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Graphics:

Byczkowska Paulina

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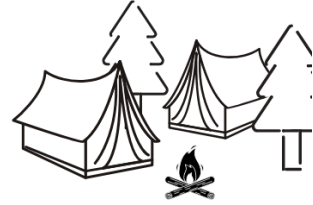
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HUMANITIES SCIENCES

PRESENTATIONS



THE ROBUSTNESS OF THE ANCHORING EFFECT IN VALUATION TASKS

Magdalena Brzozowicz

University of Warsaw, Dhuga 44/50, 00-241 Warsaw, Poland

mbrzozowicz@wne.uw.edu.pl

A few words about the author:

I am a PhD student at the University of Warsaw (Faculty of Economic Sciences). I am interested in experimental economics, behavioral economics and marketing.

Abstract:

I examined the robustness of the anchoring effect with respect to the method of valuation, type of anchor and the availability of information about the presented product. In four different laboratory experiments, I elicited consumer willingness to pay (WTP) for cosmetic product manipulating anchoring conditions (low vs. high anchor or no anchor vs. high anchor). I observed that only the market anchor (the real price of a similar product) had an impact on WTP. I also found that the strength of the anchoring effect is lower in incentivised valuation tasks compared to hypothetical anchoring questions (I observed a significant anchoring effect only in experiment with declarative valuations). My findings suggest that the robustness of the anchoring effect is limited.

Keywords:

anchoring effect, laboratory experiment, WTP, valuation of products



RENOWNED HUI MASTERS AND THEIR IMPACT ON THE DEVELOPMENT OF CHINESE MARTIAL ARTS IN THE 20TH CENTURY

Ewa Ciembroniewicz

Jagiellonian University in Krakow

e.ciembroniewicz@gmail.com

A few words about the author:

My research is devoted to Chinese martial arts, covering the functioning of traditional martial arts in the process of cultural globalization, their media presence, connections to local traditions and national identity.

Abstract:

The author will analyse the impact of Hui masters on the development of Chinese martial arts, focusing on the period of the greatest transformation that began the 1950s. This period represents a new chapter in the history of martial arts promotion and the Hui minority has been exerting a major influence upon various ways of popularization in this area. This presentation seeks to discuss the most important stages in the transformation of wushu, taking account of historical factors and the political situation at the time and then to demonstrate what role was played by Hui masters both in the process of establishing a new sport discipline and in the popularization of traditional martial arts. The author considers the Cangzhou region as an example. The members of this group were distinguished by their valor, their tradition going back hundreds of years and marked by the love of martial arts and their outstanding achievements. The martial arts practiced by the Hui from Cangzhou have been listed by the Ministry of Culture as part of the intangible heritage of the Chinese culture. The activity of renowned Hui masters, important for the development of wushu, excellent reflects the influence of Islam upon the Chinese martial arts.

Keywords:

Islam, Hui, Chinese martial arts, wushu, heritage of the Chinese culture



TRADE AGREEMENTS OF EUROPEAN UNION

Maciej Czarnecki

Nicolaus Copernicus University, Jurija Gagarina 11, 87-100 Toruń, Poland

maciejcz16@gmail.com

A few words about the author:

Master's student in the field of management with a specialization in Investments and Real Estate. In 2019, he finished bachelor studies (Finance and Accounting). He is interested in the subject of investing and quantity methods.

Abstract:

The presentation raise a topics related trading in European Union with Japan, United Kingdom, Canada, United States and China. The trade agreement is a document between two countries or two organisation that want to achieve their economic target. Often it comes down to the convenience of trade between countries and the aboliton of trade barriers. Trade agreements are also accompanied by smaller targets for example social or political. The basis for writing the presentation was the literature on the subject, legal acts, internet sources and analysis of data available on the internet.

Keywords:

European Union, agreement, free trade



ETHICAL INVESTING IN GREEN INSTRUMENTS

Maciej Czarnecki

Nicolaus Copernicus University, Jurija Gagarina 11, 87-100 Toruń, Poland

maciejcz16@gmail.com

A few words about the author:

Master's student in the field of management with a specialization in Investments and Real Estate. In 2019, he finished bachelor studies (Finance and Accounting). He is interested in the subject of investing and quantity methods.

Abstract:

Ethical investing in green instruments is a form of investing not only to bring profits, but also to support ecology, activities related to nature protection and building public awareness on environmental issues. Green instruments are created from two form: green shares and green bonds. The basis for writing the presentation was the literature on the subject, legal acts, internet sources and analysis of data available on the internet.

Keywords:

green bonds, green share, ethical investing



ANGEL IN CONTEMPORARY LITERATURE

Joanna Gawęda

Nicolaus Copernicus University

joanna_gaweda@onet.pl

A few words about the author:

Master of Cultural Studies from the University of Mikołaj Kopernik.

Abstract:

In this work, I compare three books: *Angelologia* by Danielle Trussoni, *Anioł* by Dorothea de Spirito and *Ja, Anielica* by K.B. Miszczuk. In turn, with authors coming from another country, which allows you to deal with the differences between point values and points of motivation in cultural circles, then I intend to deal with the Christian religion and motive and motive in mass culture.

Keywords:

angel, contemporary literature, comparison



IMPACT OF INTRODUCING FLAT INCOME TAX ON INCOME INEQUALITY IN HUNGARY

Paweł Gralewicz

Jagiellonian University, Kraków

pawel.gralewicz@gmail.com

A few words about the author:

I am a PhD student in economics studying at the Jagiellonian University. In my research, I focus on the analysis of socio-economic inequality and quality of life in European countries.

Abstract:

The presented research aims to show whether the introduction of flat taxation on personal income in 2011 in Hungary led to an increase in income inequality in this country. To carry out a comparative analysis of the level of inequality from the period of high progressive PIT (2006-2010) with the period of linear PIT (2011-2017), two indicators were used - the Gini coefficient and the quintile income differentiation indicator. The study used statistical data from the OECD database.

The analysis showed that there is a high probability that the adoption of flat income taxation in Hungary after 2011 led to a significant increase in income inequality.

Keywords:

taxation, income inequality, Hungary



HOW NELIE BLY HAS TRANSFORMED INVESTIGATIVE JOURNALISM?

Patrycja Haber

Pontifical University of John Paul II in Cracov

patrycja.haber1@gmail.com

A few words about the author:

Patrycja Haber has spent already five years on investigative journalism studies. Currently she is working on her doctoral degree about detectives and detective press.

Abstract:

Nelie Bly (Elizabeth Cochran Seaman) was a feminist and a social-justice advocate. She had started her writing career more than three decades before women in the US got the right to vote and she had transformed investigative journalism. Nelie bly moved to New York, where she exposed the squalid conditions inside mental institutions by getting herself committed to an asylum. The resulting piece, published in 1887, catapulted her career, making her one of the most well-known and widely read reporters in the country. She gave rise to true investigative journalism by using a secret technique to obtain information even without any technology. She should be a model for each journalist today.

Keywords:

investigative journalism, Nelie Bly



THE USE OF PROJECT-BASED LEARNING TO TEACH METHODS AND TECHNIQUES OF LEARNING FOREIGN LANGUAGES

Eliza Illukiewicz

Jagiellonian University

e.illukiewicz@gmail.com

A few words about the author:

A PhD candidate at the Faculty of Philology at the Jagiellonian University in Cracow and a lecturer at the WSB University in Dąbrowa Górnicza (Poland). Author of a foreign language vocabulary workbook Verbook.

Abstract:

The project-based learning, although known since the beginning of the 20th century, is currently being used widely in the academic environment. The advantage of this method is teaching based on the performance of some complex task - a project. Students are involved in the preparation and then presenting the prepared project to other group members. The course named Methods and techniques of learning foreign languages consists of 30 didactic hours has been based on the project-based learning method. The first part of the course consists of some introductory classes on the subject of language teaching, students' presentations constitute a second, significant part of the course. The students' task is to choose one polyglot and prepare a presentation about him/her, including a biographical note and a detailed description of the method used by a given polyglot. In the second part of the presentation students prepare handouts-exercises based on which we learn chosen foreign language. Exercises are materials created for the purposes of the classes and are a practical application of the polyglot method, learning a foreign language is only an additional profit. During the survey conducted in the first class, in which students were asked about the reasons for choosing the course, the vast majority of the students (almost explicitly) mentioned not only the desire to learn new techniques and methods of learning foreign languages but also the fact of starting to learn a new language.

Keywords:

project-based learning, foreign languages, language teaching



METHODS USED BY STUDENTS TO LEARN FOREIGN LANGUAGE VOCABULARY

Eliza Illukiewicz

Jagiellonian University

e.illukiewicz@gmail.com

A few words about the author:

A PhD candidate at the Faculty of Philology at the Jagiellonian University and a lecturer at the WSB University. Author of a foreign language vocabulary workbooks "Verbook". Her research interests are language teaching and multilingualism.

Abstract:

Although the languages are tough worldwide, we still do not know a lot about how to learn them. We have a bunch of scientifically proved methods enhancing learning, for instance, a subject-performer task or distributed practice. However, when we ask a learner at a Polish university if he/she was ever taught how to learn new vocabulary, he/she would probably reject (based on own study). Nevertheless, students find some way to learn a language. The aim of the study was to determine students' awareness of learning vocabulary methods. The study was based on quantitative research in which 40 students had to memorize new vocabulary, afterwards, they were asked to write down as many new words as they remembered. Finally, they had to answer two questions about how they were memorizing while they were learning and how they were trying to recall new-learned vocabulary. Results indicated that students' methods do not differ vastly, and its number is limited. Despite the fact, some respondents could not describe their process of learning, the majority did it intuitively.

Keywords:

vocabulary acquisition, foreign language, learning methods



PERCEPTION OF BAJM MUSIC BAND’S ACTIVITY BY ITS LISTENERS

Anna Jabłońska

The John Paul II Catholic University of Lublin

a.jablonska1993@gmail.com

A few words about the author:

Anna Jabłońska - PhD candidate of The John Paul II Catholic University of Lublin. She is interested in history of the culture, music, biographies and psychology.

Abstract:

Bajm gained its popularity in 1978 by performing the song „On foot to the summer” at the National Festival of Polish Song in Opole. The music band has been active at Polish music scene and has been having its fans among many generations for over forty years. The constant interest in this particular music band should be emphasized. A survey was conducted in order to discover reason of the band’s popularity, which showed the work of the band in perception of its fans and listeners. The respondents mostly appreciated talent and personality of the vocalist and lyricist of Bajm – Beata Kozidrak, they also appreciated the message of her songs, which often encourages them to reflect on their own lives.

Keywords:

Bajm, Beata Kozidrak



THE RIGHT TO DEFENSE AND THE RIGHT TO LIE IN THE POLISH CRIMINAL TRIAL

Karolina Kiecana

Jagiellonian University in Cracow

kiecanakarolina1997@gmail.com

A few words about the author:

I am fourth-year law student at the Jagiellonian University. I am interested in criminal law and human rights.

Abstract:

One of the most important rights in Polish criminal trial is the right to defense. This means that accused is eligible to take all steps to protect the interests, which do not breach the law. Especially this right entitles to use the help of a defense lawyer, to present evidences in his favor, to provide and refusal to provide explanations, remain silence and passive behavior of defendant. However, it is problematic whether the accused has a right to lie when making statements. Polish criminal law does not include a penalty for false testimony by accused as in the case of giving by a witness. On the other hand how does right to lie relate to moral and social principles? This issue will be discussed in more detail in the presentation.

Keywords:

right, defense, lie, criminal trial, accused



DISCRIMINATION IN THE MODERN WORLD - ANALYSIS OF THE PHENOMENON IN AN INDIVIDUAL DIMENSION

Justyna Konopelko

Faculty of Education, University of Białystok

konopelko.justyna@gmail.com

A few words about the author:

I am student at University of Białystok. My interests include especially pedagogical, psychological and social topics.

Abstract:

The presentation responds to the constant need to pay attention to the problem of discrimination and peer exclusion, which are commonplace in peer groups. The paper refers to the definition of the basic terminology of the subject matter. The problem of characteristics in the individual dimension is also discussed in the context of the roles occurring in a discriminatory situation, as well as the tendency to initiate it.

Keywords:

discrimination, peer group, peer exclusion, scapegoat



ASSESSMENT OF THE CITY'S IMAGE - BASED ON THE OPINIONS OF THE INHABITANTS OF SZCZECIN

Martyna Kostrzewska

Nowe Pokolenie Martyna Kostrzewska

martyna@nowepokolenie-mk.pl

A few words about the author:

Martyna Kostrzewska is a founder of Nowe Pokolenie MK Social Media Agency. She is as well a PhD Candidate. She appeared as a speaker at numerous conferences in the United States. Scientifically interested in the issues of Social Media Marketing.

Abstract:

The positive image of the city and the country translates into all economic spheres of both the territorial units themselves and the enterprises operating on their territory. The use of tools used by enterprises by cities is a necessary factor for development and competitiveness. The key to success in a competitive city market is making informed and strategic decisions aimed at building an attractive image of the city. Knowledge of users' emotional attitudes to space seems crucial from the perspective of creating and implementing development strategies for cities and regions, including shaping their image, which is considered one of the elements of broadly understood territorial capital. The image of the city is shaped by the individual, depending on its own demographic and social features. The purpose of the article is to present the opinion of the inhabitants of Szczecin regarding the image of the city. The article presents the results of research carried out using an electronic questionnaire on a representative sample of Szczecin residents. Knowledge of residents' opinions and assessments plays a key role in building strategic marketing activities of Szczecin, including in particular activities related to activating local communities, communication of the authorities with the inhabitants, promotion of the city's achievements and also building its image.

