetration of microorganisms and protect it from external factors such as humidity, light, temperature and oxygen. These factors contribute to the formation of adverse chemical and biological processes, and consequently lead to a reduction in the safety of stored products. Today, no ideal food packaging has been invented that does not contain harmful chemicals that can enter food while fully protecting food.

The aim of the study was to check whether the presence of graphene oxide in food films used for packaging fatty products affects the adhesion of food-borne pathogens and extends the shelf life of food. Three bacterial strains were used in the study: Escherichia coli ATCC 25922, Pseudomonas aeruginosa NCTC 12903 / ATCC 27853, Streptococcus mutans ATCC 35668 and three types of food films for fatty products: mustard, coffee, ketchup. Adhesion of pathogens to the polymer surfaces of food graphene films was studied by means of a fluorescence microscope (MOTIC B1410E).The evaluation of the adhesion of three bacterial strains to three types of food films with graphene oxide showed statistically significant differences in the action limiting adhesion and viability. Addition of graphene oxide to food packaging creates a protective barrier against bacteria, which increases the shelf life of food. In addition, lowering the adhesion of food film allows to prolong the freshness of fatty products.

Keywords:

graphene oxide, adhesion, pathogens, food packaging

THE INFLUENCE OF NANODIAMOND ON THE ADHESION OF BACTERIAL PATHOGENS IN FOOD PACKAGES

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A few words about the author:

Joanna Kornacka - graduate of Biomedical Engineering, PhD student at the Faculty of Mechanical Engineering of the Koszalin University of Technology. The subject matter of scientific work is based on diamond powders used in medicine and food industry.

Abstract:

We meet the challenges, so the aim of the research is to gain control over the surface of food packaging. The key idea is to extend the shelf life of short-term food products and to monitor bacteriostatic properties. One of the risks to humans is that foodborne pathogens can enter the human body together with food, causing disease.

Staphylococcus aureus, Escherichia coli, Streptococcus mutan were selected from among the strains of bacteria to be tested and a barrier in the form of admixture of diamond powders on the surface of the film was created. The laminates differed from each other by the number of layers. We distinguish such types as: monoplex, duplex, triplex, quadroplex. Due to the development of nano-particles of nano-diamond, a staining method was used to check the modified subsidiaries and then a fluorescence microscope was used to investigate the effects. Tests were also performed on Petri dishes to check the visible braking zone. Due to the significant development of the packaging industry, research on food film modifications is underway.

Keywords:

diamond nanoparticles, pathogens, food packaging

PROTOTYPE OF FOLDING FOOTBRIDGE

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A few words about the authors:

We have been working on our project for more than a year. We have spent hundreds of hours on this project, and as the result of our hard work, passion and commitment we are able to build this construction in reality.

Abstract:

Study describes a prototype of folding footbridge, starting from structural analysis through design documentation ending on prototype realisation. Footbridge superstructure consists of four pairs of articulated arms. The first pair works as rod and the others as cantilever. Movement of the footbridge is possible owing to the fact that wholeconstruction has one kinematic degree of freedom.

Keywords:

footbridge, motion, MES analysis, construction

INFLUENCE OF PHENOL PRODUCTION WASTE LANDFILLS ON MUSHROOM CONSUMPTION SAFETY IN THE AREAS AROUND ZACHEM FACTORY

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A few words about the authors:

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Abstract:

Areas that originally belonged to now shut down Zachem factory in Bydgoszcz are among the most contaminated with aromatic compounds in Poland. Landfills of phenol production waste; "Zielona" and "Lisia" are considered the biggest ecological problem. In this study, we have analyzed mushroom and soil samples from the forest around landfills. We have determined aniline, phenol and BTEX aromatic compounds content using headspace gas chromatography (HS-GC-FID). Both types of samples were devoid of analytes. Our results indicate that consumption of edbile mushrooms from studied area is completely safe.

Keywords:

Zachem, mushrooms, phenol production waste

ZNO QDS MODIFIED WITH RARE EARTH METALS - PREPARATION AND CHARAKTERISTICS

Jakub Sowik* (1), Magdalena Miodyńska (1), Beata Bajorowicz (1), Alicja Mikołajczyk (1), Wojciech Lisowski (2), Tomasz Klimczuk (3), Daniel Kaczor (4), Adriana Zaleska - Medynska (1), Anna Malankowska (1)

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A few words about the authors:

The above results were obtained thanks to the cooperation of scientists from the University of Gdańsk with specialists in individual analyzes, which ensured high quality of results interpretation.

Abstract:

The main purpose of this study was to obtain ZnO QDs loaded with rare earth metals with enhanced optical and photocatalytic properties. A series of novel ZnO quantum dots modified with rare earth metals was successfully prepared by a simple sol-gel approach. The effects of types (Eu, Er, Tb, Yb, Ho, La) and amounts (0.09–0.45 mmol) of lanthanides on the optical properties, chemical characteristics as well as on the photocatalytic activity of the ZnO/RE QDs under UV−Vis, were systematically investigated. The X-ray photoelectron spectroscopy, Fourier transform infrared spectroscopy, transmission electron microscopy with energy dispersive X-ray analysis, photoluminescence emission spectroscopy and UV–Vis-driven degradation of phenol in aqueous phase were applied to understand optical and photocatalytic properties.
The results showed that generally modification of ZnO QDs by lanthanides resulted in increase of photoactivity while photoluminesce decrease at the same moment. The highest photocatalytic activity among all obtained nanomaterials and the lowest photoluminescence quantum yield among ZnO/Er photocatalysts were observed for ZnO QDs modified with 0.09 mmol of erbium.

This research was financially supported by Polish National Science Centre (Grant No. NCN 2016/23/B/ST8/03336 entitled “Mechanism of quantum dots excitation in photocatalytic reaction”

Keywords:

quantum dots, ZnO, photocatalysts, photoluminescence

RHEOLOGICAL PROPERTIES OF HYALURONIC ACID, POLY (N-VINYLPYRROLIDONE) AND THEIR MIXTURES

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A few words about the authors:

Marta Szulc graduated from the second degree studies in the fields of Cosmetic Chemistry and Forensic Chemistry at Faculty of Chemistry, NCU in Torun. She is a PhD student from the Doctoral School of Exact and Natural Sciences at NCU in Torun.

Abstract:

Recently, great emphasis has been placed on the development of materials using natural polymers from renewable sources. Hyaluronic acid is a good example due to the biocompatibility with the human organism, bioactivity, and biodegradability. Therefore, the purpose of the present research was to compare the rheological properties of hyaluronic acid (HA) with different molecular weights, poly (N-vinylpyrrolidone) (PVP) and their mixtures (HA/PVP).

Rheological measurements were performed in a rotary viscometer Bohlin Visco 88 at temperatures of 25°C - 40°C. Apparent viscosity (η_a) was determined for hyaluronic acid, poly (N-vinylpyrrolidone) and their mixtures depending on: weight composition of the mixture (w_{HA}: 0.2, 0.5, 0.8), temperature, shear rate up to 1220 s^{-1}. Statement of results and analysis of the obtained rheological measurement results indicate that the examined solutions have non-Newtonian behavior. Hyaluronic acid solutions and HA/PVP mixtures behave like shear-thinning fluids. The poly (N-vinylpyrrolidone) solution behaves like a shear-thickening fluid. It can be concluded that the size of the polymer macromolecules influences the rheological properties of the polymer solutions and their mixtures.

Keywords:

hyaluronic acid, poly (N-vinylpyrrolidone), polymer mixtures, rheological properties

THE IMPACT OF THE TEMPERATURE ON THE OPERATION OF MOBILE DEVICES COMPONENTS

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MSc Eng. Robert Palka obtained his professional title at the University of Technology and Agriculture in Bydgoszcz at the Faculty of Telecommunications and Electronics. Technical Director at TELDAT responsible for managing all departments.

Abstract:

In the new digitalization era, more and more electronic devices deriving from ICT group appears on the market. They are used to the very broad extent and offer more and more innovative functionalities. According to the Global Digital Report 2018 developed by We Are Social organization the mobile sector makes up the greatest group of devices on the market. With increasing demand on this type of equipment, its popularity in various sectors such as security, defense, education and building rise up. As a consequence, it is necessary to meet all required norms by the equipment and to be resistant to climate changes. Failure to meet above requirements may be related to the fact that the various users utilizing the equipment will not accomplish their operations targets. In consequence, their effectiveness will decrease and the chance of errors will increase. To prevent this practice, it is necessary for mobile devices to be resistant to climate changes and operating conditions.

Keywords:

mobile devices, functional researches, climate researches

ARSENIC TOXIC AND CARCINOGENIC PROPERTIES

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Abstract:

Arsenic is a metalloid that is widespread in nature and is also found in the metallic form. It can be found in many known minerals. Arsenic belongs to group V of the periodic table. In the free state it occurs in two allotropic varieties: gray and yellow (crystalline), having the ability to combine with almost all metals and non-metals [6], [9]. In the natural environment, arsenic may occur in the form of sulphides in silver, lead, copper, nickel and iron ores. In trace amounts, it is also found in soil. The main pathway of arsenic circulation in the environment (in the form of arsenates and arsenites) is water [9]. The tests confirmed the mutagenic effect of arsenic and its carcinogenic properties, caused by the so-called clastogenesis (i.e. induction of chromosomal aberrations) in peripheral lymphocytes and intensification of the sister chromatid exchange process. The carcinogenic effect of arsenic increases mainly after exposure by inhalation (the development of lung and skin cancers. The main source of chemical contaminants present in various types of food products are constantly generated industrial and environmental contaminants. These include heavy metals occurring in the form of organic and inorganic compounds. Even trace amounts of these compounds in food pose a serious threat to human health because their action is characterized by distant effects.

Keywords:

arsenic, toxicity, morbidity, mutation

NATURAL SCIENCES

STING PROTEIN AS AN ANTICANCER THERAPY TARGET

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Abstract:

Stimulator of interferon genes (STING) is one of the elements of innate immune pathway. Recently, it has emerged as potent target for anti-tumor therapeutic strategies. The pathway begins when double-stranded DNA (dsDNA) is present in cytoplasm and binds to the cGAS (cyclic GMP–AMP synthase), what further provides to the production of cGAMP molecules. Binding of the cGAMP molecule to the STING protein results in type I IFN production and antitumor immune response. The most often use STING agonists are 2'-3'cGAMP and DMXAA. One of the first effect observed (24h) after intratumoral administration of STING agonist (2'-3'cGAMP in a dose 2.5µg/100µl/mice) is massive neutrophils infiltration to the tumor site. That is followed by an increase in macrophage and CD8+ T lymphocyte number (observed 7 days after DMXAA administration). In tumors, two main phenotypes of macrophages can be distinct. There are M1 and M2 macrophages which are characterized by opposite functions. Importantly, in tumors M1 macrophages are considered as cells displaying anti-tumor properties, while M2 macrophages possess pro-tumor behavior. Activation of the STING signaling pathway with DMXAA has an impact on macrophages polarization. There was observed accumulation of M1-like macrophages in tumor site in melanoma murine model. Despite promising STING antitumor effect observed in murine tumor models, there is a need to understand all of the consequences of triggering this immune pathway.

Keywords:

STING, anticancer therapy, macrophages

STATE AND OPPORTUNITIES FOR THE DEVELOPMENT OF THE TOURISM IN BIESZCZADY

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A few words about the authors:

We are students from Univeristy of Rzeszów and we belong to Student Scientific Organisation of Travelers.

Abstract:

Winter sports are popular way of spending free time in winter. More and more people are trying this form of activity. Very interesting, but distant for many people place are Bieszczady mountains. It is a region chosen more and more often by skiers. There are several reasons, but mainly because it is not a place visited by crowds. The main purpose of the work is to check why people choose Bieszczady as a new aim of travel in winter. Curiosity, new experiences and undiscovered edge of Poland may cause more and more interest of this place. Visitors can find out a higher standard of services such as accommodation base, catering facilities, quality of ski slopes and wider range of opportunities in ski tourism. It is not only downhill skis, but also cross-country skis and ski-touring. In other regions of Poland you can find exactly the same, but Bieszczady are original because only here is so calmly and wildly.

Keywords:

Bieszczady, tourism, skis, winter

CHARACTERIZATION AND TOXICITY OF AZO DYES

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Abstract:

According to the literature data there are more than 700,000 tonnes of dyes produced per year. These dyes are soluble, organic compounds and have found application in the colouring of fibers, papers, leather, cosmetics, as well as food. Due to ineffectiveness of dyeing almost 10-25% of them can be lost during this processes and up to 20% can be released to sewage. Among the industrial dyes released into environment through the textile effluents, azo dyes is the most harmful class. Azo dyes are characterized by the presence of one or more azo bonds (-N=N-) associated with aromatic rings, large variety and strong color, also resistance to environmental factors, which makes these compounds often used in industry. Despite their technological advantages, azo dyes released into treatment systems causes serious environmental problems. They act as a mutagenic and carcinogenic agents, resulting from the breakdown into aromatic amines, however some dyes can be carcinogenic even without cleavage. Moreover, water coloring reduces photosynthesis, which leads to a decrease in oxygen concentration and disorder biological balance of the environment, contributes to eutrophication of waters, inhibits growth and diversity of microorganisms and limits their enzymatic activity.

Keywords:

dyeing, azo dyes, toxicity

OPTIMALIZATION OF DIONAEA MUSCIPULA PROPAGATION IN IN VITRO CULTURES

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Masters student from Babice. Angler, musician, athlete. In his spare time, he propagates plants in his home tissue culture laboratory.

Abstract:

Dionaea muscipula is an carnivorous plant of the sundew family occurring naturally in North America. As a decorative plant, there are many cultivars, often quite valuable because of the shape and color of the traps. The progeny plants derived from generative reproduction do not repeat the characteristics of the mother plant and it is difficult to obtain a large number of cultivars of this species in the way of vegetative reproduction. However, in vitro cultures are successfully used for this purpose, thanks to which the obtained plants have the same genetic material and are free from diseases and pests.

The aim of the experiment was to find a variant of the medium with the addition of a plant growth regulator on which Dionaea muscipula will grow intensively and multiply. The culture was initiated by decontaminating the seeds and exposing to ½ MS medium. Then the seedlings were divided into several smaller ones to increase the number of plants, and after obtaining the appropriate number, an experiment was established. To the MS medium, two plant growth regulators from the cytokinin group were added separately - kinetin and 6-benzyloadeninopurine, three concentration variants were prepared for each regulator. One concetration included 5 jars. Each jar contained 6 plants in a balanced growth phase (3 leaves). As a control, ½ MS medium without the addition of growth regulators was used. The experiment lasted 8 weeks at 20°C and a 12-hour day.

Keywords:

tissue culture, dionaea, carnivorous plant

HOW MANY GRASSLANDS DO WE REALLY HAVE? THE PROBLEM WITH GRASSLAND MAPPING IN POLAND

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Abstract:

Grassland ecosystems are distributed across all biogeographical regions of Europe and provide a wide range of ecosystem services related to biodiversity. As a result of management intensification and land-use transformation, the area of grasslands in Europe is constantly decreasing. Appropriate conservation of grasslands at regional and national scales needs knowledge about changes in their area. The main goal of this study was to compare area of grasslands provided by different, freely available databases: Corine Land Cover, Pan-European High-Resolution Layers and BDOT10k at a study area comprising 20 000 km^2 (Lower Silesia S-W Poland). The results showed that different data sources provide highly different grassland areas. The results also reveal that in Lower Silesia the area of improved, urban grasslands equalizing area of grasslands and pastures used for agriculture.

Keywords:

Corine Land Cover, Pan-European High Resolution Layers, BDOT10k, green infrastructure

PROSPECTS OF USING ENTOMOPATHOGENIC FUNGI TO REMOVE RESIDUES OF HARMFUL SUBSTANCES FROM THE NATURAL ENVIRONMENT

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A few words about the author:

My name is Anna Litwin. I am a PhD student at the Department of Industrial Microbiology and Biotechnology of the University of Lodz. My main research topic is entomopathogenic fungi and their relationships with synthetic insecticides.

Abstract:

Environmental pollution is a growing problem. Endocrine Disrupting Compounds (EDCs) are one of the most dangerous groups of toxic substances polluting natural environment. They are mostly synthetic substances which disrupt the functioning of the human and animal endocrine system.

Entomopathogenic fungi are organisms with the capacity to cause diseases and kill arthropods. These fungi commonly live in soils where they constantly come into contact with numerous pollutants. It has been shown that these organisms have an ability to remove some harmful substances from the natural environment. There are only few reports regarding the interaction between toxic compounds and these fungi.

It has been shown that strains belonging to M. robertsii could efficiently remove 4-n-NP, 17α-ethinylestradiol. B. bassiana and M. robertsii have an ability to use linear hydrocarbons as the only source of carbon. Moreover, entomopathogens are able to biodegrade dibutyltin to hydroxylated monobutyltin and finally to monobutyltin. M. brunneum is also capable of degrading 4-n-NP and also partially decomposing ametryn. Some of entomopathogenic fungi participate in the elimination of industrial dyes.

To summarize, entomopathogenic fungi, in addition to their basic role, which is control of arthropod populations, can also perform additional functions in the removal of harmful substances residues from environment.

Keywords:

entomopathogenic fungi, toxic pollutants, harmful substances

THE PRESENCE OF RHUBARB IN THE DIET MAY SUPPORT THE CARDIOVASCULAR HEALTH

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Abstract:

Huge progress in science and technology has stimulated the civilization development. Civilization diseases occur most strongly in highly urbanized countries and in those with no adequate disease-preventive strategies. Life in the city, work in a sedentary mode, fast and unhealthy nutrition, low physical activity and a fast pace of life give rise to psychological and physical stress. The above-mentioned factors significantly contribute to oxidative stress, inflammations, overweight (or obesity) and development of different disorders, incl. cardiovascular diseases.

In recent years, the plant-derived substances and herbal extracts have gained considerable scientific and social interest. The aim of this work was to collect and summarize available information on the cardioprotective effects of two rhubarb species Rheum rhaponticum and Rheum rhabarbarum. The results of in vitro and in vivo tests indicate on antioxidant, anti-inflammatory and hypolipidemic properties of both species. Our cross-search the Medline/Pubmed, Scopus and Springer Link/ICM databases revealed several basic studies and over 10 in-vivo examinations devoted to the cardioprotective effects of rhubarb. Data derived from these examinations suggest considerable therapeutic potential of bioactive components of rhubarbs, especially in a context of prevention of cardiovascular diseases.

The work was supported by the National Science Centre grant (UMO-2018/31/B/NZ9/01238).

Keywords:

cardiovascular diseases, antioxidant activity, rhubarb

BIOLOGICAL PROPERTIES OF EXTRACTS FROM BARK AND LEAVES OF FRAXINUS EXCELSIOR L.