Keywords:

city image



INVOLVEMENT OF THE EQUITES IN THE PROVINCIAL ADMINISTRATION DURING THE REIGN OF FLAVIANS. OUTLINE OF THE ISSUE

Patrycja Kudzin

Kazimierz Wielki University

patrycja.kudzin@wp.pl

A few words about the author:

Patrycja Kudzin - PhD student in the History Department in Kazimierz Wielki University.

Abstract:

The Roman society displayed a complicated structure. The Equites in terms of rank and wealth were the second of the privileged orders, immediately below the Senators.

Beginning with the reign of Augustus, the Equites were increasingly involved in public administration. They were entrusted with financial affairs in the provincial administration and, having completed military service, they could act as procurators – officials responsible for fiscal matters. Moreover they were entitled to hold the position of governors in some parts of the Roman Empire.

In the Flavian era, there were changes in the province administration, territorial changes which translated into changes in administration, as new offices had to be filled. Vespasian was the emperor to attempt restructuring the political elite of the Roman Empire. As argued by P.A. Brunt, at the beginning of his reign, Vespasian was to remove some of the administrative offices to create new ones intended for his supporters. This practice was continued by Domitian, who established new offices, for example procurator XX hereditatium. According to O. Hirschfeld, during the reign of Flavians, the Equites held more offices in the imperial administration than before, albeit their positions were predominantly related to financial administration. During the Flavian era Equites in the social and political life of the Roman Empire began to gain importance.

Keywords:

Roman administration, equites, Flavians



THE EQUESTRIAN SERVICE IN THE ROMAN ADMINISTRATION DURING THE REIGN OF THE FLAVIANS ON THE EXAMPLE OF THE HIGHEST EQUESTRIAN OFFICES. OUTLINE OF THE ISSUE

Patrycja Kudzin

Kazimierz Wielki University

patrycja.kudzin@wp.pl

A few words about the author:

Patrycja Kudzin - PhD student in the History Department in the Kazimierz Wielki University.

Abstract:

The Equites in terms of rank and wealth were the second privileged group of the roman society, after senators.

The highest positions in the roman administration available to the Equites included the Praetorian Prefect, the Prefect of Egypt, the Prefect of Annona and the Prefect of the Vigiles. The first Praetorian Prefects were appointed in the year 2 B.C. to command the Pretorian guard. The cohorts were responsible for the safety of the emperor and his family, and the office itself was clearly rooted in the military. In the second part of the first century, during the reign of Flavians, the Praetorian Prefect was essentially regarded as the second most powerful person after the emperor. The high offices held by the Equites included also the position of the Prefect of Egypt, whose role was to govern the province. The Prefect of Annona was responsible for the delivery of grain to Rome, whereas the Prefect of the Vigiles was the commander of the municipal fire department in Rome.

The administrative system was rebuilt under the rule of Flavians, allowing cunning and skilful individuals to develop spectacular careers. The number of the Equites who held offices and their importance increased. Consequently, the Flavian reign marked certain significant changes in the social and political situation of the Equites.

Keywords:

Flavians, equites, Roman administration



PEER DISCRIMINATION - THE GROUP DIMENSION

Urszula Kulikowska

University of Białystok

urshula.k9@gmail.com

A few words about the author:

I am a student at the University of Białystok. I am interested in different fields of knowledge, e.g. sociology, pedagogy. In the future, I want to become a school teacher.

Abstract:

The presentation focuses on the problem of discrimination in a peer group. The main aim is to present the genesis of the problem and to show some dependencies between the discrimination and the functioning of the peer environment as a group. The presentation analyzes the structure, hierarchy and the roles played in the peer group.

Keywords:

peer group, discrimination, roles, hierarchy



POSTMORTAL MYTHOLOGIZATION OF ARCHDUKE RUDOLPH HABSBURG-LORRAINE IN GALICIA AS AN EXAMPLE OF A PREMODERN POLITICAL MYTH

Katarzyna Lipińska

University of Wrocław

katarzyna_maria_lipinska@poczta.onet.eu

A few words about the author:

Law and political science student at the University of Wrocław interested in legal sociology and the history of political discourse. Privately a collector of Biedermeier jewelry.

Abstract:

The suicide of the heir to the throne of the Austro-Hungarian Empire became an inspiration for fine literature and an object of research for journalists and historians. The political views and journalistic activity of the only son of Francis Joseph differed significantly from the concepts implemented by Kaiser. Rudolph received teachings from the Hungarian elite and was under influence of his mother. In the process of mythologizing Archduke Rudolph, crucial seems to be the antagonism between the Emperor and the heir to the throne. The press controlled by Hofburg was afraid to reveal that the heir to the throne committed suicide until the February of that year.

Galicia was a relatively neutral area in regard to the conflict between Cisleithania and Transleithania. During last years of Imperial-Royal Monarchy and the Interwar period, two simultaneously developing trends in Kronprinz's myth were noticeable there, i.e. the archaic one represented by the peasantry and the quasi-modern one, noticeable in cities. While Rudolph's rural legend was expressed in legends of a ruler-pilgrim, the urban myth of the heir to the throne took on a much more sublime form. The evolution of press reports indicates a gradual nostalgization of the image of the deceased heir to the throne. Among the people, the vital myth of Archduke Rudolph played a significant role in the so-called emigration fever, as well in the Jewish pogroms.

Keywords:

Archduke Rudolph, Mayerling, political myth, Galicia, Austria-Hungary Empire



ANALYSIS OF THE OCCURRENCE OF STRESS AND OCCUPATIONAL BURNOUT AMONG TEACHERS' PROFESSIONAL ACTIVITY

Edyta Ubran (1), Martyna Łukacz (2)*

(1) College of Medical Sciences, University of Rzeszów, Rzeszów,

(2) Collegium of Social Sciences, Institute of Pedagogy, University of Rzeszów, Rzeszów

*martyna.lukacz@o2.pl

A few words about the authors:

Edyta and Martyna: two students of Rzeszów University. Edyta is first-year of graduate studies of Nursing profession. Martyna is first-year of graduate studies of Pedagogy. They are representing Academic Circle of Science about Family.

Abstract:

Burnout is a process that concerns general stress reactions resulting mainly from stress and difficulties at work. More and more often it concerns various professional groups, including the teacher. Burnout is a destructive process that starts in the psyche of people who over-devote their strength to working with people. Burnout syndrome is associated with many stress reactions, such as decreased motivation and willingness to work. Working with a student and his parents can be extremely stressful. It is constantly assessed and controlled by the school management and other teachers, as well as students and parents. The pressure that accompanies the performance of professional duties makes teachers one of the professions most prone to burnout and stress. The aim of the study was to find out the opinions on stress and burnout among teachers. In order to conduct the study, the method of a diagnostic survey was used, and the original questionnaire was used as a research tool. Primary school employees (60%) accounted for over half of the surveyed teachers. For respondents, the events that cause the most stress at work are the need to study in crowded classrooms, parents' demands that cannot be met, and participation in conferences and meetings.

Keywords:

stress, burnout, teacher



USING OF NEW MEDIA IN ACADEMIC EDUCATION

Ewa Majewska

Maria Curie Skłodowska University in Lublin

ewa.majewska@poczta.umcs.lublin.pl

A few words about the authors:

Currently a contract teacher in an elementary school and a PhD student in media sciences at the Maria Curie-Skłodowska University in Lublin (Faculty of Political Sciences and Journalism).

Abstract:

The dynamics of social change also forces changes in education. New media play a very important role in the education process. Nowadays, didactic means served to them by the development of modern technologies. This form of conducting classes is making classes more attractive and activating students. PhD students indicate which applications and e-learning platforms use during conducting classes and describe what is important for the effectiveness of the teaching process. The presentation presents research among a group of PhD students. Selected electronic aids selected by PhD students have been characterized. The author pays attention to the need to improve digital literacy among academic educators and the need to adapt academic education, which would be a response to the needs of a digital student.

Keywords:

new media, internet, academic education, educational applications



DESIGN THINKING - A CHANCE FOR INNOVATION IN HIGHER EDUCATION INSTITUTIONS

Ewa Majewska

Maria Curie Skłodowska University in Lublin

ewa.majewska@poczta.umcs.lublin.pl

A few words about the author:

Currently a contract teacher in an elementary school and a PhD student in media sciences at the Maria Curie-Skłodowska University in Lublin (Faculty of Political Sciences and Journalism).

Abstract:

Design thinking as a way of reasoning is becoming more and more popular nowadays. Originated in business and transferred to other areas, it is now being implemented even in education and since. With its four or five steps in the whole process, interdisciplinary teams can solve every problem and find a solution which meets the needs and expectations of the end-users. This approach has also been successfully implemented in higher education institutions and it is through that HEIs are becoming more open and efficient in their cooperation with business, public administration, NGOs and other stakeholders.

Keywords:

design thinking, interdisciplinarity, creativity, higher education, teamwork



NATURAL ENVIRONMENT OF 16TH CENTURY POLAND IN THE LIGHT OF "POLONIA" MARCIN KROMER

Paweł Miszczuk

The John Paul II Catholic University of Lublin

miszczuk12@wp.pl

A few words about the author:

The author is a PhD student in history and additionally pursues his passion by teaching at school.

Abstract:

Bishop Marcin Kromer wrote a textbook for the king of Poland in the 16th century. "Polonia" was created to emphasize the natural wealth of the country.

The natural environment is a fairly broad concept. In this case, it refers to the fauna and flora that were shown in the source, including the watercourses and the topography. Numerous descriptions are conducive to the reflection of what Poland used to be. What is particularly interesting is how much afforestation influenced various species of animals, and how much settlement was caused by the distribution of rivers and lakes.

From this source, we learn about the level of knowledge that the Polish elite presented in the 16th century about the nature surrounding them.

Keywords:

Polonia, natural environment, fauna, flora



DIVERSITY OF THE UNEMPLOYMENT IN THE FEDERATIVE REPUBLIC OF BRASIL (BRASIL) - THE CHOSEN ASPECTS

Michał Mrozek

*Faculty of Economics, Finance and Management, University of Szczecin
Institute of Economics and Finance, Department of Economics*

michaladrianmrozek@gmail.com

A few words about the author:

I am a PhD student of the 3rd Year of Economics. My scientific areas include: Labour market policies, labour market instruments, Unemployment level, Unemployment rate, Regional development, Socio-economic development, Socio-economic policy.

Abstract:

The paper regards the Diagnosis of the Diversity of the Unemployment Phenomenon in The Federative Republic of Brasil (Brasil). The aim of the paper is the the Diagnosis of the Diversity of the Unemployment Phenomenon in The Federative Republic of Brasil. The following research problems were put forward: How does the Diversity of The Federative Republic of Brasil in terms of the Unemployment Phenomenon look?; Which of the researched provinces of The Federative Republic of Brasil have the lowest, middle, the highest level of The Unemployment? In the theoretical part were presented the following issues: Unemployment, labour market, labour market policies. In the empirical part was presented the results of the carried out researches: structure analysis, comparative, dynamic analysis of the Unemployment Phenomenon, ranking of the provinces of Federative Republic of Brasil by the Unemployment Phenomenon. The results showed that Federative Republic of Brasil is diversified within unemployment level depending on researched period of time. The inference process took place in the deductive way.

Keywords:

diversity, unemployment, labour market, Federative Republic of Brasil



ANTI-POLISH POLICY IN 1935-1937 IN THE USSR

Przemysław Mirosław Pazder

Pomeranian University in Słupsk

mm527@o2.pl

A few words about the author:

Przemysław Mirosław Pazder – Master of History at the Pomeranian University in Słupsk.
Research interests: Poles in the USSR during the Great Famine.

Abstract:

The 1930s were characterized by dramatic experiences of Poles living in the USSR. Poles, like other citizens of the USSR, survived the tragedy of collectivization of the village and the Great Famine, as well as other repressions such as the liquidation of Polish autonomy or deportations deep into the USSR. The dissolution of two Polish autonomous regions in the USSR was initiated in 1935. This year it was decided to liquidate the Polish National District Julian Marchlewski, while the liquidation of the Polish National District Feliks Dzerzhinsky took place in 1937.

Keywords:

Polish National District Feliks Dzerzhinsky, Polish National District Julian Marchlewski,
USSR



COLLECTIVIZATION OF THE VILLAGE AND THE POLISH POPULATION IN THE USSR

Przemysław Mirosław Pazder

Pomeranian Univeristy in Slupsk

mm527@o2.pl

A few words about the author:

Przemysław Mirosław Pazder – Master of History at the Pomeranian University in Słupsk.
Research interests: Poles in the USSR during the Great Famine.

Abstract:

After the Bolshevik seizure of power in Russia in 1917, they sought to introduce a communist system, and this required the implementation of two basic assumptions - the liquidation of private property and the liquidation of religious beliefs. In order to collectivize agriculture, introduced by violence, they sought to completely liquidate individual peasant farms and replace them with collective farms.