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A few words about the authors:

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Abstract:

In traditional medicine extracts from common ash (Fraxinus excelsior L.) have been used to treat rheumatism, arthritis, gout, neuralgia, and for the treatment of infected and difficult-to-heal wounds.

The presence of secoiridoids, phenylethanoids and coumarins is a characteristic feature of the Fraxinus species. Almost 15 different coumarins have been identified in bark extracts (e.g., esculetin, scopoletin, fraxin), while leaves may contain coumarins as secondary compounds. Coumarins have the ability to inhibit the production of chemokines (IL-8) and cytokines (TNF-α and IL-1β), which is of particular importance in the treatment of inflammatory diseases. Esculin and eskuletin have also been shown to inhibit the formation of erythema, which is the result of excessive skin exposure to UV radiation, indicating their anti-inflammatory, antioxidant and regenerating effect on the epidermis.

Our preliminary study has indicated that the methanolic extracts from bark and leaves, at the concentration of 25 μg/ml, increased (by approximately 20%) the viability of human skin fibroblasts (Hs68) exposed to UVA radiation, compared to the cells not treated with plant extracts. Moreover, the bark extract was more effective than extract from leaves in scavenging of reactive oxygene species, generated by UVA radiation in Hs68 cells.

An innovative solution in anti-solar protection is the introduction of natural plant substances with photoprotective effects into sunscreens.

Keywords:

UV radiation, Fraxinus excelsior, photoprotection

ANTIBIOTIC PEPTIDES FROM TRICHODERMA SPECIES

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Abstract:

The fungal genus Trichoderma has various applications in industry and medicine. Several species have economic importance as sources of enzymes, antibiotics, plant growth promoters, decomposers of xenobiotics or as commercial biofungicides.

Peptaibiotics and peptaibols are a class of linear peptides synthesized by fungi, which were first isolated from cultures of Trichoderma viride in 1967. They are produced in soilborne and plant-pathogenic fungi, mainly in the genus Trichoderma, as secondary metabolites that function as antibiotics and antifungal agents.

Peptaibols are biologically active peptides containing between seven and twenty amino acid residues, some of which are non-proteinogenic amino acids. In particular, they contain α-aminoisobutyric acid along with other unusual aminoacids such as ethylnorvaline, isovaline and hydroxyproline.

Secondary metabolites isolated from Trichoderma species have been shown to possess important biological activities the most important of which are those against a range of Gram-positive bacterial and fungal phytopathogens. In addition, peptaibols exhibit hemolytic properties, e.g. alamethicin affects in rat mast cells, bovine and mouse lymphocytes and erythrocyte lysis.

Currently, these products are being examined in biotechnological and pharmacological studies.

This study was supported by the National Science Center, Poland (Project No. 2015/19/B/NZ9/00167).

Keywords:

peptaibols, secondary metabolites, trichoderma

APPLICATION OF RISING PLATE METER FOR ASSESING MOUNTAIN PASTURE PRODUCTIVY

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Abstract:

Semi-natural species rich grasslands provides a wide range of ecosystem services: from biomass production, through water retention and CO_2 sequestration to biodiversity maintenance. Unfortunately the area of species rich grasslands decreased in entire European Union. To prevent the decrease numerous policies helping in sustaining extensively used grasslands have been developed. Such extensive management needs planning, including also estimation of grasslands productivity. A use of rising plate meter is a convenient methods, but needs calibration. In this study we calibrate the rising plate in a species rich, extensively used mountain pastures, two times in vegetation season (June, August). The results show that the indirect measurements are able to predict 50-62% of aboveground biomass productivity. The results were significant for both measurement terms.

Keywords:

grasslands, herbometer, topographic wetness index, biodiversity

4-N-NONYLPHENOL BIODEGRADATION BY GENUS METARHIZIUM

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We are the team from Institute of Microbiology, Biotechnology and Immunology, University of Łódź.

Abstract:

Endocrine disrupting chemicals (EDCs) have an ability to alter the endocrine system of a vertebrate and disrupt normal function of this system in mammals. The representative of these compounds is 4-n-nonylphenol (4-n-NP), that easily accumulates in contaminated areas due to a low solubility, hydrophobic properties, and high resistant to degradation processes. Entomopathogenic fungi of the genus Metarhizium are a large group of microorganisms with the ability to parasitize insects. They are often used as biopesticides, regulating populations of arthropods. These unique microorganisms can find an application in the removal of EDCs, including 4-n-NP.

The aim of the study was whether entomopathogenic fungi of the genus Metarhizium have similar biodegradability capabilities of 4-n-NP. Eight species were used in this study. In order to describe the process of xenobiotic degradation in these fungi, quantitative and qualitative analysis was carried out using gas chromatography coupled with mass spectrometry.

Metarhizium sp. has a high ability to degrade 4-n-NP. After 48 hours of incubation, less than 5% of 4-n-NP was detected in six species. Analysis of 4-n-NP biodegradation products showed that the xenobiotic biodegradation pathway is common for the Metarhizium genus, while differences in the formation of metabolites in individual species were observed.

This research was financed by a grant from the National Science Center in Krakow (Poland), contract number UMO-2016/23/B/NZ9/00840.

Keywords:

Metarhizium sp., nonylphenol, biodegradation pathway

DEDICATED PROBIOTICS AND PREBIOTICS – HUMAN SKIN

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Lidia Piekarska-Radzik is a PhD student at Institute of Fermentation Technology and Microbiology, Lodz University of Technology. Her scientific interest include issues related to lactic acid bacteria and their action towards pathogenic bacteria.

Abstract:

Human skin, as the largest body organ, is the basic protective barrier of the body. It is constantly exposed to the harmful effects of physical, chemical and biological agents. It is important that the skin's microflora is always in good condition. Microorganisms indigenous to human skin are the main competition for microorganisms that can cause serious infections.

Prebiotics help to maintain the balance of human skin microflora. As substances with the ability to modulate microflora, they can have a direct or indirect effect on human skin. Thus, supplementation with prebiotic substances can significantly contribute to the prevention and treatment of skin diseases such as eczema and acne. It also soothes allergic and hypersensitivity conditions. In addition, beneficial effects of probiotic bacterial species on human skin have also been proven. They are currently an alternative way of fighting diseases such as atopic dermatitis. Probiotics are a factor responsible for maintaining normal skin homeostasis and are involved in the regulation of the skin's immune system. Probiotic bacteria have the ability to synthesize specific substances (e.g. lactic acid, bacteriocins), which, unlike antibiotics, only act on microflora recognized as pathogenic. Thus, they do not disturb the amount of non-pathogenic microorganisms constituting the microflora of a healthy individual.

Keywords:

human skin, probiotics, prebiotics, lactic acid bacteria

IDENTIFICATION OF STAPHYLOCOCCUS BACTERIA ISOLATED FROM HUMAN SKIN

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Abstract:

In 1880, the Scottish physician Alexander Ogston observed in a microscope image bunch-like bacteria - the Staphylococcus genus.

Currently, Staphylococcus spp. Is commonly found in the wild. Many species are in fact the natural microflora of human skin and mucous membranes. It happens that bacteria of the Staphylococcus genus are also isolated from the natural environment: soil, water, dust and air.

Unfortunately, there has been a significant increase in nosocomial infection rates in recent years. One of the biggest challenges of modern science is the fight against infections caused by methicillin resistant bacteria of the Staphylococcus aureus species.

The aim of the study was to isolate bacteria of the Staphylococcus genus from human skin and to identify isolated strains based on phenotypic traits.

The biological material in this study was taken from healthy volunteer aged 25-30 years. The aim of the work was achieved, among others, by determining the ability of biological material to produce enzymes: coagulase and catalase; ability to grow on a selective-differentiating medium with mannitol (Chapman medium). Strains were also identified using the API Staph test and their resistance to popular antibiotics (including cefoxitin) was determined.

As a result of the research, 5 strains of bacteria belonging to the Staphylococcus genus were isolated, which were then identified using genetic engineering methods.

Keywords:

human skin, Staphylococcus spp.

SOIL AGGREGATE STABILITY OF YOUNG MORAINING HUMMOCKY PLATEAU SOILS IN NORTH POLAND

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Abstract:

Soil erosion is a widespread process that closely related with human activity, especially agriculture. Poland is not exclude from the impact of soil erosion with about 33 percent of total area affected by the process. As noted in scientific literature, soils might differ significantly from each other by their resistance to water erosion. One of the vulnerable agrolandscapes in North Poland is young moraine hummocky plateau the widely presented in the norther part of Kuyavian-Pomeranian Voivodeship. The territory specifies with a complicated relief and, as a result, high spatial differentiation of soils.

The determination of soil aggregate stability was based on laboratory experiments of static water impact on soil aggregates (7-10 mm). The aggregates from 16 soil profiles along the four slopes of the moraine hills were investigated in repeating catenal patterns. The data specified differences between soils on the top of hummocks and soils on the foot slope, and, additionally, between topsoils and subsoils. A rate of aggregate destruction increases from colluvial soils – domination of water stable aggregates with low erodibility – to completely eroded Regosols with calcareous parent materials. Aggregates from Regosoils and very similar strongly eroded Luvisols with Bt in arable layer predominantly have short period of dispersion in water – less than 120 sec. That testify of high erosivity of soils on the top of hummocks, and worthening situation with erosion due to tillage.

Keywords:

soil erosion, aggregate stability, hummocky landscape

A RESEARCH ON THE USE OF MODERN THERMAL IMAGING TECHNIQUES IN THE ASSESSMENT OF CONTAMINATION OF PLANT PRODUCTS

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Abstract:

In the era of automation of production processes and intensification of production efficiency, it is necessary to improve individual stages of the food chain in product quality control. Optical methods based on the phenomenon of thermovision are an alternative to conventional methods of microbiological diagnostics.

The aim of the research was to evaluate the possibility of using thermovision in the detection and monitoring of the degree of contamination of plant products on the example of an apple. Early capture of characteristic changes in the product, using remote measurement methods, would improve the process of control of plant products. The conducted research consisted in monitoring the of growth, selected mould fungi Penicillium expansum, Botrytis cinerea and Rhizopus stolonifer on contaminated apples Honeycrisp variety. A significant correlation between apple temperature and the growth of microorganisms was observed, as well as a two-stage character of temperature changes related to their physiology. It was found that the thermal imaging method has a great potential to be used in the microbiological quality control of fruits, however, it is necessary to conduct further research in order to build an accurate prognostic model.

Keywords:

microbiological contamination detection, food quality control, mould diseases, apples, thermal imaging camera

MONITORING OF MICROBIOLOGICAL QUALITY OF SELECTED MEAT PRODUCTS WITH USING A THERMAL IMAGING CAMERA

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Abstract:

Techniques of rapid detection of the presence of microorganisms in food are increasingly displacing traditional methods. Their advantage is primarily the speed of analysis and high accuracy. The technique using IR radiation seems to have a high potential for detecting microorganisms, therefore the aim of this work was to try to develop a method for determining the microbiological quality of meat products using a thermal imaging camera. The scope of research included testing of poultry cold meats contaminated with various degrees of bacteria from the Proteus mirabilis species using the active thermovision method. It was found that the applied method allows the detection of microorganisms in meat, and the average temperature difference between the non-contaminated area and the area with the highest pollution was 0.58 degrees Celsius, which indicates the possibility of detecting microorganisms in the meat product under study.

Keywords:

thermography, infrared radiation, microbiological contamination of meat, active thermovision, poultry ham

MOLECULAR EVIDENCE OF WIDESPREAD PREVALENCE OF INTRACELLULAR BACTERIA CARDINIUM IN PARTHENOGENETIC FEMALES OF AN OSTRACOD HETEROCYPRIS SALINA (BRADY, 1868)

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A few words about the author:

Tadeusz Namiotko studies taxonomy and ecology of Recent and Quaternary ostracods. Other autors studies molecular testing DNA.

Abstract:

Many arthropod species are engaged in a diverse range of relationships with endosymbiotic bacteria that exert various effects on biology, evolution and reproductive ecology of their hosts. One of the best studied examples of such interactions includes the intracellular bacteria Cardinium and Wolbachia interfering with host reproduction. Exact effects of these bacteria on host fitness are largely unknown. It is thought that both maternally transmitted endosymbionts can manipulate host reproduction by feminization, cytoplasmic incompatibility or induction of thelytokous parthenogenesis.

Here, we present a report of screening for natural infection of both symbionts in parthenogenetic females of ostracod species Heterocypris salina collected from eight sites situated in the circum-Mediterranean region as well as two sites in Poland. The presence of both symbionts was tested using classic PCR amplification and direct DNA sequencing with a newly designed 16S rRNA-specific primers. Interestingly, all of the 126 tested individuals showed positive results for the occurrence of Cardinium. Our results are in concordance with those of other authors based on material from Turkey (Çelen et al. 2019) and other Greek site (Schön et al. 2018) and indicate widespread prevalence of Cardinium in Heterocypris salina. On the other hand, for now we found Wolbachia only in four individuals from the Polish sites, indicating low-level infection of the tested ostracod species with these bacteria.

Keywords:

Cardinium, Ostracods, Heterocypris salina, parthenogenesis

THE RABBIT'S URETHRA AS A MODEL IN UROGENITAL RESEARCHES – MORPHOLOGY AND MORPHOMETRY

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A few words about the authors:

DVM Joanna Skonieczna is a PhD student working on rabbit's urethra. PhD DVM Jan Madej, Assoc. Prof. is a specialist in birds' lymphatic system. Prof. Romuald Będziński and PhD Agnieszka Kaczmarek-Pawelska are specialists in experimental mechanics.

Abstract:

Rabbits are widely used for study and experiments of the urogenital system. The histological structure of rabbit urethra is similar to the human. Furthermore, these species have the same type of penis. The aim of this study was to deepen knowledge about structure of this organ under physiological conditions. The research was performed on seven male New Zealand White rabbits weighting 2.1-3 kg. The whole urethra, along with accessory genital glands was removed, cut into slices and stained with haematoxylin-eosin (H&E), Masson-Goldner (MG), Van Gieson (VG) and Movat-Russell modified pentachrome stain. The morphology was described and morphometry was performed.

The structure of the rabbit urethra varies depending on the segment. It is an unpaired organ consisting of mucosa, muscularis, and adventitious membrane. The urethral lumen is lined by transitional through double-layer cylindrical to non-keratinised stratified squamous epithelium. The connective tissue of mucosa is rich in blood vessels and contains single bundles of smooth muscle fibres in the penile urethra. Whereas, closer to bladder, the number of smooth muscle bundles increase finally forming a separate layer – muscularis.

The presented results might be helpful: for testing drugs used in the urinary tract treatment, in designing implants, in physiological tests, in clinics and correct surgical approaches as well as in pathology of urethra.

Keywords:

rabbit, urethra, morphology, morphometry, histology

PROSPECTS FOR THE DEVELOPMENT OF THE PACKAGING MARKET IN POLAND

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A few words about the author:

PhD student, I am interested in consumer behavior on the confectionery market and the opportunity to care for our planet.

Abstract:

The packaging market in Poland is determined by macroeconomic factors and changes in consumer behavior related to increase in spending on consumer goods. The value of the packaging market in Poland in 2017 exceeded PLN 30 billion, of which more than half was the value of plastic packaging.

The aim of this presentation was to analyze the perspectives for the development of the Polish packaging market in terms of quantity and value, with particular emphasis on packaging of food products and innovative solutions of a functional and marketing nature. Presentation describes the main risk factors for the further development of the packaging market, including dependence on imports of raw materials and contents, sensitivity to changes in demand and legal regulations of a regulatory nature. A list of opportunities and threats was also presented, referring to the increase in demand for finished products and new trends in the packaging market, i.e. an increase in demand for smaller packaging.

There is a diversity of consumer requirements for packaging depending on trends, sociodemographic criteria and level of consciousness. It was unequivocally stated that the packaging is no longer just a protective coating, but also a product advertisement and a company's calling card.

Keywords:

packaging market, consumers, plastic

EVALUATION OF SELECTED BIOACTIVE COMPONENTS ALGAE CHLORELLA VULGARIS

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A few words about the author:

I am a PhD student in the Institute of Fermentation Technology and Microbiology and I participate in the project „A new doctoral program at the Faculty of Biotechnology and Food Sciences of the Lodz University of Technology".

Abstract:

Algae produce a broad spectrum of bioactive secondary metabolites and valuable bioactive substances. The presence of such compounds as chlorophyll, carotenoids, lutein, neoxanthine, and carotene in Chlorella vulgaris was confirmed using the spectrophotometric method, HPLC and HPLC / MS. Total chlorophylls were at a level 13.2 mg/g, total carotenoid 16.2 mg/g and pheophytin 67.1 mg/g. Moreover, the results showed the high content of dietary fiber in algae (10-14%). Furthermore, the microbiological purity of the algae powder preparation used in the study (Bellis Food) was evaluated. The total number of mesophilic and psychrophilic bacteria, the number of Enterobacteriaceae, E. coli, gram-negative bacteria, the total number of fungi and spores were determined. The obtained results showed that the tested algae are microbiologically pure and do not require any additional heat treatment.

Keywords:

Algae, Chlorella vulgaris, bioactive components, chlorophyll, carotenoids

SURVIVAL OF LACTIC ACID BACTERIA IN SOY DRINK WITH THE ADDITION OF ALGAE

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A few words about the authors:

My interests are connected with diet and functional food, food safety, probiotics and fermented food. Moreover, I am creating functional fermented products with algae.

Abstract:

The aim of this study was to determine the survival of lactic acid bacteria in soy drink with addition of algae Chlorella vulgaris.

The biological material was Lactobacillus brevis ŁOCK 0944 with probiotic features. The research material was Chlorella vulgaris from Bellis Pharma in the concentration of 1.5%, while the nutrient matrix is enerBio soy drink.

The survival of lactic acid bacteria in soy drink with and without algae was tested by the plate method during the fermentation process (4 hours at 30°C) and maturation (20 hours at 18°C). Moreover, the significance test of ANOVA (univariate) was performed using the OriginPro 2017 program ($p \leq 0.05$). In addition, the acidity was determined in all samples of fermented soy drink by titration, and the pH of the samples was controlled during the fermentation and maturation process.

The results showed that Chlorella vulgaris affects the level of multiplication of Lactobacillus brevis ŁOCK 0944 in soy drink.

Algae may be used for construction of fermented functional food. Combination of fermented products offering a high content of lactic acid bacteria with algae allows to compose products with a high content of nutrients and to create a brand new segment of fermented food.

The results are patented in a patent application for the invention "A method for producing a probiotic fermented soy drink with algae" (No. P.431323).

Keywords:

Algae Chlorella vulgaris, soy drink, lactic acid bacteria, Lactobacillus brevis

GAMIFICATION IN SOIL SCIENCE - AN EDUCATIONAL IMPLICATIONS

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A few words about the author:

I am implementing a research project of soil science education at the Department of Soil Science and Landscape Management.