Keywords:

USSR, Holodomor, collectivization



POLITICAL CHANGES IN POLAND AFTER 1989

Przemysław Mirosław Pazder

Pomeranian University in Słupsk

mm527@o2.pl

A few words about the author:

Przemysław Mirosław Pazder – Master of History at the Pomeranian University in Słupsk.
Research interests: Poles in the USSR during the Great Famine.

Abstract:

A landmark event in the history of Poland was the Round Table meeting (February 6, 1989), where political reforms were the most important. The power's goal was to persuade the opposition to participate in the so-called non-confrontational parliamentary elections to make the first step towards incorporating it into the political system of the People's Republic of Poland without violating its foundations. Generally, the process of democratic change in Poland can be divided into three periods: 1989 - the fall of communism in the Polish state, 1989-1991 - the creation of democratic procedures and institutions, and further after 1991 - the consolidation of democracy. In the years 1989–1991 significant political transformations took place, which are the basis for the democratic system - at that time political institutions were established, such as the Senate, municipal councils or the office of the president. In addition, in 1992 the so-called a small constitution which defined the powers of the executive and legislative authorities.

Keywords:

Poland, democracy, consolidation of democracy



OFFSHORE FINANCIAL CENTERS IN SELECTED COUNTRIES OF THE WORLD AND THEIR ACTIVITY

Izabela Pokraśniewicz

Nicolaus Copernicus University, Jurija Gagarina 11, 87-100 Toruń, Poland

ipokrasniewicz@gmail.com

A few words about the author:

Master's student in the field of management with a specialization in Investments and Real Estate. In 2019, she finished bachelor studies (Finance and Accounting). She is interested in the subject of investing.

Abstract:

The aim of the presentation is to characterize the activities and importance of offshore financial centers (OFC), distinguish jurisdictions classified as OFC, present the regulations governing the centers and indicate the benefits and risks of investing in OFC. This paper presents the OFC countries with the specification of services in which a given center specializes. The presentation will also indicate their offer and the features that determine their international attractiveness.

The aim of the research is also to show that individual OFCs differ in the sectors in which they specialize, and these differences result not only from their range of influence and adopted economic systems, but also from their geographical location.

The subject of research in this paper are offshore financial centers, their activities and offer.

For the purposes of the study, a research hypothesis was formulated that: all offshore financial centers (OFC) offer more favorable tax conditions than countries classified as onshore.

The basis for writing the presentation was the literature on the subject, legal acts, internet sources and the analysis of data available on the website of the World Bank and the International Monetary Fund. The presentation combines the study of literature, the analysis of financial and macroeconomic data of individual countries considered to be OFC and a comparative analysis of the attractiveness and services offered in selected offshore centers.

Keywords:

Offshore Financial Centers, Caribbean Offshore Financial Centers, attractiveness, product offer, legal regulations



DIVERSITY OF POPULATION INCOME IN THE EU AND MEMBER STATES

Izabela Pokraśniewicz

Nicolaus Copernicus University, Jurija Gagarina 11, 87-100 Toruń, Poland

ipokrasniewicz@gmail.com

A few words about the author:

Master's student in the field of management with a specialization in Investments and Real Estate. In 2019, she finished bachelor studies (Finance and Accounting). She is interested in the subject of investing.

Abstract:

The differentiation of the income of the population in individual countries is the focus of interest for economists, but also politicians. Household incomes testify to the wealth of a given country, influence public interest in financial services and the structure and volume of consumption of entities.

The aim of the presentation is to analyze the standard of living of the inhabitants of the European Union by comparing various measures of economic prosperity, to show significant differences in the wealth of countries, but also to improve their situation over a period of several to several years. Moreover, the paper presents an internal analysis of Poland's affluence divided into voivodships.

The basis for writing the presentation was the literature of the studied subject, internet sources and the analysis of data available on the website of Eurostat and the Central Statistical Office (popularly called GUS).

Keywords:

measures of prosperity, GDP per capita



PANDEMIC CHALLENGE: TRANSFORMATION OF THE EDUCATION SYSTEM UNDER THE NEW CONDITIONS

Natalia Shelest

The University of Lodz, Narutowicza 68, 90-136 Lodz, Poland

natalia.shelest@unilodz.eu

A few words about the author:

The author is a MA student of the University of Lodz and, concurrently, a teacher of English. Her research interests include the culture of English-speaking countries, English phonetics, distance learning methods.

Abstract:

Nowadays, humanity has found itself in a new reality, which has certainly affected almost all areas of our life. One of them is education. Simultaneously, in many countries of the world and for the same reason, schools and educational institutions have become isolated. There is no doubt that the impact of the pandemic on the education system will have far-reaching consequences. The unexpected problems faced by students and teachers require rethinking and deep transformation of the current education system in accordance with new realities. Along with the introduction of the latest technologies and educational programs, the participants in the educational process themselves must socially and psychologically adapt to them: teachers should be more flexible and globally thinking, and students should become effective, independent, inquisitive students with self-learning skills.

Keywords:

distance learning, generation Z, globalization, adaptability, self-study skills



RULES FOR MAKING PERSONAL DATA OF INFRINGERS AVAILABLE TO THE VICTIM IN THE LIGHT OF THE JUDGMENT OF THE COURT OF JUSTICE OF THE EUROPEAN UNION C-264/19

Paula Skrzypecka

Cardinal Stefan Wyszyński University in Warsaw

pziembicka@gmail.com

A few words about the author:

PhD student at the Faculty of Law and Administration of the Cardinal Stefan Wyszyński University in Warsaw. It deals with the law of new technologies, the protection of personal data and intellectual property.

Abstract:

The ruling was brought on the canvas of a dispute between a company whose copyrights were infringed by unknown persons by posting videos of its copyright on YouTube. The Company requested YouTube and Google to share information about those responsible for the copyright infringement: email addresses, mobile phone numbers and IP addresses, along with a precise date and time of access, and after being denied, the case went to court. Whereas, on the basis of Article 8(1)(2) of the Directive 2004/48/EC of the European Parliament and of the Council on the enforcement of intellectual property rights, the CJEU ruled that the right to information on copyright infringers applies only to activities carried out on a commercial scale, in particular producers, manufacturers, distributors, as well as expected wholesalers and retailers. According to the CJEU, this means that a national court may order a service provider operating an online platform such as YouTube to disclose the data of the person who posted the video without the consent of the rightholder, but since the concept of address is not defined by law, it must be given uniform, colloquial meaning in the interpretation of EU law. Thus, the CJEU stated that only the addresses of a person's residence or residence may be addressed within the meaning of the Directive, so that the courts of the Member States cannot order the sharing of IP addresses or e-mails of infringers.

Keywords:

intellectual property, IP address, data sharing



THE CATEGORY OF PLACE AND ITS FUNCTION IN LITERARY WORKS OF GUSTAW HERLING-GRUDZINSKI

Katarzyna Sobota

The Jan Kochanowski University in Kielce

katarzyna.m.sobota@wp.pl

A few words about the author:

Katarzyna Sobota (1992) – PhD student in the Jan Kochanowski University (literary studies); scientific interests: geopoetics, life nad works of Gustaw Herling-Grudzinski, the category of place in Polish literature of 20th century, literary tourism.

Abstract:

The main subject of the presentation is the category of place and its function in works of Gustaw Herling-Grudzinski. The author attempts to point, analyse and interpret these areas of Herling's writing which are affected by place considered in both geographical and literary meaning. The author refers to the theory of space and place which has been put forward in topographical turn in literary studies and geopoetics. According to this definition space and place are not only the element of setting or motifs but also the causative factors of literary work, especially of lot, ways of acting and decisions of characters created by the writer. Some literary researchers such as Włodzimierz Bolecki, Iwona Gądek and Irena Furnal point out that places connected with Herling-Grudzinski's life have a great influence on his literary works. Major issues discussed in the presentation are following: firstly, the experience of place including the interaction between a particular place and a character; secondly, problems involved in literary expressing of place (i.e. expressibility or inexpressibility of the relationship between place and human) and thirdly, dealing with the mystery of place, its inhabitants and aura.

Keywords:

geopoetics, Gustaw Herling-Grudzinski



KEY ASPECTS OF THE INVESTMENT STRATEGY IN A CRISIS SITUATION

Jakub Sowiński

Nicolaus Copernicus University in Toruń

jakubsowinski97@gmail.com

A few words about the author:

I am a first year student of Master's degree in finance and accounting at the Nicolaus Copernicus University in Toruń. I am the vice president of student stock exchange scientific club. I focused my scientific work on capital markets.

Abstract:

The presentation will focus on the theoretical but key aspects of building an effective investment strategy. The presentation will describe the most important phases of each investment strategy. Many of them are more formal and others less. Everything depends also on the amount of capital invested and the investor's decision. Issues related to fundamental and technical analysis will be addressed. It will also describe building an investment strategy based mainly on psychological aspects that are extremely important during the crisis associated with the coronavirus pandemic.

Keywords:

investment strategy, fundamental analysis, technical analysis, behavioral finance



LIFE INSURANCE WITH AN INSURANCE CAPITAL FUND AS A SYNERGY OF TWO DIFFERENT FINANCIAL PRODUCTS

Jakub Sowiński

Nicolaus Copernicus University in Toruń

jakubsowinski97@gmail.com

A few words about the author:

I am a first-year student of Master's degree in finance and accounting at the Nicolaus Copernicus University in Toruń. I am the vice president of student stock exchange scientific club. I focused my scientific work on capital markets.

Abstract:

This presentation will reflect on the profitability of investment in life insurance with an insurance capital fund. First, basic historical issues related to the idea of this type of life insurance will be raised. The detailed characteristics of this financial product will then be determined. Then the issue of risk will be raised in the context of the investor's need for cash. In the following, the basic rights of the policyholder and the insurance undertaking's obligations will be described. The last issue will address the real threats arising from investing money in life insurance with an insurance capital fund. The examples described in this presentation are taken in the Polish financial market.

Keywords:

insurance with an insurance capital fund



PREFERRED VALUES AND LIFE BALANCE FOR OLDER PEOPLE

Monika Strzelecka

Catholic University of Lublin

monstrzelecka@wp.pl

A few words about the author:

Third year doctoral student in psychology. Scientific interests: identity, narrative identity, adulthood, self-confidence. She deals professionally with psychotherapy of children, adolescents and adults.

Abstract:

It is natural for older people to balance their lives. The assessment of one's own past is done through evaluation, which can be carried out in several ways, among others, one's own life balance can be made in relation to values. According to Scheler, an objective hierarchy consists of four basic groups of values: hedonistic, vital, spiritual and sacred. The questions asked in this paper are: Is there a relationship between preferred values and the life balance of the elderly? What values are associated with a high life balance? What values are associated with a low life balance? The study involved 30 older people, over 60 years of age, not working, both from town and countryside. In the study, the Metric, S. Steuden's Life Attitudes Scale for the elderly, the Scheler's Value Scale - SWS were used. The obtained results indicate that people with a high life balance evaluate all value categories higher. Persons with a high life balance differentiate between two categories of values - aesthetic and vital, with higher scores in these scales being achieved by persons with a high life balance.

Keywords:

old people, values, life balance



THE NEED TO INTERNATIONALIZE HIGHER EDUCATION IN THE MODERN WORLD

Bartosz Stula

University Jan Długosz, ul. Waszyngtona 4/8 42-200 Częstochowa

bartosz.stula@ajd.czyst.pl

A few words about the author:

Historian dealing with the history of the culture of the Iberian Peninsula, Latin America and the United States. In addition, a fan and researcher of pop culture – especially comics and their structures and video games.

Abstract:

In other words, universities are institutions in the form of higher education institutions that conduct classes at the optional final stage of the formal education process in order to educate the highest qualified professional and academic staff. In addition, it is the oldest and basic type of European multi-faculty higher education institution, which has the right to award academic degrees and combines didactic functions (educating the highest qualified professional staff and scientists) with scientific functions (conducting research, promoting innovative and scientific ideas). Along with their development, the process of internationalization of scientific units gradually followed. The aim of the presentation is to present the extent to which the internationalization process is important today.

Keywords:

erasmus, internationalize, univeristy, modern world



HETERONYMS IN FERNANDO PESSOA'S LITERATURE - AN ARTISTIC FIGURE OR A PERSONALITY DISORDER?

Paulina Szczygłowska

Jan Długosz University in Częstochowa

szczygłowskapaulina@gmail.com

A few words about the author:

Criminologist, Police Academy in Szczytno graduate. Law and Iberian culture student of the Jan Długosz University in Częstochowa.

Abstract:

Fernando Pessoa was a Portuguese writer who, nowadays, becomes more recognizable and popular. His most acclaimed pieces of work are "The Book of Disquiet" and "The Keeper of Sheep". Although, in his portfolio, we would see more of the popular releases, like - "Poemas de Alberto Caeiro" or "Odes de Ricardo Reis". We might, though, ask - who is Caeiro? Who is Reis? - and the answer will not be obvious.