Abstract:

Nowadays the digital media are increasingly bringing into play on geography lessons and soil science. The aim of the presentation is comparison of various modern tools used to support teaching soil science. The use of gamification during the lesson should be purposeful, so there is a need to develop strategies for the use of multimedia tools. Soil education as a part of geography subject is important because students learn not only about soil properties but also about conscious and rational using of the soil resources. Social media and virtual reality games changed the way young people –"digital natives" perceive real world, including education process. Role-playing and elements of gamification could be applied in soil education as well as in other parts of geography lessons. Gamification commonly employs game design elements to improve user engagement, organizational productivity, flow, learning and more. A collection of research on gamification shows that a majority of its application has positive effects on individuals. The development of technologies and its availability in the modern world creates the need for changes in teaching methods to increase attractiveness as well as effectiveness in soil education.

Keywords:

geography, education, soil science, gamification

HUMANITIES SCIENCES

POLITICAL CROWDFUNDING – AN INNOVATIVE FORM OF FINANCING POLITICIANS AND POLITICAL CAMPAIGNS

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Master of European Studies at the Faculty of Social Sciences of the University of Wrocław. Member of the Polish Society of European Studies of the UWr. His interests include: social policy and EU economic policy, political philosophy, europarties.

Abstract:

The aim of the presentation is to present the theoretical assumptions of political crowdfunding as an alternative source of funding political campaigns and political initiatives. Although political crowdfunding is a relatively new method of raising both social and political capital, its roots come from fundraising, which gained immense popularity during Barack Obama's first campaign. Political crowdfunding is an increasingly chosen form of financing political campaigns by politicians outside of estabilishment. Its pro democratic nature allows to identify with voters, making it ideal for candidates entering the political scene. Political crowdfunding allows to study electoral mood at a relatively low cost, build a community centered around a given initiative, create personalized content targeted at the right audience and respond in real time to dynamic changes on the political scene. Political crowdfunding is increasingly used by pro-social actors in countries that have democratization processes ahead of them. Dedicated crowdfunding platforms are currently being developed, focusing only on pro-social activities that are designed to intensify efforts towards the democratization of states and to create a civil society.

Keywords:

crowdfundingu, politicial crowdfundingu, fundraising, civil socjety, political campaign

THE HISTORICAL WHEEL OF FORTUNE(?)

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A few words about the author:

Student of history and cultural studies at Jagiellonian University. His many interests include historical anthropology, Hegel's philosophy and the phenomenon of choice in history.

Abstract:

The purpose of my speech will be to attempt to outline and discuss the important problem, that Jared Diamond touches in his book Guns, Germs, and Steel: The Fates of Human Societies, which the author himself describes as "the historical wheel of fortune."

The American biologist and physiologist in his work tries to answer the question, what caused that Eurasian civilizations reached the highest level of development and thus were able to dominate all others? Diamond states with conviction, that this phenomenon was not caused by any mental, moral or genetic superiority of Europeans and Asians over other peoples, but the unique geographical circumstances in which the two races came to develop.

Of course, the issue raised by the American scholar is too extensive to be criticize or approve based on numerous sources and evidence. My task is a brief characterization of this problem, an attempt to place it in the broadly understood public debate and a preliminary verification of what answers Diamond's text gives us to old questions, and which new ones put before us. In achieving the set goals, in addition to analyzing the source itself, I will be helped by information from several other surveys with which I will try to support or undermine Diamond's theses.

I think that raising and sketching the problem described above is extremely important in the face of today's social, political, economic and cultural problems.

Keywords:

civilizations, development, rivalry, anthropology, history

"THE JONAH COMPLEX" - UNHERALDED FACTOR INHIBITING CREATIVE SELF-REALIZATION

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A few words about the author:

University of Lodz graduate, student of pedagogy at PhD Studies in Social Sciences. Interested in the topic of self-realization through the psycho-pedagogical perspective (especially the phenomenon of "compulsion to create", experienced by artists).

Abstract:

The "Jonah Complex" is a term described by Abraham Maslow that indicates a destructive inner force, which inhibits self-realization – especially fulfilling one's artistic potential. The topic of courage to create and factors that prevent individuals from transforming their creative ideas into practice have been analysed by many prominent thinkers and scientists (e.g. Alfred Adler, Otto Rank, Carl Gustav Jung, Friedrich Nietzsche, Rollo May, Steven Pressfield). The topic is important in the context of psycho-pedagogy, as attaining self-realization is one of the requisites for psychological health and overall well-being.

Keywords:

Jonah complex, self-realization, creativity

THE DEFINITION OF ADJECTIVES REGARDING GERMAN-POLISH CONTASTIVE GRAMMAR

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A few words about the author:

The author is a PhD student at Adam Mickiewicz University in Poznań who investigates the translation of German compound adjectives into Polish. This problem is analyzed on the basis of Elfriede Jelinek's novels and their translations into Polish.

Abstract:

The presentation deals with the problem of the definition of adjectives regarding German-Polish contrastive grammar. Although in broad meaning adjectives can be easily recognized by language users, it is surprisingly difficult to define this term accurately in both German and Polish. By the characterization of adjectives different authors usually focus just on one aspect, e.g. semantic, syntactic or inflectional features, which leads to many theoretical problems. Adjectives are all the more difficult to define if they are investigated in regards to contrastive grammar where an appropriate tertium comparationis has to be found. The presentation will show theoretical approaches to this problem in both German and Polish. Furthermore, it will underline differences between linguistic features of adjectives in both languages. At the end it will be attempted to define this term for the purpose of further research.

Keywords:

definition of adjective, German-Polish contrastive grammar, translation

THE METALINGUASTIC AWARENESS OF THE 3RD GRADE PRIMARY SCHOOL CHILDREN IN THE LIGHT OF VERBAL COMEDY

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A few words about the author:

I am a master of Polish philology.

Abstract:

In my speech I would like to discuss a problem about language awareness in the light of verbal comedy. For needs of this research I prepared a two-piece questionnaire which I distributed to children of the 3rd grade in th primary school. On this basis I amassed research material. I used typology language joke by Danuta Buttler posted in the book entitled Polski dowcip językowy. Appealing for the typology language joke by Danuta Buttler I drew conclusions which I put in my speech. Analysis included passive competencies and active competencies. It was meant to check at what stage of metalinguistic development are the children of the 3rd grade in the primary school. The basis of the research are joke mechanisms included in the language material. I hope that my research and conclusions expand knowledge about metalinguistic awareness and metapragmatic awareness.

Keywords:

language joke, language awareness, metalinguistic awareness, metapragmatic awareness, internet meme

LABOUR MARKET IN THE VOIVODESHIPS OF THE MACROREGION OF THE EASTERN POLAND IN 2016-2018

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A few words about the authors:

I am a doctoral candidate/ PhD student on the 3rd year of Economics. My research area regards labour market, labour market policies, active labour market policies, socio-economic development, regional development, regions.

Abstract:

The paper regards the diversification of the voivodeships within the labour market in the macroregion of Eastern Poland. The aim of the article is the assessment of the labour market in Eastern Poland within unemployment, employment, job offers. The research problem is the question: how does the diversification of the Eastern Poland voivodeships within labour market look. In the theoretical part were presented the situation on the Polish labour market, labour market institutions, employment policy instruments, the labour market tools used on the labour market in Poland. In the empirical part was carried out the analysis of the level of employment, unemployment, job offers. In the article were carried out the documentation analysis, statistical analysis, comparative analysis. The analysis pointed out that the researched voivodeships differs within the level of employment, unemployment, job offers.

Keywords:

labour market, labour market institutions, employment, unemployment, Eastern Poland

THE INFLUENCE OF ENGLISH ON THE POLISH CORPORATE LANGUAGE USED ON FACEBOOK

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A few words about the author:

PhD student in linguistics at the University of Warsaw, graduate of English Philology (two specializations: teaching and translation) at Nicolaus Copernicus University. Teacher and translator of English and Arabic, founder of a language school.

Abstract:

The impact of English on Polish can be noted not only in the case of general written and spoken language but also in various sociolects, e.g. in the corporate language. The aim of the present paper is to analyse Polish posts and comments published on the Facebook page entitled: "Korposzczur płakał jak czelendżował". The website provides humorous entries related to work in corporations. As has been observed, the research material includes, first of all, numerous lexical borrowings of English origin. Moreover, the Facebook users often switch from Polish to English. The contact between the languages is visible both in the discussed posts and comments. It may be inferred that corporate work, performed in international environment and frequently requiring communication in English as a lingua franca, can encourage using this language also in other, non-professional situations.

Keywords:

borrowing, code-switching, corporate language, Facebook

THE EUROPEAN UNION AND BELARUS

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A few words about the author:

Przemysław Mirosław Pazder – in 2017 he graduated from the first degree in political science at the Pomeranian University in Słupsk, from 2018 a second degree student in history.

Abstract:

Belarus is recognized as one of the last countries on the European continent where fundamental democratic standards are not being observed. Relations between the European Union (EU) and Belarus are largely dependent on Minsk's relations with EU Member States, including those with its neighbors (Poland, Lithuania, Latvia). The strong influence of the Russian Federation on the politics and economy of the Belarusian state is also significant. Relations with Belarus should be important for the European Union, because Belarus has become its important neighbor since its enlargement - it borders with three EU countries, where the common border covers over a thousand kilometers. In addition, with properly conducted policy, Minsk may be an important link in the transit of raw materials from Russia.

Keywords:

European Union, Belarus, Poland, TACIS program, Russian Federation

FREEGANISM – ANTI-CONSUMPTION LIFESTYLE OR A FAD?

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A few words about the author:

Aspiring student of Gdynia Maritime University. Honored Minister's scholarship holder, with many achievements gained at national and international conferences.

Abstract:

Freeganism has been gaining popularity in recent years in Poland. Freegans are the alternative and anarchistic environmentalists who are fed up with participation in the conventional economy and decided instead to try to mitigate the harm to the earth by reducing their personal waste.

Presented results cover an ethnographic study which involved 160 freegans of different age who carry on their activities in Polish provinical cities. All the surveyed respondents choose to acquire goods from „dumpster bins" and also use unconventional ways of exploitation conquered products. Volunteers were asked to share their expenditures on food, sources of knowledge about freeganism, motives on starting being a freegan, frequency of „dumpster diving", places of search, products they find, problems they face and advantages to obtain.

The structure of examined freegans is not homogeneous. Surveyed volunteers have very varied motivations, they come from different environments and also have different, sometimes extreme, views. Surveyed freegans' life seems to be creative and innovative. Instead of trying to make money to spend it, they strive to make less, spend less, and make the most out of what is available. No significant differences were found between respondents from both age groups except for a few slight disparity. This study has raised many more questions than could be addressed within the article.

Keywords:

freeganism, dumpster diving, anti-consumption, food waste

SUSTAINABLE DEVELOPMENT IN THE OPINION OF STUDENTS OF THE MARITIME UNIVERSITY IN GDYNIA

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Fourth-year student of the first degree of engineering studies - Commodity Sciences and Quality Management. Chairwoman of the Cargo Scientific Commodity Association.

Abstract:

Work titled Sustainable development in the opinion of students of the Maritime University in Gdynia raises the issue of sustainable development, knowledge about it, and the values represented by modern students. The work was based on own research using a questionnaire consisting of 9 closed questions. 100 respondents took part in the survey. The respondents were diversified in terms of the year of study and the faculty in which they study. The aim of the research was to determine consumers' attitudes, behaviours and knowledge regarding the concept of sustainable development. As a result of the research it was found that, among others for respondents, sustainable development is real action for the world, taking into account economic, ecological and social goals, the Internet and mass media are the most and most often chosen sources of information, and environmental protection is a less important aspect than economic considerations.

Keywords:

sustainable development, students, behaviours, knowledge, research

ORGANIC PRIVATE LABELS OF RETAIL CHAINS AS AN EXAMPLE OF PRICE COMPETITIVENESS ON THE POLISH MARKET

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A few words about the authors:

Maksymilian Czeczotko is a participant of the full-time PhD study programmed created on the Department of Food Market and Consumer Research- Institute of Human Nutrition Sciences at Warsaw University of Life Sciences.

Abstract:

The main aim of this study was to determine how chains of modern international retailers can achieve a competitive advantage by introducing private labels-PLs in the organic category. For retail chains, it was found that the introduction of OPLs is the source of CA via five contributors, namely, price, range of assortment, type of PLs, image of the retailer, sustainability and specific process. The extension of private labels in the organic food category by international retail chains resulted in the transition from a branded house strategy (e.g., Carrefour, Auchan) towards a sub-brand strategy, e.g., in the Carrefour chain to Carrefour and Carrefour Bio, in the Auchan chain to AuchanBio and Auchan economy. However, the discounts chains accepted a house of brands strategy, e.g., goBio, Prawdziwe, and at Jeronimo Martins and Bio Organic, Pilos, Cien and at Lidl.

Increasing the offer of organic private labels makes it easier for consumers to buy organic food at more affordable prices and follow the principles of proper nutrition and a sustainable diet with low environmental impact. The last element of the study was the analysis of the difference in the price of goods, among 5 categories of brands, on the example of rice: Organic Private Labels, Organic Discount Private Labels, Non-organic Private Labels, Non-organic Discount Private Labels and Organic Producer Brands.The whole presents the differences in the pruduct's price, as the basis for accepting Organic Private Labels.

Keywords:

organic private labels, network trade, competitiveness

MEDICAL SCIENCES

INFECION OF SURGICAL SITES AS AN ADVERSE EVENT IN PATIENT CARE

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A few words about the author:

I graduated Nursing at the Medical University of Lublin, I am a PhD student at the Medical Uniwersity in Łódz, srub nurse. I am interested in sport, medicine and healthy lifestyle.

Abstract:

Adverse event is never an expected consequence medical proceeding. It develops as a result of treatment or nursing and is not associated with a natural course of disease or patient's health state. Adverse event comes into being not only because of a human factor but also it can be caused by some unpiedictable defects of medical proccedures. There are many different kinds of adverse events. Despite of a significant advance in counteracting and medicating infections, of surgical sites still pose a challenge. Over the years there has been a steady decrease in percentage of this kind of infection but again and again it is a huge problem that medical staff have to deal with on a daily basic. The infections generate additional cost's and prevent patient patien's fast and full recovery. They are consideredd from both medical and financial points of view.

Keywords:

adverse event, infections, surgical site infection

WICKER PRODUCTION AS A LOCAL PRODUCT OF THE NIŻAŃSKI POVIAT

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A few words about the authors:

We are students of tourism and recreation of University of Rzeszów. Moreover, we are members of the student scientific club of travelers.

Abstract:

A characteristic feature of given cities are local and regional products. The local product for the niżański poviat is wicker, from which products have found worldwide demand.The purpose of this work was to present the tourist attractiveness of the niżański poviat and learn how a local product shapes the tourist attractiveness of the poviat.The main problem was to find out: how the promotion of the region is based on a local product. The goal was to answer the following question: what regional products - products, customs and other features of the region or town – would have a chance to become products or attractions of the region around which social and professional life could be organized?

Keywords:

local product, wicker, region, tourist attractiveness

IS THE USE OF MOLECULAR BIOLOGY TECHNIQUE NECESSARY TO SUPORT IMMUNOHISTOCHEMICAL STAINING FOR CASES ASSESSED AS EQUIVOCAL OR NON-SPECIFIC?

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A few words about the authors:

A young, dynamically developing team of the Department of Clinical Pathomorphology, Faculty of Medicine, Collegium Medicum in Bydgoszcz.

Abstract:

BRAF gene encodes the protein belonging to a highly oncogenic RAS/RAF/MEK/ERK signaling pathway whose deregulation is implicated in different mechanisms underlying cancer development and progression. The studies revealed that BRAF V600E mutation occurs in 100% of hairy cell leukemia, 50-60% of unresectable and metastatic malignant melanomas, approximately 30-50% of papillary thyroid carcinomas, 15-35% of serous low grade and borderline ovarian carcinomas. The most common BRAF mutation is the result of a transversion of T to A at nucleotide 1799 (T1799A), which results in a substitution of valine (V) for glutamic acid (E) at position 600.

Immunohistochemistry(IHC) with anti-BRAF V600E (VE1) antibody was performed using the automated Ventana BenchMark ULTRA platform. All cases on IHC were further assessed using the Idylla BRAF Mutation Assay coupled with the Idylla platform. Of 6 positive BRAF-VE1 cases, all tested positive for BRAF V600E/E2/D mutation. Of 4 equivocal BRAF-VE1 samples, only 1 tested positive for BRAF V600E/E2/D mutation on the Idylla real-time PCR BRAF mutation test, whereas others were negative. In addition, all negative BRAF-VE1 samples tested molecular analysis confirmed their negative mutation status.

Our study found that IHC VE1 is suitable for screening purposes, but all negative, equivocal and weak positive cases should be further tested with molecular biology techniques, of which the Idylla system seems to be a promising tool.

Keywords:

IHC, Idylla™ test, equivocal cases, non-specific cases

THE IMPACT OF COFFEE CONSUMPTION ON THE HUMAN ORGANISM

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A few words about the author:

I am a third-year student of bachelor's dietetics at the Faculty of Medical Sciences and Health Sciences at the University of Natural Sciences and Humanities in Siedlce.

Abstract:

Currently, coffee is one of the basic food products and commercial goods in the world. Bearing in mind the popularity of coffee consumption, the question arises about its impact on health. The purpose of the work was to present current information on the impact of coffee on the human organism. Coffee is still controversial and it is cannot be clearly determine whether drinking coffee is clearly harmful or beneficial in its effects. This is due to the fact that the impact of coffee ingredients on the human body depends on many factors, e.g. the method of cultivation, the processing process , preparation, frequency of consumption, condition and health conditions of the potential consumer. Thanks to the caffeine content, it stimulates, refreshes the body, regulates metabolism, improves concentration and is a natural source of antioxidants. It has been proven that coffee consumption reduces the risk of breast cancer, which is attributed to the presence of polyphenols, caffeine and diterpenes. Coffee consumption has also been suggested to reduce the risk of chronic diseases such as diabetes and Parkinson's disease. According to some authors, caffeine has a negative effect on bone structure, contributing to increased urinary calcium excretion, which reduces bone mineral density and increases the risk of fractures. Undoubtedly, coffee is still a challenge for scientists who want to study its properties.

Keywords:

coffee, health, human

THE CORRELATION BETWEEN TOBACCO SMOKING AND OBESITY

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A few words about the author:

I am a student of fiveth year of medicine studies at Collegium Medicum UWM in Olsztyn. I am very interested in scientific activity and I expand it by membership in Student Science Club at Department of Pathophysiology.

Abstract:

Smoking tobacco is one of the most popular negative habits in Polish society. The effect of tobacco smoking could by intensified by other negative habits like alcohol drinking or obesity. As the health education in the group of smokers is probably low, other negative habits should be more frequent in this group. In my work, I would like to study the correlation between tobacco smoking and obesity in the group of students of high school from a town of northern Masovia.