Pessoa, as an author, became a master in creating heteronyms - a whole different characters, with a completely different history, background, writing style, memories et cetera. A heteronym has been a character created in Pessoa's mind, who, like, "on behalf" of him, wrote a massive piece of his artistic achievements. It might seem easy to create one or two of such, but Pessoa is claimed to create nearly 80 of them - separate different characters, his "alter egos" who never existed in real life, but he still could tell us everything about them in details, as he would be telling us his own life story.

The main goal of the presentation is to try to consider if Pessoa was a literature genius who has been able to create nearly 80 separate people's stories in his mind and then write "their" words in books, or if he has been troubled by any mental issues that might have been the reason he was hiding behind different names while writing instead of using his own. The sources of analysis are Pessoa's books, his memories and interviews, as well as analyses of his biography.

Keywords:

Fernando Pessoa, heteronym, Portuguese literature



4TH ESTATE ON THE GLOBAL PLATFORM OF ELECTRONIC - SPECIFICITY OF OPERATION MEDIA

Danuta Sztuba

The Pontifical University of John Paul II in Cracow

danuta.sztuba@gmail.com

A few words about the author:

Danuta Sztuba: Ph. D. student, Faculty of Social Sciences, The Pontifical University of John Paul II in Cracow, Poland. The subject of the speech directly concerns her doctoral dissertation.

Abstract:

The emergence of an additional center of power requires special attention, both from the government and society, because we can see how strong this Fourth Estate is and at the same time, unlike the other three, it has no personality - it's not very visible. Individuals/institutions involved in the Fourth Estate can be identified, but in the current situation of media pluralism in terms of technical platforms, interrelationships, constant changes; it is difficult to identify the actual role played by specific individuals/institutions in a given social / political / economic event, which we consider to be inspired and managed by the Fourth Estate. It affects individuals through the media that the individual uses. As long as these were newspapers, which were basically an elite and only available to a few media, the influence of the Fourth Estate on society was practically negligible. It could only aspire to be called "a factor that partially shapes public opinion". Since the emergence of electronic media such as the Internet and mobile telephony, it has been possible to talk about a total impact system for everyone on a continuous basis, because at the moment everyone has a smartphone and is constantly carrying it with them and using it.

Keywords:

electronic media, Fourth Estate, media platform



AFFORDANCES AND ARCHITECTURE: HOW THE SPACE SHAPES SOCIAL INTERACTION

Mateusz Tofilski

Silesian University in Katowice

mtofilski@us.edu.pl

A few words about the author:

A graduate of the University of Silesia College of Interdisciplinary Individual Studies, currently a doctoral student at the Institute of Philosophy of the University of Silesia in Katowice, focuses on philosophy of mind and social cognition.

Abstract:

The term affordances, that refers to environmental offers and possibilities of interaction between an animal and its surroundings, is also used in the context of social environment. As James Gibson points out, this category can be considered as a crucial socialization factor, and “the richest and most elaborate affordances of the environment are provided by other animals and, for us, other people” (Gibson 2015: 126). The human niche, i.e. a set of affordances, is being shaped by his social practices.

In this context, several ways of affordances classification have been proposed, including a distinction between ecological, interpersonal and social affordances (Kono 2009), but also categorizing them according to their context (sensory, intentional and institutional affordances (Fiebich 2014)) and the number of recipients (individual, shared and collective (Leonardi 2013)). Considering these categories and multidimensionality of social interaction, the presentation will concentrate on discussion about the possibility of application of the affordances concept as the theoretical framework to architecture (Koutamanis 2006). Therefore, the main aim of the paper is to examine the complex interpersonal dimension of the affordances shaped directly or indirectly by the architecture of a given place. Thus, it is supposed to emphasize the importance of its haptical dimension from the perspective of haptical communication and intercorporeal affordances (Katila 2018).

Keywords:

affordances, social cognition, architecture



PREDICTORS OF STRESS-RELATED DISORDERS IN THE PROFESSIONAL ACTIVITY OF NURSES AND TEACHERS

Edyta Urban (1)*, Martyna Łukacz (2)

(1) College of Medical Sciences, University of Rzeszów, Rzeszów

(2) Collegium of Social Sciences, Institute of Pedagogy, University of Rzeszów, Rzeszów

*edyta.urban@onet.eu

A few words about the authors:

Edyta and Martyna: two students of Rzeszów University. Edyta is the first-year of graduate studies of Nursing profession. Martyna is the first-year of graduate studies of Pedagogy. They are representing Academic Circle of Science about Family.

Abstract:

Stress is ubiquitous, it is severely experienced by nurses, teachers and other social groups contact with people. Emotional intelligence is also an important factor contributing to the perception of stress. The aim of the opinion poll on predictors was to study explanations of stress in the professional work of nurses and teachers. In order to use the research method for use in diagnostic trials, the original questionnaire was used as a research tool. Research on height, height in 78% of respondents, stress manifests itself as a reaction of the body, e.g. in the form of insomnia, 92 people among the respondents considered their profession stressful, but they would not change it for another, as many as 88% of the respondents did not use psychological care.

Keywords:

predicators, stress, professional activity, teacher, nurse/arz



ASSESMENT OF INVESTMENT EFFECTIVENESS IN EXCHANGE TRADED-FUNDS LISTED ON THE WARSAW STOCK EXCHANGE

Adam Wesolowski

Nicolaus Copernicus University, Gagarina 11, 87-100 Torun, Poland

adam.wesolowski.4@gmail.com

A few words about the author:

Student of the Nicolaus Copernicus University in Torun.

Abstract:

Investments are an important element of the finances of organizations and households. They give you the chance to get additional cash benefits in the future. Joint investment institutions, primarily investment funds, are one of the possibilities for investing their funds. An interesting alternative to traditional investment funds are the Exchange-Traded Fund funds. Thanks to a simple mechanism, they have developed the idea of passive investment. Managers want to reliably reproduce a certain base index.

The presentation presents the effectiveness indicator for passively managed funds. An analysis was also made of ETFs listed on the WSE and managed by Lyxor Management.

The aim of the work is to analyze the effectiveness and profitability of Exchange Traded Fund funds listed on the Warsaw Stock Exchange.

Keywords:

investment efficiency, Exchange Traded-Funds, investment fund, stock exchange, investments



THE GOOD AND THE BAD SIDES OF THE EUROPEAN CENTRAL BANK'S ANTI-CRISIS POLICY

Adam Wesolowski

Nicolaus Copernicus University, Gagarina 11, 87-100 Torun, Poland

adam.wesolowski.4@gmail.com

A few words about the author:

Student of the Nicolaus Copernicus University in Torun.

Abstract:

The financial crisis of 2008 was initiated in the United States. He was associated with the bursting of the bubble on the real estate and stock market. However, it also affected countries from the euro area. The impact of the financial crisis on the euro area can be divided into two phases. The beginning of the first of these dates from the fall of Lehman Brothers in 2008. The beginning of the second phase of the financial crisis is believed to be 2010. At that time, other European countries took over bankruptcy. Until the crisis occurred, the ECB pursued a stable monetary policy and was focused on achieving its goals. During the crisis, the ECB was forced to use innovative monetary policy tools and instruments. Not all of the actions were correct. Others of these challenged previously adopted rules. The presentation presents the principles of the ECB's operation as well as the impact of individual anti-crisis measures on the economy of the euro area.

The purpose of the presentation is to present the policy pursued by the European Central Bank during the financial crisis of 2008. Issues raised about the anti-crisis measures taken by the European Central Bank at that time to protect the euro area against the negative consequences of the financial crisis

Keywords:

financial crisis, ECB, anti-crisis policy



MELANCHOLY IN "HORSZTYŃSKI" BY JULIUSZ SŁOWACKI

Łukasz Wieczynski

University of Szczecin, Piastów 40B, 71-065 Szczecin, Poland

lukasz.wieczynski@gmail.com

A few words about the author:

PhD student at the Institute of Literature and New Media of the Faculty of Humanities, University of Szczecin. Specializes in Romantic literature and 20th century periodicals.

Abstract:

The author outlines an analysis of the melancholic disposition of Szczęśny - the main character of Słowacki's piece titled "Horsztyński". He indicates that Słowacki created a suffering hero, permanently in melancholy torment. The name itself - Szczęśny, seems to be a preview of the bitter irony that accompanies the life of a young man, remaining in great life dilemmas resulting from his melancholy situation. Particular attention is paid to of the melancholic's longing for the harmony of the cosmos, presented in the person of Szczęśny. The author refers to the thesis of Maria Janion, who argues that the inner tear of the romantics was a result of the collision of human finiteness with the cosmic infinity. Based on analysis of the successive events described in the work, the author concludes that Szczęśny is a prisoner and a victim of melancholy, because, overwhelmed by a state of sadness, boredom and torment, he cannot take actions that change his life situation, which leads to a feeling of defeat. This is a reason why the hero cannot fulfill himself as a romantic hero, because he turns out to be incapable of fighting for the Homeland, and above all he loses freedom - the fundamental romantic value. The disease of outstanding individuals and above-average minds consumed the heart of the romantic hero do not allow him to leave his pride behind him, tearing his heart apart with contradictions. The author proves that melancholy was an inherent attribute of the romantic hero.

Keywords:

melancholy, Romantic literature



FOOTBALL AS A TOOL OF THE PROPAGANDA. THE MILITARY DICTATORSHIP IN ARGENTINA (1976- 1983) IN LITERARY WORKS

Kinga Wiśniewska

Maria Curie-Skłodowska University, plac Marii Curie-Skłodowskiej 4A, 20-031 Lublin

kingawisniewska97@gmail.com

A few words about the author:

The fourth year student of Spanish philology at Maria Curie-Skłodowska University. In her works to date, she has dealt with the influence of football on Argentina's national identity and the analysis of Latin American literature.

Abstract:

The work entitled; "Football as a tool of the propaganda. Military dictatorship in Argentina (1976-1983) in literary works" discusses the process of using football as an instrument of political propaganda in Argentina during the 1976-1983 military dictatorship and the Football World Cup in 1978. The work is focused on the examination of Argentinian literary works where we can observe how the military junta used the organization of the 1978 World Cup to create slogans of identity and national unity of citizens. They created image of strong Argentina that is capable of great achievements and covered up the mass crimes committed against civilians and opponents of the regime. The work continues the author's research on the influence of football on Argentina's national identity.

Keywords:

football, World Cup 78, 1976-1983 military dictatorship in Argentina, national identity of Argentina



THE ELEMENTS OF THE STRATEGIC-CULTURAL THINKING IN ANCIENT WESTERN TRADITIONS

Jakub Wołynec

University of Maria Curie-Skłodowska in Lublin

jakub.wolyniec@o2.pl

A few words about the author:

Jakub Wołynec is a PhD candidate at the International Relations Department of the Faculty of Political Science and Journalism at UMCS. His research interests revolve around strategic culture and foreign and security policy of the UK.

Abstract:

The concept of strategic culture can be most easily understood as cultural determinants of foreign and security policy. The concept first appeared in the context of the Cold War. Since then, the subject matter and scope of strategic culture has been evolving, which is reflected in successive generations of its understanding. Today, strategic culture is not only a sphere of state practice, but also an analytical construction with its own specificity, and a research tool in political science. The presentation argues that certain key elements that constitute what is today known in the literature as “strategic culture” were present in ancient Europe. While this term was coined in the 20th century, Greek and Roman elites and leaders were aware of the fact that certain cultural elements can be attributed to particular groups of people and their way of waging wars and thinking about security. To support this argument, the presentation gives examples of such ancient European characters as Thucydides, Pericles, Homes and Hippocrates.

Keywords:

strategic culture, ancient Greece, ancient Rome



THE USAGE OF SOCIAL MEDIA BY ELDERLY PEOPLE AS CHALLENGES FOR INNOVATIVE ENTERPRISES

Daria Wrukowska

NOWE POKOLENIE - Martyna Kostrzewska

dariawrukowska@gmail.com

A few words about the author:

Daria Wrukowska is a PhD student of the University of Szczecin. She appeared as a speaker at numerous national and international conferences. Her broadest interests encompass senior marketing, customer behavioural and e-client.

Abstract:

The dynamic changes that are taking place in contemporary enterprises and their surroundings, the clear development of mobile technologies, social media, create new expectations and human needs. Due to the global ageing of societies, more and more innovative enterprises treat elderly people as a key factor in their success. Altering demographic structure, the emigration of young people and an increase in the percentage of elderly people lead to an increase in the segment of seniors interested in product innovation. The purpose of the article is to discuss the challenges companies face in the context of the elderly and to try to examine the attitudes and behaviour of seniors towards innovation in the field of social media. The presented material can be used by managers to formulate marketing strategies in social media operating on the "silver consumer market".

Keywords:

seniors, innovations, social media, marketing strategies, mobile technologies



QUALITY OF LIFE AND SCHIZOPHRENIA

Aleksandra Zadrożna

The Maria Grzegorzewska University

a.m.zadrozna@wp.pl

A few words about the author:

Psychologist, PhD student at the Maria Grzegorzewska University in Warsaw. Topics of interest: therapy for people suffering from mental illness, quality of life of people suffering from schizophrenia, self-help groups.

Abstract:

Schizophrenia is associated with great and hard to describe suffering, it affects everyone regardless of gender, education or place of residence. The illness affects all areas of functioning, is associated with a high risk of suicidal death and broad clinical and social consequences. Recovery from schizophrenia is possible despite the difficult psychopathological picture. Recovery is defined as personal achievement of a satisfying life and is possible without full symptomatic remission. One of the indicators of recovery from mental illness is quality of life. Quality of life is a multidisciplinary and multidimensional construct. It is described as subjective perception of position in life and assessment of life's aspects. There are many factors linked to quality of life of people suffering from schizophrenia, including factors related to the illness process and treatment (e.g. severity of symptoms, medications and side effects, place of treatment) but also related to sociodemographic factors (i.e. sex, education, being in a relationship, job). Personal qualities of the individual and psychological variables play great role in individuals perception of life i.e. psychological resilience, generalized self-efficacy, optimism, hope. Understanding predictors and factors that affect the quality of life of people suffering from schizophrenia may be important for recovery process and creating effective therapeutic programs.

Keywords:

schizophrenia, mental illness, quality of life, quality of life predictors, recovery

HUMANITIES SCIENCES

POSTERS



MIGRATION CRISIS NOTION AS AN EXAMPLE OF SEMANTIC FALLACY

Oliwia Bleszyńska

Pedagogical University of Krakow, Podchorążych 2, 30-804 Krakow, Poland

olivia.bl@icloud.com

A few words about the author:

I am student of International Relations at Pedagogical University of Krakow. I am interested in the Middle East - society and religion. Currently my interest are focused on migration policy and refugee crisis.

Abstract:

The poster presents the results of research focused on the analysis of European migration policy. An attempt to analyze this policy and the notion of "migration crisis" appearing in the discourse, resulted in reflection on the sources of this notion and adequacy of using it. The starting point for the conducted research was the assumption that the use of the "migration crisis" notion when referring to increased migration flows into the EU after 2015 is not only unjustified but also incorrect. The poster presents research hypothesis and summary of conducted research referring to the concept of a fallacy.

Keywords:

migration crisis, refugee crisis, migration policy, fallacy



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Magdalena Buż*, Amelia Fudali

Institute of Psychology, University of Opole

*magda.buz@gmail.com

A few words about the authors:

We are Magda and Amelia, we are friends and we study psychology at the University of Opole. We are interested in social psychology, interpersonal relationship. What's more we are interested in law, particularly in copyright law.

Abstract:

Music is with us almost all the time during our lives. Songs are distributed every day in many places such as: restaurants, pubs, shopping centers or even in public transport. We also share it on social media, but do we ever wonder if we are doing it legally, in accordance to the law? The poster was created to show what copyright is, what characterizes copyright and how does it look in relation to musical works. The poster shows basic legal acts related to copyrights and also tells how long does copyright protection last and what are the exceptions where copyright law expires.

Keywords:

copyright, law, music



MOURNING AND ITS STAGES

Kamila Farbiszewska-Arent

The John Paul II Catholic University of Lublin, Poland

kamila.farbiszewska@gmail.com

A few words about the author:

PhD student at the Department of Social Pedagogy of the John Paul II Catholic University. During certification - drug addiction specialist. A school pedagogue in a high school.

Abstract:

Experiencing mourning and grief as a result of a close person passing away has been described in a number of ways. It appears that the clearest and the most appropriate are the descriptions presenting various stages of moving through this difficult period. One of the well-known mourning classification systems mentions five stages:

1. Shock and denial stage (first month);
2. False acceptance stage (second month);
3. Pseudo-organisation of a new life stage (third month);
4. Depression stage (up to the eighth month).

Keywords:

mourning, stages of mourning



LOSS OF A LOVED ONE

Kamila Farbiszewska-Arent

The John Paul II Catholic University of Lublin

kamila.farbiszewska@gmail.com

A few words about the author:

PhD student at the Department of Social Pedagogy of the John Paul II Catholic University. During certification - drug addiction specialist. A school pedagogue in a high school.

Abstract:

The death of a loved one is always a painful experience fulfilled with grief, sorrow, hurt, tears, unacceptance and despair. Regardless of who passed away – a mother, a father, a friend, a brother, a husband, a daughter – and regardless of the circumstances, the loss strikes one right in the heart. What is the way to cope with the unimaginable suffering? How to come to terms with the feeling of loss and how to move through the mourning process in a conscious way?

Keywords:

loss, death, suffering, close person



PERCEPTION OF PHYSICAL ATTRACTIVENESS

Amelia Fudali*, Magdalena Buż

Institute of Psychology, University of Opole

*ladyami@interia.pl

A few words about the authors:

We are Amelia and Magda. We are friends. We are psychology students at the Opole University. We are interested in social psychology, interpersonal relationship. What's more, we are interested in law, especially copyright.

Abstract:

The goal of this study was to find whether our attractiveness to others is affected by our self-assessment of physical attractiveness and context, in other word whether the assessment of other people will change, if before showing a given person, the examined person sees another, more attractive person. It would seem that the answer to the second question is quite simple, because more than once everyone has said that a person is not very attractive, "but compared to another, you can not be judged so low." The issue of self-assessment of attractiveness and its correlation with the assessment of the attractiveness of others was also interested. Ethnically neutral faces were chosen to rule out impact on the example of skin color in assessing the attractiveness of people from photos (the main reason is lack of multiculturalism in Poland). Because of that we examined 100 people. Statistical analyzes showed results not statistically significant for all of the 2 research hypotheses. The results of the study were that there are no statistically significant differences in the assessment of the attractiveness of unattractive persons in the context of whether they were presented after or before attractive persons. It also showed no statistically significant differences in the assessment of the attractiveness of unattractive persons by persons assessing themselves as attractive. Thus, the original assumption turned out to be wrong.

Keywords:

physical attractiveness, self-esteem, context, rating other people



STYLES OF RESPONDING IN A DIFFICULT SITUATION PROFESSIONAL SOLDIERS

Maria Krzemińska-Cieśla

*University of Szczecin, Doctoral School, Mickiewicza 16, 70-383 Szczecin, Poland,
Institute of Pedagogy*

adresograf@gmail.com

A few words about the author:

Psychopedagogue, Public Health Specialist, PhD student at the Doctoral School of the University of Szczecin, Graduate of Public Health and Psychopedagogy. Research interests relate to health in all its dimensions.

Abstract:

The study of response styles in a difficult situation was carried out on 157 professional soldiers. In the group of respondents there were 91% of men and 9% of women. The research tool was the CISS questionnaire by Norman Endler and James Parker.

The cognitive goal indicates that the dominant style of reacting in the difficult situation of the soldiers is the style focused on the task (87.9%), then the avoidant style (8.3%) and the emotional style (3.8%).

The exploratory objective was achieved – on the basis of the obtained research results, statistical significance was found between the style focused on the task and the democratic style of parenting in the family. The avoidant style and the search for the society are characterized by respondents with vocational education. The style focused on emotions, the avoidance style and the search for company are characteristic styles of response in a difficult situation for respondents belonging to the serial corps. The task style is characteristic for soldiers who participated only in one mission, while the emotional style is representative for soldiers who have never participated in a mission. The avoidant style is characteristic for people who drink alcohol in their free time.

The practical goal was achieved: workshops for soldiers and their families, shaping health behaviors, stressing the essence of social support and tolerating stress when other strategies fail.

Keywords:

coping, stress, functioning, family, soldiers



INTERDISCIPLINARY DIMENSION OF WORK

Maria Krzemińska-Cieśla

*University of Szczecin, Doctoral School, Mickiewicza 16, 70-383 Szczecin, Poland,
Institute of Pedagogy*

adresograf@gmail.com

A few words about the authors:

Psychopedagog, Public Health Specialist, PhD student at the Doctoral School Of The Szczecin University. Research interests concern health in all its dimensions. Conducts research on uniformed groups and other high-risk professions.

Abstract:

The work is of interest to various disciplines: philosophers, psychologists, educators, sociologists, economists and doctors. All of these sciences have a common goal in the context of work, which is to prepare a person to fulfill a professional role in the national and world community, using their full potential, thanks to which they can fulfill themselves not only as an employee, but also as a citizen.

Working in the philosophical dimension is a tool for transforming reality. The desired human model is the homo creator, which is characterized by creativity, entrepreneurship and initiative. The subject of work pedagogy research is the human-upbringing-work relationship - qualifications and attitudes shaped in school and non-school educational programs as well as in course and training systems. Working in a pedagogical context speaks of man's striving to adapt reality to his needs in order to create a safe world.

From a sociological point of view, work is a purposeful activity that is socially useful, socially important or ensures a specific position in society. Through work, many relationships and social bonds are established.

The economic definition of work refers to a set of activities performed in the production process of creating goods, but it refers only to perceiving it solely and exclusively in terms of acquiring material means. Economic motives considered the most important at work.

Keywords:

man, work, interdisciplinarity



BIRTH CONTROL, FAMILY PLANNING AND ABORTION IN DEVELOPING COUNTRIES ON THE CASE STUDY OF SAMOA

Dominika Pawlina

University of Warsaw

d.pawlina@onet.pl

A few words about the author:

Master degree student at the University of Warsaw at the Department of Political Science and International Studies. Interested in social science, culture and the inequalities in social structures worldwide.

Abstract:

In this paper I would like to discuss the issues of birth control policy, family planning, abortion and general reproductive issues of a developing country on the example of Samoa. It is a very interesting case for a research because of the isolation of the islands, history, customs and culture of the people inhabiting this region, also the religion plays an important role in the lives of Samoans. The aim of this essay is to address the struggles, solutions and predictions for the future that Samoan people and government are coming across in the field of birth control policies. Customs, culture and religion impacts the decision on the new policies or upgrading the old laws, for example the issue of abortion and it's almost total prohibition. As a developing country, with relatively high population growth and expected rise of the birth numbers in accordance to death rate, improving policies considering the household outlining are an important matters. Education and development of country's facilities, schools, hospitals is important but also knowledge and sexual awareness are key elements for maintaining conscious society. That is why I want to present current level of education and awareness about birth control methods among people, especially in their reproductive age which is between 15 and 49 years old.

Keywords:

abortion, family planning, inequality, Samoa



INTERNATIONAL ACCREDITATIONS IN THE ASPECT OF QUALITY MANAGEMENT OF MEDICAL ENTITIES

Arkadiusz Trela

Akademia WSB Dąbrowa Górnicza

arek.trela@op.pl

A few words about the author:

PhD student at the WSB Academy in Dąbrowa Górnicza. Lecturer, Trainer, Advisor of quality management systems in health care.

Abstract:

The development of competition, as well as the increasingly popular medical tourism means that medical entities wanting to confirm the high quality and safety of medical services are implementing a quality management and accreditation system. Some of these systems, although known in the country, are hardly recognized among foreign tourists. That is why international accreditation is becoming more and more important.

The purpose of the poster is to discuss the importance of international accreditation in the aspect of quality management of medical entities based on a review of selected literature on the subject of international standards for accreditation in health care. The results of the review indicate that international accreditations are an important element of the competitive struggle and quality management of medical services of healthcare entities.

Keywords:

international accreditation, quality management system, healthcare

MEDICAL SCIENCES

PRESENTATION



PELVIC CONGESTION SYNDROME - AN ENIGMATIC DISEASE

Kamil Balabuszek

*Department of Interventional Radiology and Medical Imaging Techniques,
Medical University of Lublin*

balkam@o2.pl

A few words about the author:

PhD student at the Doctoral School of the Medical University of Lublin.

Abstract:

Pelvic congestion syndrome - PCS is a medical condition that causes chronic pelvic pain. It was described for the first time in 1949 by Taylor and is demonstrated by dilation and malfunction of the internal iliac and ovarian veins with typical slow flow and reflux. The aim of this work is to inform viewers about PCS and explain the effectiveness of endovascular treatment in recent years. Despite the widespread occurrence of the disease, many patients with PCS are undiagnosed, most likely because of the doctors' unknowledge about the disease. The procedure that is effective in treatment of PCS is percutaneous embolisation. In some papers significant clinical improvement was noted in up to 100 percent of the patients.

Keywords:

PCS, Pelvic Congestion Syndrom, embolisation



DOSIMETRIC COMPARISON OF RADIOTHERAPY TREATMENT PLANS, FOR ADVANCED LUNG CANCER, PERFORMED WITH VMAT AND HYBRID TECHNIQUE

**Agnieszka Bartnikowska (1, 2)*, Grzegorz Cieřlik (1), Mateusz Młodzik (1),
Anna Kawecka (1), Łukasz Mach (1), Sabina Jasińska (1), Tomasz Wiřniewski (1),
Klaudia Głowacka (2)**

(1) Oncology Center, Radiotherapy Department in Opole

(2) Opole University

*a.bartnikowska@o2.pl

A few words about the authors:

We are medical physicists working in the Radiotherapy Department of Oncology Center in Opole. I am, Agnieszka Bartnikowska, also during PhD studies (3rd year) in Physics in Opole University.

Abstract:

The aim of the study was to dosimetrically compare two radiotherapy treatment plans for advanced lung cancer. The treatment plans were performed using dynamic techniques, i.e. Volumetric Arc Therapy (VMAT) and hybrid technique, which is a combination of VMAT and IMRT (Intensity Modulated Radiotherapy). The research was conducted using RayStation computerized radiotherapy planning system by RaySearch, a product approved for clinical applications on the Polish market. In order to calculate the dose of ionizing radiation a dose calculation algorithm called CC (Collapse Cone) was used.