Keywords:

cigarettes, youth, overweight, Mazovia, health education

IMPACT OF PROLONGED TOBACCO SMOKING ON ACHIEVING OF POTENTIAL GROWTH

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A few words about the authors:

We are students of fiveth year of medicine studies at Collegium Medicum UWM in Olsztyn. We are very interested in scientific activity and we expand it by membership in Student Science Club at Department of Pathophysiology.

Abstract:

The problem of tobacco smoking is a very popular issue in Polish society. Despite the well known negative effects tobacco smoking is a very popular habit even among young people. A very popular statement about cigarettes is their negative impact on growth. We used to study the impact of tobacco smoking on growth of the youth by percentiles grids. Now, we would like to check the impact of at least 3 years of tobacco smoking on achieving of grow potential by the youth. To define this potential we will use two methods based on the growth of parents of the subject of research. We receive the data for our research by the survey.

Keywords:

cigarettes, youth, growing, Mazovia, countryside

TREATMENT OF PANCREATIC CANCER

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(2) Department of Electroradiology, Medical Faculty,
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A few words about the authors:

Justyna Jandernal -specialist in clinical oncology, dealing in the diagnosis and treatment of cancer patients for several years.
Dr. hab. Ewa Ziółkowska-specialist in oncological radiotherapy, professor at the PWSZ in Kalisz at the Medical Faculty.

Abstract:

Because of growing numer of cases of pancreatic cancer, oligosymptomatic course of disease in the early stages, when the radical treatment is still possible, the unsatisfactory results of the therapy, pancreatic cancer is a serious challenge to the contemporary oncology. The aim of the presentation is providing an overwiev of present-day treatment standards of the pancreatic cancer therapeutics, taking account of: intention of a cure, the results of the multinational clinical trials, the guidlines of the international societies of oncology, as well as possibilities of treatment in Poland. Oncology is one of the medical specialties that has significantly improved over the past years. The presentation aims to presenting possible development trends of existing ones therapy methods used in the daily diagnosis and treatment of patients with pancreatic cancer.

Keywords:

pancreatic cancer, therapeutic standards, clinical trials

TOURIST POTENTIAL AND OPPORTUNITIES FOR THE DEVELOPMENT OF DUKLA MUNICIPALITY IN THE OPINION OF RESIDENTS

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A few words about the authors:

We are students of tourism and recreation of University of Rzeszów. Moreover, we are members of the student scientific club of travelers.

Abstract:

The purpose of the research was to know and analyze the opinions of the inhabitants of Dukla municipality on the current tourist potential and the possibility of further development of the municipality. The work was put in place and analyzed by the statements of the inhabitants of the municipality about the attractions that are most famous to them, as well as those that can significantly affect the tourism of the region. On the basis of the answers obtained, it was possible to respond positively to the questions raised earlier and draw some conclusions. After analyzing the surveys, it can be concluded that the municipality of Dukla is an area interesting for the tourist and undoubtedly worth visiting, in addition, having considerable potential for further development. However, as the respondents noted, this requires further action by the municipality authorities (promotion) as well as the tourists themselves.

Keywords:

tourist potential, development, Dukla, tourism

MOTIVES FOR PARTICIPATION IN PHYSICAL ACTIVITY OF STUDENTS OF THE UNIVERSITY OF THE THIRD AGE IN SIEDLCE

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A few words about the authors:

P. Kozioł is 2nd year student of tourism and recreation and study at Faculty of Medical and Health Sciences in Siedlce. A.Godlewska is a employee at Faculty of Medical and Health Sciences and she deals with tourism and physical activity.

Abstract:

The aim of the study was to identify the motives that affect participation in physical activity of students of the University of the Third Age in Siedlce, hereinafter referred to as UTW. The conducted research used the diagnostic survey method in which the research tool was a questionnaire, with 82 respondents examined. The statistical calculations were performed with the Statistica 13. PL software, which included an analysis of the discriminant function. The obtained results showed that most common free time activities of UTW students were meetings with friends and self-education. The forms of physical activity that the subjects engaged in most frequently included walking and team games such as basketball. Respondents declared that their participation in physical activity had a positive impact on their well-being. The main motive for participation was the desire to oxygenate the body, enjoy a pleasant experience of being in the fresh air as well as to boost the lust for life.

Keywords:

University of the Third Age, seniors, physical activity, motives, spare time

THE ROLE OF THE NANOSTRUCTURES IN THE SYSTEMIC TREATMENT

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MSc. D. Laskowska – assistant at the Department of Electroradiology, PWSZ in Kalisz.

Abstract:

The essence of any cancer therapy is to destroy as many cancer cells as possible while protecting healthy tissue and minimizing potential complications. This purpose is not always achievable, especially for the systemic treatment (chemotherapy, hormonetherapy and immunotherapy). The use of nanostructures is a chance to overcome these limitations.

The purpose of this article is to present the potential of application of the selected nanostructures in the systemic treatment (targeted therapy).

Keywords:

nanotechnology, nanostructures, systemic treatment, targeted therapy

THE CONTRACEPTION AMONG YOUTH - AWARENESS OF CHOICE

Barbara Pelc*, Aneta Makówka, Justyna Nowakowicz, Anna Muzyczka

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A few words about the authors:

The students of the second year of nursing in PWSTE Jarosław, actively participate in the academic circle called "Promotorzy zdrowia". The supervisor of science club is dr Anna Muzyczka.

Abstract:

Main goal and research problems: Main goal of conducted research was to check the level of knowledge and youth awareness about contraception methods.

Research problems: Which method of contraception is most common among teenagers. From where they draw information about contraception? By what the youth guide themselves in choosing of contraception method

General hypotheses: The most common method of contraception among teenagers is a condom. Teenagers most often draw information about contraception from mass media and friends experience.nIn the selection of the contraceptive methods teenagers are guided by price and availability

Research methods: The only method that was used to carry research was a survey on youth awareness about contraception. Research were carried by online form, posted on social media websites in the region of Podkarpacie. Survey included questions about basic demographical data such as gender, age, place of residence. Moreover survey had questions, for example, about methods and means of contraception used among teenagers in specified range of age, what is their level of knowledge about contraception. Research results: Survey has been filled by about 80 teenagers and it was addressed to youth in age range between 18 and 25. Our research shows that teenagers has good knowledge about contraception which they draw from the mass media and the most common method of contraception is a condom.

Keywords:

youth, contraception, awareness

SPEECH DISORDERS IN ADULT NEUROLOGICAL PATIENTS

Krystian Manicki

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A few words about the author:

Krystian Manicki is an MA student of Pedagogy at Kazimierz Wielki University and a speech therapist at Antoni Jurasz University Hospital No. 1 in Bydgoszcz, Poland.

Abstract:

Contrary to popular opinion, speech therapists are not specialists who work exclusively with children; it is not uncommon for their support to be necessary at a later stage of life as well. Adults in need of speech assistance contend with various speech disorders, among which are those neurologically based, substantially limiting or even completely preventing patients from verbal communication. The aim of this paper is to discuss the most frequent speech pathologies, resulting from strokes or traumatic brain injuries. Selected methods of alternative communication with adults after neurological incidents will also be presented.

Keywords:

speech disorders, brain injuries

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4rd edition
National Scientific Conference
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January 18, 2020

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SELECTED MARKERS OF INFLAMMATION AND THEIR ROLE IN ASSESSING THE RISK OF LUNG CANCER

Marlena Markiewicz*, Anna Grabas, Jarosław Nuszkiewicz, Karolina Szewczyk-Golec

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A few words about the authors:

Medical biology is our passion. We are still learning and sharing our knowledge.

Abstract:

According to the WHO data, lung cancer is the leading cause of cancer death worldwide (18.4% of the total) and is the most commonly diagnosed cancer in men. Smoking is a major etiological factor in lung cancer. The data suggests that 10 years after smoking cessation, the risk of lung cancer is reduced by up to half. Statistics suggest that even passive smoking increases the risk of developing this type of cancer in non-smokers. Clinical and epidemiological studies show a strong relationship between chronic infection, inflammation and the development of lung cancer. Evidence of this is, among others, the presence of inflammatory mediators in the tumor microenvironment, an increase in cancer risk associated with inflammatory disease, and overexpression of proinflammatory cytokines promoting angiogenesis and proliferation of cancer cells. A number of inflammatory markers have been identified that may be associated with lung cancer risk, including: serum amyloid A (SAA), soluble tumor necrosis factor receptor 2 (sTNFRII), interleukin 1 receptor antagonist (IL-1RA), or chemokines: epithelial neutrophil-activating peptide 78 (ENA 78/CXCL5) or monokine induced by interferon gamma (MIG/CXCL9). Recent reports on advances in cancer etiopathology signal the involvement of inflammation in cancer development, and inflammatory factors studied in lung carcinogenesis may be important for cancer prevention and screening.

Keywords:

inflammatory markers, inflammation, lung cancer

MELATONIN - A MOLECULE WITH ANTIOXIDANT PROPERTIES IN THE ASPECT OF THE INFLUENCE OF IONIZING RADIATION ON LIVING ORGANISMS

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Jarosław Nuszkiewicz is a PhD student at Faculty of Medicine, Ludwik Rydygier Collegium Medicum in Bydgoszcz. Interested in oxidant/antioxidant balance, role of vitamin D and melatonin in homeostasis.