As a result of the study, spatial dosage distributions were obtained in the model of patient's chest where the area of advanced neoplastic lesion was determined together with tissues of healthy organs. Dose Volume Histogram (DVH) for critical organ models such as lungs, heart, spinal cord and model cancer tumor was used for dosimetric evaluation. The results obtained for both analysed cases of radiotherapy treatment plans give very good results. Doses in the volume of healthy organ tissues are in accordance with the guidelines of the QUANTEC Dosimetry Report and ICRU Report 83. Dosimetry comparison of both radiotherapy treatment plans indicates the advantage of the hybrid plan over the VMAT plan both in terms of radiation dose distribution in the neoplastic lung lesion model and healthy lung, heart and spinal cord tissues.

Keywords:

radiotherapy, treatment planning, dosimetry, VMAT, Collapse Cone



RULES OF NUTRITION DURING INSULIN THERAPY

**Aleksandra Borkowska*, Zuzanna Chilimoniuk, Aleksandra Chalupnik, Anna Sobstyl,
Maciej Dobosz, Szymon Marosz**

*Chair and Department of Epidemiology and Clinical Research Methodology,
Medical University of Lublin*

*borkowska.ola231@gmail.com

A few words about the authors:

Students of the Medical University of Lublin interested in the pathogenesis, epidemiology and treatment of diabetes.

Abstract:

Diabetes mellitus is a group of metabolic diseases that affects 422 million people worldwide. Type one is caused by damage to the beta cells of the pancreas in an autoimmune process which results in a deficiency or complete lack of insulin in the body. The main aim of the treatment is to achieve a blood glucose concentration close to that of a healthy person. Modern methods of insulin therapy allow to achieve this goal, but it is also necessary to follow the rules of healthy nutrition.

Over the years, recommendations on the types of diabetic diets have been changing. Modern methods of treating diabetes allow for great flexibility in the choice of food products. However, there are certain rules in dietary management that diabetics should follow. A special role in maintaining adequate glycemia is attributed to dietary fibre, the appropriate ratio of nutrients in dishes, and the glycemic index. At present there is no universal diet that can be attributed to every patient. When choosing a dietary plan it is necessary to take into account various factors such as age, gender, level of physical activity and above all the insulin treatment used. Appropriate choice of diet combined with insulin therapy prevents the development of complications and allows patients to live a normal life.

Keywords:

diabetes, dietary recommendations



WŁADYSŁAW BIEGAŃSKI – PROFESSOR WITH NO CHAIR

Jan Bylica

Jagiellonian University Medical College

janbylica@op.pl

A few words about the author:

I am a 5th-year medical student at the Jagiellonian University Medical College in Cracow. My scientific interests include medical humanities, history of medicine, and internal medicine.

Abstract:

W. Biegański was a Polish physician and philosopher. He was born in 1857 in Grabów. He studied medicine at the Imperial University of Warsaw. In 1880 Biegański received a medical diploma. After two years of working in Russia, he went to Berlin and Prague, where he completed his medical education. In 1883 Biegański returned to Poland and settled in Częstochowa, where was employed as a hospital doctor. As the director of the Częstochowa town hospital, he carried out several reforms in the field of hygiene and education of physicians. He was involved in both the development of medical sciences and philosophy. Biegański wrote many textbooks on internal medicine, as well as philosophical dissertations. He has contributed significantly to the development of Polish cardiology, neurology, and internal medicine. Biegański was also a social activist. In his philosophical considerations he addressed the issues of human cognition, free will, and medical ethics. He managed to conduct medical researches in a town placed far away from academic centers. That is why he was called "professor with no chair". He died in 1917 of an angina pectoris. Many of his works (especially on humanities) are still valid today and can be a valuable lessons. Both during his lifetime and after his death, Biegański's thought influenced other philosophers and scientists. Due to the extraordinary influence on the shaping of Polish medicine and philosophy, this character deserves our memory and respect.

Keywords:

history of medicine, philosophy, Władysław Biegański



EVALUATION OF THE TRANSFORMING GROWTH FACTOR SYSTEM IN BAL MATERIAL

Maciej Chmielarski (1)*, Ewelina Wędrawska (1), Arkadiusz Goede (1),
Paweł Waśniowski (2)

(1) *Department of Lung Diseases, Neoplasms and Tuberculosis, Collegium Medicum, Nicolaus Copernicus University in Toruń, Poland*

(2) *Department of Inorganic and Analytical Chemistry, Collegium Medicum, Nicolaus Copernicus University in Toruń, Poland*

*mmch94@gmail.com

A few words about the authors:

PhD students of Collegium Medicum UMK, conduct research on the use of modern gene therapy techniques and immunotherapy in the treatment of many diseases, e.g. cancer, rheumatic or interstitial lung diseases.

Abstract:

Chronic lung diseases are a serious clinical problem. Especially those characterized by bronchiolitis leading to interstitial lung fibrosis. One of the profibrogenic factors is TGF β 1 belonging to the superfamily of growth factors. It is a cytokine that causes the growth and proliferation of many cell types and has both inflammatory and anti-inflammatory properties. The aim of the study was to assess TGF β 1 levels in BAL material from patients with selected lung diseases. In these materials, the concentration of TGF β 1 was determined by ELISA and the expression of TGF receptor by flow cytometry. Compared to the control a significant increase in the concentration of TGF β 1 concerned only idiopathic pulmonary fibrosis. TGF β 1 expression in sarcoidosis and extrinsic allergic alveolitis was similar to the control. The results indicate that the presence of TGF β 1 was demonstrated in BAL in all groups. The TGF receptor is present in the lower airways commonly on fibroblasts, pneumocytes II and macrophages; in sarcoidosis, significantly reduced expression on alveolar lymphocytes. Idiopathic pulmonary fibrosis is characterized by increased expression of the TGF β system: both the cytokine concentration and the percentage of TGF receptor positive lymphocytes are significantly high. The observations made confirm the adverse role of TGF β in pulmonary fibrosis, and also highlight the importance of the lower respiratory tract cell reactivity to this cytokine tested by staining the TGF receptor.

Keywords:

chronic lung disease, lung fibrosis, transforming growth factor



ANALYSIS OF RISK FACTORS OF POSTPARTUM DEPRESSION IN MEN AFTER PARTURITION OF THEIR FEMALE PARTNER

Malgorzata Chyćko (1)*, Piotr Wójcik (1), Michał Obel (2)

*(1) Student Research Circle at the Department of Epidemiology and Clinical Research Methodology,
Medical University of Lublin*

*(2) Student Scientific Association at the Department of Endocrinology
of the Medical University of Lublin*

*malgorzatachycko@gmail.com

A few words about the author:

I am a forth year medical student from Medical University of Lublin that is interested in looking for equality in research, diagnosis and management between all people. As medicine should look beyond any classifications and labels.

Abstract:

Postpartum depression (PPD) is a debilitating mental disorder associated with childbirth, which can affect both sexes. Commonly regarding mother of a child, in 1 to 26% can affect father. This not obvious observation is under broad investigation and its undertow is not well explained. Aim of this research is to investigate the risk factors that might correlate to development of PPD in male partners of mothers giving childbirth. The fact that there are no criteria stated for diagnosis of PPD in men, shows the need of investigation of this topic more deeply than heretofore. In this report research literature in English was analysed, PubMed database was searched considering the words like postpartum depression, fathers, men, risk factors. Four articles in the period 2015-2019 were chosen for review and analysis. Literature review showed the variety and multitude of risk factors affecting the development of postpartum depression among men. Among those, psychological, obstetrical, socio-economical, biological factors and general lifestyle were observed, and can be classified as risk factors possibly affecting prevalence rate of PPD. Listed factors create correlation between each other and simultaneously affect prevalence and severity rate of postpartum depression in both sexes. As the research on PPD in men is studied inequitably, there is strong strive for deeper investigation, diagnosis, management and better support for men suffering from this condition.

Keywords:

postpartum depression, men, fathers, risk factors, review



HOW (NOT) TO TREAT CONSTIPATION? AN EXTREMELY RARE CASE OF A 10-YEAR-OLD GIRL

Patrycja Drzonek*, Katarzyna Nowak, Weronika Pawlik

*Students' Scientific Club in Department of Pediatrics, Hemato-Oncology and Gastroenterology,
Pomeranian Medical University in Szczecin, Poland*

*patrycjadrzonek@gmail.com

A few words about the authors:

5th year medical students from Pomeranian Medical University in Szczecin, Poland associated with the Student's Scientific Club of Pediatric Gastroenterology under the supervision of dr n.med. Małgorzata Mokrzycka.

Abstract:

Constipation is a disease that affects over 10% of children. One of the symptoms can be incontinence, so it can easily be mistaken with diarrhea, which makes a proper treatment hard to manage even for an experienced practitioner. Due to Covid-19 pandemic, the access to specialist care and treatment was difficult. It affected many patients, leading to neglect of managing chronic diseases and delay of diagnosis. We present a case of a 10-year old girl that was admitted to the emergency department with symptoms of severe constipation and abdominal pain. Our patient turned out to have a history of ongoing constipation and diarrhea for about 6 months, mistreated by her GP. In the emergency room she was given a sodium-phosphate enema twice - with poor effect. After a few hours she developed a rare and dangerous side effect of laxatives - a life-threatening hyperphosphatemia and hypocalcaemia. The presented patient is an example of a severe, chronic and unfortunately mistreated constipation. The phone consultation is a great compromise between giving a piece of solid medical advice for sick and minimalizing the risk of virus transmission, but it cannot replace a face-to-face appointment. We find it important to remember about an uncommon adverse effect of a phosphate enema – hyperphosphatemia among children. It's essential to underline that monitoring after procedure, quick and proper treatment, if the mentioned effect occurs, can save patient a life and doctor some stress.

Keywords:

constipation, enema, hyperphosphatemia, pediatrics, telemedicine



GENE THERAPY IN PARKINSON'S DISEASE

**Dominik Dudek (1)*, Weronika Fałęcka (1), Jan Milanowski (1),
Jarosław Nuskiewicz (2), Karolina Szewczyk-Golec (2)**

(1) Students Research Club of Medical Biology, Faculty of Medicine, Ludwik Rydygier Collegium Medicum in Bydgoszcz Nicolaus Copernicus University in Toruń

(2) Department of Medical Biology and Biochemistry, Faculty of Medicine, Ludwik Rydygier Collegium Medicum in Bydgoszcz Nicolaus Copernicus University in Toruń

*domxdud@gmail.com

A few words about the author:

Dominik Dudek is a fourth-year's student of laboratory medicine at Collegium Medicum, Nicolaus Copernicus University; member of Students Research Club of Medical Biology. Interested in genetics and molecular biology.

Abstract:

Gene therapy has been rapidly emerging in contemporary medicine. It brings huge therapeutic potential in treating diseases such as adenosine deaminase deficiency (ADA-SCID) or melanoma. Parkinson's disease (PD) is a slowly progressive, degenerative disease of the central nervous system, mainly affecting the elderly. PD is the second most common neurodegenerative disorder. The use of gene therapy can significantly improve the quality of life of people affected by PD. There are various targets in PD gene therapy, such as γ -aminobutyric acid (GABA), dopamine synthesis or neurotrophins. Some research also targets mitochondrial pathway. In non-disease modifying targets, the primary approach is through gene transfer of L-amino acid decarboxylase (hAADC), as a result the synthesis of dopamine is increased. Another symptomatic therapy is based on delivering gene of glutamic acid decarboxylase (GAD), which is associated with the synthesis of GABA. Both of these therapies provide improvement in motor functions. In disease modifying targets, the approach is through neurotrophins which are aimed to modulate degenerative process and provide better prospect in treatment. There are numerous neurotrophins that show extensive effects, such as glial cell-derived neurotrophic factor (GDNF). GDNF has been found to bring a great potential in survival of dopaminergic neurons in vivo. Nevertheless, the research concerning gene therapy in PD is on-going and many issues have not been fully described.

Keywords:

gene therapy, neurodegenerative disorders, Parkinson's disease



ROLE OF THE ESTROGENES IN PARKINSON'S DISEASE

**Weronika Fałęcka (1)*, Dominik Dudek (1), Jan Milanowski (1),
Jarosław Nuskiewicz (2), Marlena Markiewicz (2), Karolina Szewczyk-Golec (2)**

(1) Students Research Club of Medical Biology, Faculty of Medicine, Ludwik Rydygier Collegium Medicum in Bydgoszcz Nicolaus Copernicus University in Toruń

(2) Department of Medical Biology and Biochemistry, Faculty of Medicine, Ludwik Rydygier Collegium Medicum in Bydgoszcz Nicolaus Copernicus University in Toruń

*wero_97@onet.pl

A few words about the author:

Weronika Fałęcka is a third-year's student of laboratory medicine at Collegium Medicum, Nicolaus Copernicus University; working for two years at the Students Research Club of Medical Biology. Interested in cancer diagnostics and treatment.

Abstract:

Parkinson's disease (PD) is a slowly progressive, chronic disease of the central nervous system. Microglia protects the cells of the nervous system against the negative effects of harmful factors and, moreover, it helps to repair the damage. Estrogens are hormones responsible for the regulation of the female reproductive system but also regulate microglia activity. The estrogen receptor (ER) has been found to play an important role in PD. It have been shown that by altering the activity of the hypothalamus and hippocampal receptor, the pathogenesis of dementia and memory disorders associated with postmenopausal period can be explained. Estrogens affect nerve cells through the ER and off-receptor. Activation of ER is connected with the stimulation of growth factors such as a neurotrophic factor of cerebral origin, thereby activating GABAnergic transmission, and as a consequence, has a beneficial effect on glial cells and inhibits apoptosis. In non-receptor pathway, estrogens reduce the toxicity of glutamate that stimulates the N-methyl-D-asparaginic acid receptor. They also inhibit apoptosis by protecting nerve cells against reactive oxygen species and glutamic acid-induced cell death. The impairment of estrogen signalling, combined with the lack of other biomolecules crucial for neuronal health, may have an impact on the onset of the neurodegenerative process. Research is not consistent, however the use of estrogens in PD shows a beneficial effect.

Keywords:

estrogenes, nervous system, Parkinson's disease



COMPLETE SHIFT IN UNDERSTANDING OF THE ROLE OF TESTOSTERONE IN PROSTATE CANCER –TESTOSTERONE SATURATION MODEL

**Michał Godzisz*, Damian Sudol, Iga Kuliniec, Paweł Plaza,
Przemysław Mitura, Krzysztof Bar**

Department of Urology and Urological Oncology of Medical University of Lublin

*michal.godzisz92@gmail.com

A few words about the author:

About Michał Godzisz: I am a resident of urology and doctoral student in the Clinic of Urology and Urological Oncology of Medical University of Lublin. My area of expertise is prostate cancer and related subjects.

Abstract:

For the last 20 years there has been a growing recognition of testosterone therapy in men. The increased incidence of testosterone replacement therapy has led to increased interest in its association with prostate cancer. Mongetaler et al. have proposed a new theory of the "Testosterone Saturation Model" that completely changes the concept of how testosterone works on prostate cancer. Conventional androgen theory assumed that testosterone supplementation in a patient with prostate cancer is like "pouring gasoline on the fire". However, as a result of many years of observations and several key studies Morgentaler et al. concluded that above mentioned thesis is wrong. Based on their observations, the researchers have theorized that serum testosterone levels have influence on the development of prostate cancer cells only up to a certain concentration, and an increase in concentration above this saturation level does not result in acceleration of the promotion or progression or the adenocarcinoma of prostate. The aim of this review is to synthesize the knowledge about the testosterone saturation model that we've got so far. A PubMed search was performed using the terms Saturation, Testosterone, Prostate Cancer. Only full-text articles in English from the last 15 years were taken into consideration.

Keywords:

saturation, testosterone, prostate cancer, review



CYTOIMMUNOLOGICAL CHARACTERISTICS OF BAL CELLS AFTER STEROID THERAPY IN SELECTED LUNG DISEASES

Arkadiusz Goede*, Ewelina Wędrowska, Maciej Chmielarski

CMUMK in Bydgoszcz, Department of Lung Diseases, Cancer and Tuberculosis

*arkadiusz_goede@wp.pl

A few words about the authors:

PhD students at the Faculty of Medicine of the CM UMK, conduct research on the use of modern gene therapy techniques and immunotherapy in the treatment of many diseases, e.g. cancer, rheumatic or interstitial lung diseases.

Abstract:

Induction of anti-inflammatory effects in interstitial lung diseases after treatment with steroids is most often desired. Despite for diseases such as sarcoidosis (PS) and nonspecific interstitial pneumonia (NSIP) steroids therapy is not precisely defined and for idiopathic pulmonary fibrosis (IPF) use of steroids is controversial and can be dangerous. The purpose of the work was to conduct an analysis of BAL cell pattern, cell cycle and apoptosis after steroid treatment in selected interstitial lung diseases. Bal analysis, cell cycle analysis, Tunnel assay were performed in steroid-treated and native patients with PS, IPF and NSIP. Additionally, flow cytometry and staining of alveolar lymphocytes for BCL-2 and death receptors (DR) were performed. A lower total BAL cell count, percentage of eosinophils and CD4/CD8 ratio were observed in patients treated with PS and NSIP compared to untreated control. The percentage of apoptotic AL was higher in patients treated with PS and in NSIP nonsmokers. In the case of IPF, there were no noticeable changes. No changes were also noted in the level of expression of the death receptor compared to the treated and native groups. The percentage of AL BCL-2 + was lower in treated patients compared to untreated PS patients. Summarizing steroid therapy can only be used successfully in patients with PS and NSIP. Treating patients with IPF using steroids is ineffective, has no benefit and should not be used.

Keywords:

lung, BAL, apoptosis, steroids



THE EFFECT OF DOWNREGULATION OF PROFILIN-1 AND FORMIN EXPRESSION ON MIGRATION POTENTIAL OF A549 NON-SMALL CANCER CELL LINE

Marta Halas-Wiśniewska*, Wioletta Zielińska, Magdalena Izdebska, Alina Grzanka

*Department of Histology and Embryology, Nicolas Copernicus University in Toruń, Faculty
of Medicine, Collegium Medicum in Bydgoszcz, Karłowicza 24, 85-092 Bydgoszcz, Poland*

*marciah88@wp.pl

A few words about the author:

Assistant at the Department of Histology and Embryology CM UMK in Bydgoszcz.

Abstract:

Metastasis remains a serious clinical problem, in which EMT is strictly involved. Regarding the great interest in cytoskeletal proteins manipulation, it was considered reasonable to apply downregulation of two actin-associated proteins - profilin-1 (PFN1) and formin (FHOD1) in non-small cell lung cancer A549. The manipulation of proteins levels was used in the context of assessing the effect of the induced reorganization of microfilament networks in order to reduce the metastatic potential of the cells of the tested lines, as well as sensitize them to alkaloids.

The research indicated that downregulation of the above-mentioned proteins influences the reduction of the migratory and invasive potential of highly aggressive A549 cells. In comparison to non-transfected cells, those after manipulation migrated more slowly, while the use of the combination intensified this effect. The obtained results were associated with microfilaments reorganization and vimentin network induced by reduction of PFN1 and FHOD1. As in the case of cells without altered levels of actin-binding proteins, the greatest cytotoxic effect was observed after treating cells with a synergistic combination of alkaloids. In this case, it induced an increase in the percentage of early and late apoptotic cell populations respectively for the silencing of profilin-1 and formin expression.

Keywords:

A549 cell line, migration, profilin-1, formin, actin



THE ROLE OF METALLOPROTEINASES IN MIGRATION AND INVASIVENESS OF BREAST CANCER CELLS

Magdalena Izdebska*, Wioletta Zielińska, Marta Hałas-Wisniewska

*Department of Histology and Embryology, Faculty of Medicine, Nicolaus Copernicus University
in Toruń, Collegium Medicum in Bydgoszcz, Karłowicza 24, 85-092 Bydgoszcz, Poland*

*mizdebska@cm.umk.pl

A few words about the author:

Associate professor at the Department of Histology and Embryology.

Abstract:

Highly invasive cancer cells show the ability to changing their phenotype from epithelial to mesenchymal. These changes are defined as epithelial-mesenchymal transition (EMT). The formation of metastases is a cascade of strictly consecutive molecular and morphological changes, including broadly understood reconstruction of the cytoskeleton and extracellular matrix (ECM). Metalloproteinases (MMPs), which are a family of zinc-dependent endopeptidases responsible for physiological and pathophysiological tissue remodeling, are of great importance in the process. Changes in MMPs levels have been observed in many types of cancers, such as ovarian and colorectal cancer. An important aspect is also the correlation of enzyme activity with the stage of cancer, increasing the invasiveness of cancer cells, as well as decreasing the survival rate. Those factors emphasize the value of MMPs in predicting the prognosis and monitoring the effectiveness also of breast cancer treatment. It has been documented that high levels of MMP-1 correlate with increased migration and invasiveness. In turn, MMP-2 plays a significant role in angiogenesis and regulates invasive potential in the breast cancer line. In turn, MMP-7 is involved in the proliferation and has an antiapoptotic character. The most recent literature shows that modification of biochemical pathways responsible for metastasis, by direct effect on EMT or the level/activity of MMPs can bring a potential therapeutic effect.

Keywords:

breast cancer, metalloproteinases, metastasis



THE COMPARISON OF THE INTENSITY OF TRAINING ON STABLE AND UNSTABLE SURFACE OF WOMEN, WHO ATTENDS FITNESS CLASSES IN THE CONTEXT OF HEALTH-RELATION RECOMMENDATIONS

Jagoda Kansy*, Piotr Polechoński

*Student Scientific Circle of Physical Activity and Tourism in Virtual Reality,
Academy of Physical Education in Katowice*

*kansyjagoda@gmail.com

A few words about the authors:

Jagoda Kansy and Piotr Polechoński – students.

Abstract:

The aim of this study was to compare the intensity of physical effort during interval training on stable and unstable surface (BOSU) women who attends recreationally fitness and profile these results with healthy recommendations. A group of 30 women took part in the experiment. All of them were attending fitness classes. The study shows that during 10 minutes training on interval character, which were done on unstable surface by examine women the energy expenditure is marginally (statistically insignificant) bigger than this in identical training on stable conditions. The intensity of physical effort during the training which is described on unstable surface consists in beneficial (recommended) for health range.

Keywords:

fitness, stable surface, unstable surface, bosu, health-relation recommendations, intensity of training



ANTIOXIDAT POTENTIAL AND CONTENT OF SELECTED PHENOLIC ACIDS IN FUNCTIONAL FOODS WITH THE ADDITION OF GOJI BERRIES

Kamila Kasprzak-Drozd (1)*, Anna Krajewska (2), Anna Oniszcuk (1)

(1) Department of Inorganic Chemistry, Medical University of Lublin

(2) Department of Integrated Paediatric Dentistry, Medical University of Lublin

*kamilakasprzakdrozd@gmail.com

A few words about the authors:

Our scientific interests include human health sciences, in particular pharmaceutical sciences. Our scientific work consists, among others, in the analysis of functional foods in terms of polyphenols content and antioxidant activity.

Abstract:

Functional Food is when, simultaneously with the basic nutritional value, it exerts an additional influence on one or more functions of the human body, both by improving general and physical conditions or / and limiting the risk of developing the disease. Experience consisted in designing, manufacturing and testing a new range of functional foods. The material for the research were extracts (ultrasound-assisted extraction) of corn porridges with the addition of polyphenolic goji fruit in amounts of 1%, 3%, 5%. These berries are an excellent source of antioxidants and are known to strengthen immunity and the ability to fight harmful free radicals and inflammation.

Antioxidant activity was determined by spectrophotometric assay with DPPH reagent. Studies have shown that the antioxidant properties of extracts increase with the increase in the content of goji fruits in the product.

Chromatographic analysis (LC-MS/MS) has shown a wide variety of phenolic acids present in products. 9 acids were detected in all types of samples. These were derivatives of benzoic acid: protocatechuic, 4-hydroxybenzoic, gentisic and salicylic acid, and derivatives of cinnamic acid: trans-caffeic, p-coumaric, ferulic and isoferulic acid. The experiment confirmed that under the influence of the production process, the phenolic acids contained in the healing fruit were not deactivated. Produced porridges enriched with these berries can be an important source of compounds with health-promoting potential.

Keywords:

functional food, antioxidant activity, DPPH, phenolic acids



HOW TO RECOGNIZE AND TREAT OBSTRUCTIVE SLEEP APNEA?

**Kamil Klimas (1)*, Zuzanna Sycz (2), Agnieszka Święcicka-Klama (1, 3),
Małgorzata Korzeniowska (4, 5)**

- (1) Department and Clinic of Angiology, Systemic Hypertension and Diabetology,
Wrocław Medical University*
(2) Department of Biology and Medical Parasitology, Wrocław Medical University
(3) Department of Social Medicine, Wrocław Medical University
(4) Department of Pathophysiology, Wrocław Medical University
(5) Department and Clinic of Pediatric Infectious Diseases, Wrocław Medical University

*kamkli17@gmail.com

A few words about the authors:

All authors of this work are the PhD candidates in 2nd and 3rd year of full-time doctoral studies at Wrocław Medical University. Kamil Klimas, a presenting person, performs PhD thesis experiments in the field of angiology and internal medicine.

Abstract:

Obstructive sleep apnea is a disorder that consists of repeated episodes of upper airway obstruction (apnea) or its narrowing (shallow breathing) at the throat level resulting in decreased saturation and awakening from sleep. Obesity, deviation of the nasal septum, hypertrophy of the palatine tonsils and craniofacial abnormalities contribute to the occurrence of this disorder. Symptoms of sleep apnea include chronic fatigue, daytime sleepiness, problems with concentration, headache, loud snoring. In patients, sleep apnea repeats several dozen times per hour. This leads to the development of cardiovascular diseases, including high blood pressure and stroke. It is estimated that obstructive sleep apnea affects 4–10% of adult men and 2–4% of women.