Abstract:

Melatonin is a hormone that regulates circadian rhythms. The precursor for the synthesis of melatonin is the amino acid tryptophan. The main site of melatonin synthesis and secretion are pinealocytes that build the pineal gland located in the central nervous system. Melatonin not only regulates the "biological clock" but is also an antioxidant. It plays an important role in maintaining oxidative-antioxidant balance. The disturbance of this balance in favor of oxidative processes is called oxidative stress and can lead to genetic mutations, oxidative modifications of proteins and lipids.

One of the factors influencing the generation of a significant amount of reactive oxygen species and reactive nitrogen species is ionizing radiation (IR). IR has enough energy to cause ionization of atoms. Humanity is exposed to IR from natural sources (e.g. naturally occurring radioisotopes in the ecosystem, cosmic rays) from the beginning of its existence. IR is also used in medicine.

Radioprotective role of melatonin was confirmed in studies both in vitro and in vivo. Melatonin reduces biochemical markers associated with oxidative stress. This effect only occurs when melatonin is administered prior to exposure to IR. A properly selected dose of melatonin affected the survival of the animals tested and reduced the occurrence of negative radiation effects. Further research can help reduce the negative effects of radiotherapy.

Keywords:

melatonin, reactive oxygen species, oxidative stress, ionizing radiation

MOVEMENT IN THE FRESH AIR AS A GREAT WAY TO FIGHT MENOPAUSAL AILMENTS

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A few words about the authors:

Janina Rzeszot, physioterapist, future doctoral student in Health Sciences.

Abstract:

An improperly balanced diet can accelerate the appearance of perimenopausal complaints. Physical activity is less important than a proper diet in preventing the symptoms of menopause. Women exercising at least three times a week have been shown to better tolerate menopause. It counts up to 10 minutes of walking. Training must increase your heart rate and cause sweating. These must be medium to high intensity exercises that last 30- 45 minutes a day, at least five times a week. An analysis of scientific research shows that menopause is associated with physiological predispositions for fat growth. Research by Polish scientists shows that mowement delays menopause by an average of a year. 5498 women were examined, 57% of women reached the average age of 50 years. Data on physical activity were collected from 3 129 women. After considering the effects of age, smoking, education and employment, it was shown that with the lowest non- occupational physical activity later accurred in women in the group with the highest physical activity. An atletic person is less likely to suffer from back and joint pain.

Keywords:

physical activity, scientific research, menopause

MODERN PERCEPTION OF HUMAN BODY ON THE EXAMPLE OF BODY FITNESS

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A few words about the author:

Third year PhD student at University of Physical Education in Warsaw and master's degree in Sociology. The main research interest are the human body in social space and body approach in relation to sport.

Abstract:

The aim of the consideration is to show postmodern vision of the human body. On the basis of Body Fitness, an attempt has been made to characterize current trends in human body perception and creation of own desired image. An analysis of the existing visual and text materials posted on Instagram was conducted to the study. Ten Instagram profiles of Polish male and female Body Fitness competitors were the subject of observation.

An interpretation of the shared content has shown that contemporary body appearance can be looked upon from two perspectives. The first concerns that observed social network provides model examples of what an attractive and desired figure should look like. It includes primarily an aesthetically shaped body and symmetrically sculpted muscles. The second perspective relates to the way which enables achievement of such figure. It means adopting a specific lifestyle based mainly on undertaking physical activity. Such approach is also inspired by motivational content appearing on Instagram (fitspiration). Both attitudes create an image of happy, successful people who achieve such state thanks to their attractive appearance and active life.

The analysis of Instagram profiles of Body Fitness competitors revealed that modern image of the human body promoted on the indicated portal firstly is a matter of physicality and secondly is connected with specific lifestyle. Undertaking physical activity becomes a way to achieve the desired figure and success in life.

Keywords:

human body, body fitness, fitspiration

THE EVALUATION OF THE OCCURRENCE OF OVERWEIGHT AND OBESITY AMONG THE CITY AND COUNTRY YOUTH AND THEIR IMPACT ON SUBJECTIVE PHYSICAL FITNESS

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A few words about the author:

I am a student of fiveth year of medicine studies at Collegium Medicum UWM in Olsztyn. I am very interested in scientific activity and I expand it by membership in Student Science Club at Department of Pathophysiology.

Abstract:

The frequency of overweight and obesity is constantly rising. Obesity is recognized as one of many civilization diseases. Obesity among children and the youth is a serious problem. In Poland about 6.5% of boys and 7.5% of girls are obese. The main causes of overweight and obesity are incorrect nutrition (eating fast-foods and cola-like drinks) and low physical activity. In the countryside the youth don't have access to fast-foods and have more physical activity, which suggests that there are fewer young people with obesity and overweight in the countryside than in the city. This study shows the frequency of overweight and obesity among the youth of the northern Mazovia. In the study we used the anonymous survey. We divided subjects into two groups: people, who live in a village and those, who live in the city and we compared those groups in terms of frequency of obesity and overweight. We also compared the subjective physical fitness between people with correct and increased BMI. The results show an important problem of obesity among the youth and should encourage medical environment to work on solving it.

Keywords:

BMI, vitality, civilization disease, Mazovia

THE IMPACT OF SMOKING BY PARENTS AND OTHER FACTORS LEADING TO A SMOKING HABIT AMONG THE YOUTH

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We are students of fiveth year of medicine studies at Collegium Medicum UWM in Olsztyn. We are very interested in scientific activity and we expand it by membership in Student Science Club at Department of Patophysiology.

Abstract:

The studies show that most smoking people smoked their first cigarette in the age between 15 and 19. The most common cause of starting smoking is the pressure of colleagues. There is also correlation between smoking parents and starting smoking by children. My study shows the impact of smoking parents and other factors which could contribute to the beginning of smoking by the youth of northern Mazovia. In the study I used the anonymous survey. The subjects were divided into three groups: people with non-smoking parents, ones with one parent smoking and those with both parents smoking. The results show that most of smoking youths have at least one smoking parent. The most common reason of smoking first cigarette by a youth was: “curiosity”, other common reasons were: “the desire to impress the colleagues”, “the desire to fit into the group”, “ stress” and “ problems”. Smoking of first cigarette is an important issue because this can cause addiction.

Keywords:

cigarettes, nicotinism, nicotine initiation, Mazovia

THE POPULARITY OF EXTREME TOURISM AMONG STUDENTS OF THA UNIVERSITY OF RZESZÓW AT THE FACULTY OF PHYSICAL EDUCATION

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A few words about the authors:

We are students of tourism and recreation of University of Rzeszów. Moreover, We are members of the student scientific club of travelers.

Abstract:

The purpose of this work was to obtain information on the popularity of extreme tourism among students of the University of Rzeszow at the Faculty of Physical Education, using anonymous surveys. The paper describes the concepts of tourism, extreme sports and its types according to various authors. The form of charts gives the percentage of people practicing extreme tourism, the frequency of taking extreme activities and their motives, as well as the time of year that participating audience choose most often. Research shows that more than half of the students surveyed deal with this type of tourism, and the majority of participants of the survey consider summer to be the best time to engage in extreme tourism.

Keywords:

extreme tourism, tourism

MYO-INOSITOL AND ITS POTENTIAL THERAPEUTIC USES

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A few words about the author:

I am a student of medicine at University of Warmia and Mazury in Olsztyn. This work was prepared as a part of my activity in Pathophysiology academic circle.

Abstract:

Inositols are a family of slightly different compounds derived by C6 sugar alcohol. Myo-inositol (myo-Ins) is one of the nine known inositol isomers. It is a natural substance, which can also be synthesized in our bodies. Currently, myo-Ins is recognized as a very safe substance. Side effects of its supplementation are mild and mainly gastrointestinal. Because of the fact, that myo-Ins is involved in regulation of many physiological processes, it is being tested in some disorders as a possible treatment option in future. In pubmed.gov database there are over 45 000 articles, which are associated with subject of myo-Ins. However, most of them concentrates on in vitro trials or only on myo-Ins effects in one disorder. This presentation will focus on presenting in a comprehensive way, currently available knowledge about the myo-inositol and its potential therapeutic uses.

Keywords:

myo-inositol, metabolic syndrome, Hashimoto’s thyroiditis, PCOS

TOXICITY INDUCED BY MYO-INOSITOL ON ZEBRAFISH EMBRYOS

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I am a student of medicine at University of Warmia and Mazury in Olsztyn. This work was prepared as a part of my activity in Pathophysiology academic circle.

Abstract:

Myo-inositol (myo-Ins) is a natural substance, which is involved in many of physiological processes, including regulation of cells survival, growth and proliferation. Although its' quite important role in cells live, myo-Ins supplementation seems to be very safe. The Zebrafish (Danio rerio) is a freshwater fish, which is being used as scientific model organism in different studies. However, no toxic level of myo-Ins in Zebrafish has been yet establish. The aim of this study was to determine lethal and toxic doses of myo-Ins in Zebrafish embryos.

To determine the toxicity level, 181 selected Zebrafish embryos (in the stage of 3 hpf) was divided into 6 groups. Each of group was then incubated in different myo-Ins concentrations up to 120 hpf.

The lethal dose of myo-Ins was 100 mg/ml. This myo-Ins concentration caused death in almost all embryos in first 24 hours of incubation. The doses of myo-Ins up to 10 mg/ml seems to be well tolerated by Zebrafish embryos, with no impact on death rate or development abnormalities.

The findings of this study suggest that myo-Ins is a very safe substance, which can be used in high concentrations (up to 10 mg/ml) on Zebrafish scientific models.

Keywords:

myo-inositol, zebrafish embryos, toxicity

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ISBN: 978-83-955366-6-3

ISBN 978-83-955366-6-3

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