The diagnosis of obstructive sleep apnea is based primarily on a polysomnography, which includes the assessment of oxygen saturation, pulse, airflow through the nose and mouth, chest and abdominal breathing movements, limb movements, snoring, body position, electrocardiogram, electroencephalogram, electrooculogram and electromyogram during sleep. At home, a shortened examination is often performed (polygraphy). It does not include the assessment of EEG, electrooculogram and muscle tension. Treatment may include lifestyle changes (weight loss in obese people, correct body position while sleeping), CPAP (constant positive airway pressure) therapy, surgical treatment (e.g. tonsylectomy, septoplasty).

Keywords:

apnea, obstructive sleep apnea, polysomnography



THE ROLE OF THE ENDOCANNABINOID SYSTEM (ECS) IN MAINTAINING HOMEOSTASIS

Magdalena Klimiuk

*Lviv National Medical University of Danylo Halytsky,
Pekarska Street, 69, Lviv, Lviv Oblast, Ukraine, 79010*

magdalenaklimiuk0157@gmail.com

A few words about the author:

Student of fifth course of medical faculty at Lviv National Medical University, Ukraine. Passionate about modern methods of diagnostics and treatment, for years focused on studying the latest branches of medicine.

Abstract:

The endocannabinoid system was only identified in the early 1990s by researchers studying the properties of one of the most known cannabinoids - THC. The ECS system consists of exogenous cannabinoids, i.e. THC (tetrahydrocannabinol) and CBD (cannabidiol) together with endogenous cannabinoids called endocannabinoids - anandamide (AEA) and 2-arachidonoylglycerol (2-AG). The compounds co-form the endocannabinoid system together with the CB1 and CB2 endocannabinoid receptors, as well as the enzymes responsible for the synthesis and degradation of endogenous compounds belonging to the system. Both endocannabinoids and cannabinoids of plant origin have a lipophilic structure, acting as ligands for receptors CB1 and CB2 coupled to G proteins. CB1 endocannabinoid receptors are found mainly in peripheral terminals of primary sensory neurons, superior colliculus, dorsal horn of spinal cord and in thalamus. In addition, they can be found in the cells of the immune system, spleen, endocrine, digestive and urinary systems. CB2 receptors are mainly distributed in the cells of the immune system and spleen. A thorough understanding of the ECS system along with all its dependencies allows for the improvement of treatment with usage of medical cannabis and CBD.

Summarizing, in my opinion, the ECS system performs much more function than maintaining homeostasis in the body through sleep regulation, transmission of pain stimuli, immune response, mood, appetite, memory and fertility.

Keywords:

the endocannabinoid system, CBD oil, cannabinoids, anandamide, 2-arachidonoylglycerol



ALCOHOL AND ITS EFFECTS ON THE HUMAN BODY

**Malgorzata Korzeniowska (3,4)*, Kamil Klimas (2), Agnieszka Święcicka-Klama (2,5),
Zuzanna Sycz (1)**

- (1) Department and Clinic of Angiology, Systemic Hypertension and Diabetology,
Wrocław Medical University*
(2) Department of Biology and Medical Parasitology, Wrocław Medical University
(3) Department of Social Medicine, Wrocław Medical University
(4) Department of Pathophysiology, Wrocław Medical University
(5) Department and Clinic of Pediatric Infectious Diseases, Wrocław Medical University

*malgosia.korzeniowska1@gmail.com

A few words about the authors:

All authors of this work graduated from Wrocław Medical University. Nowadays, they are the PhD candidates in 2nd and 3rd year of full-time doctoral studies at Wrocław Medical University.

Abstract:

According to the WHO, 3 million deaths a year in the world result from harmful alcohol consumption, accounting for 5.3% of all deaths.

According to the data of PARPA, about 7% of Poles consume alcohol in a problematic way, i.e. risky or harmful. In this group, 85% of people had an incident of excessive drinking during the last year.

There is a causal relationship between harmful alcohol consumption and a number of mental and behavioral disorders, injuries caused by accidents and somatic diseases.

Contraindications to drinking alcohol even in small quantities include, but are not limited to, pregnancy and breastfeeding, personal or strong family history of alcoholism, alcohol-related liver or pancreatic disease and taking certain medications.

Harmful alcohol consumption is the cause of over 200 diseases and injuries - the purpose of our work was to present the most important of them.

It is necessary to raise awareness of alcohol abuse problem and to promote a healthy lifestyle.

Keywords:

alcoholism, alcohol-related diseases



HEADACHE THROUGHOUT HISTORY OF HUMANKIND

Jerzy Król

Jagiellonian University Medical College

jekrol@poczta.fm

A few words about the author:

I am a fifth year medical student from Jagiellonian University Medical College. I am one of founders of Medical Humanities students' scientific circle. I am a chairman of historical section of this society and on this field I carry out my research.

Abstract:

Headache is one of the most common ailments that patients suffer from. Nine out of ten people will experience it throughout their lives, but nevertheless it is often underestimated, both by patients and doctors, due to its universality and usually mild course. Undoubtedly, a headache can cause a significant decrease in the quality of life, absenteeism at work, withdrawal from social contacts or increase in financial expenses for treatment.

Migraine headaches are known since the Neolith. From that era the first evidence of skull trepanation come from. The earliest written reports about migraine derived from Sumer five thousand years ago. Areteus from Cappadocia, living in the first century is, according to many historians was the first doctor who described migraine detailedly. He used the terms cephalagia (headache lasting several days), cephalea (headache lasting from several days to several weeks) and heterocrania (semi-episodic headache that corresponds to migraine). Galen transformed term heterocrania to hemicrania. With the development of science, the approach to treatment has changed. The last step so far in migraine therapy is the discovery that serotonin through vasoconstrictive activity through 5-HT_{1B} /D receptors can have a beneficial effect on migraine symptoms.

Keywords:

history of medicine, headache



THE IMPORTANCE OF FOLLOW-UP AND RE-DIAGNOSIS OF PATIENTS WITH DEMYELINATING SYNDROME SUSPICION - A CASE STUDY OF A CONVERSION FROM RADIOLOGICALLY ISOLATED SYNDROME TO CLINICALLY DEFINITE MULTIPLE SCLEROSIS

**Marcin Kulczyński (1)*, Michał Marciniec (1), Klaudia Sapko (1),
Esteban Muñoz-Niklitschek (2)**

(1) Chair and Department of Neurology, Medical University of Lublin, Poland,

(2) Faculty of Medicine, University of Concepción, Chile

*mk.marcin.kulczynski@gmail.com

A few words about the authors:

M. Kulczyński, M. Marciniec and K. Sapko are PhD students and resident physicians at the Department of Neurology at the Medical University of Lublin. E. Muñoz-Niklitschek is an intern physician at the University of Concepción, Chile.

Abstract:

Radiologically isolated syndrome (RIS) is a term to describe criteria of diagnosis for the individuals, who underwent brain MRI because of other reasons than multiple sclerosis (MS) suspicion, but turned out to have white matter lesions similar to those present in patients with diagnosed MS. RIS is a separate entity with the presence of MR detected lesions strongly suggestive of MS in patients with no neurological manifestations. Although RIS is not the first stage of MS in every individual, 30-45% of them will present clinical symptoms later.

We describe a case of a 35-year-old female patient who was initially diagnosed with RIS after MRI performed due to migraine. After about 1.5 year of follow-up she presented clinical manifestation, a progression in MRI and appearance of oligoclonal bands in cerebrospinal fluid. There is more research needed to determine significant risk factors for conversion from RIS to CDMS. In RIS patients watchful neurological supervision is indispensable.

Keywords:

multiple sclerosis; magnetic resonance imaging; demyelinating syndromes; oligoclonal bands



THE LATEST NEWS REGARDING RISK FACTORS OF BLADDER CANCER

**Iga Kuliniec*, Michał Godzisz, Damian Sudół, Paweł Plaza,
Przemysław Mitura, Krzysztof Bar**

Department of Urology and Urological Oncology, Medical University of Lublin, Lublin, Poland

*iga.kuliniec@gmail.com

A few words about the author:

Iga Kuliniec – 1st year resident in the Department of Urology and Urological Oncology, Medical University of Lublin, 1st year PhD student in doctoral school of Medical University of Lublin.

Abstract:

Based on data from International Agency for Research on Cancer in 2018 almost 550,000 new cases of bladder cancer were reported worldwide. Bladder cancer occurs as a sixth most common for man and seventeenth among woman population. The well-known risk factors for this cancer are smoking, gender, race and age. However, scientists are constantly looking for new risk factors that may change perspective of physicians and improve diagnosis and treatment of bladder cancer. The aim of this study is to present newest literature that examine risk factors of patients treated due to bladder cancer. The articles which are being analyzed has been selected using keywords: ‘bladder cancer’ and ‘risk factors’ in PubMed database. The authors examine possible risk factors such as reproductive and hormonal factors, occupation and dietary patterns.

Keywords:

bladder cancer, risk factors



IMMUNOLOGICAL AND MOLECULAR CHARACTERISTICS OF CHRONIC MYELOID LEUKEMIA PATIENTS AFTER STOPPING IMATINIB

Paulina Kwaśnik*, Joanna Zaleska, Krzysztof Giannopoulos

Department of Experimental Hematooncology, Medical University of Lublin, Lublin, Poland

*paulina701020@gmail.com

A few words about the authors:

P. Kwaśnik: PhD student at the Medical University of Lublin, researcher in the OPUS project.
J. Zaleska: researcher in the OPUS project. K. Giannopoulos: head of the OPUS project.

Abstract:

Tyrosine kinases inhibitors (TKI) revolutionized chronic myeloid leukemia (CML) treatment for many years and prolong patient's life expectancy to be comparable to age-matched healthy individuals. Despite clear clinical benefits after imatinib, extended time of treatment contributes to occurrence of adverse effects in many patients and high cost of the therapy. Hitherto, clinical trials in discontinuation of imatinib in first-line therapy in CML proved that almost 40% of patients remain in deep molecular response and nearly all relapses occurs during first 6 months after withdrawal. The mechanisms, that are responsible for CML relapses, still remain unexplained. It is suggested that maintaining long-term treatment-free remission (TFR) is not directly related to the total disposing of the gene transcript BCR/ABL, but it might be a result of the restoration of the immune surveillance in CML. The aim of the project is complex analysis of changes occurring in immune system as well as BCR-ABL molecular status after imatinib discontinuation and at molecular relapse in CML patients, who previously achieved deep molecular response at minimum level of molecular response (MR4). Our preliminary results confirmed existence of immune response in CML patients that might be further restored (augmented) after imatinib discontinuation.

Keywords:

chronic myeloid leukemia, tyrosine kinases inhibitors, imatinib, immunotherapy, treatment-free remission (TFR)



THE ROLE OF MELATONIN IN THE PREVENTION AND TREATMENT OF NON-SMALL CELL LUNG CANCER

**Marlena Markiewicz*, Jarosław Nuskiewicz, Anna Piórkowska,
Karolina Szewczyk Golec**

*Ludwik Rydygier Collegium Medicum in Bydgoszcz Nicolaus Copernicus University in Toruń,
Department of Medical Biology and Biochemistry, Faculty of Medicine*

*marlenamarkiewicz@o2.pl

A few words about the author:

I am a PhD student at Ludwik Rydygier Collegium Medicum in Bydgoszcz, Faculty of Medicine. Medical biology is our passion.

Abstract:

Melatonin (MEL) is a hormone produced by the pineal gland in response to a lack of blue light (wavelength around 458-484 nm). At the end of the 20th century, epidemiological studies related to its oncostatic function of accessibility in various types of cancer. The protective role of melatonin in cancer development occurring with its antioxidant activity, with inhibitory effect on intracellular protein - calmodulin and also with functioning through nuclear receptors and MT1 and MT2 membrane melatonin receptors. It includes the pleiotropic mechanisms of melatonin action, can stimulate apoptosis, regulate cancer survival and metabolism signaling, inhibit angiogenesis, metastasis, and induce epigenetic changes. Non-small cell lung cancer is a type of cancer with an increased metastasis process with poor prognosis and reduced survival associated with late diagnosis. MEL alleviates the side effects of chemo- and radiation therapy and supports anti-cancer treatment. In addition, it inhibits the development of cancer due to its anti-inflammatory effect. Melatonin supplementation in use with endogenous melatonin release can be a new preventive strategy or in use with chemotherapy, as well as therapeutic for patients with lung cancer improving their quality of life. The combined research confirmed the huge clinical potential of melatonin in cancer treatment, however, further research is needed by the more accurate pineal hormone action and its effects.

Keywords:

carcinogenesis, melatoni, non-small cell lung cancer



CBD OIL AS A NEW WAY OF TREATMENT AND PREVENTION OF PERIODONTITIS

Radosław Miśnik

*Lviv National Medical University of Danylo Halytsky,
Pekarska Street, 69, Lviv, Lviv Oblast, Ukraine, 79010.*

miasikradoslaw@gmail.com

A few words about the author:

Student of fifth course of dentistry faculty at Lviv National Medical University, Ukraine. Always focused on discovering new, progressive methods of treatment in stomatology and introducing them in a daily practice.

Abstract:

Periodontitis and also gingivitis is one of the most common oral diseases, the symptoms of which most often force the patient to visit a dentist. According to epidemiological studies conducted in Poland, as much as 90% of adult Poles have periodontal problems. In the 35-44 age group, at least 16% of people were diagnosed with advanced periodontitis, and worse, only 1% have a healthy periodontium. Unlike gingivitis, periodontitis, depending on its stage is considered to be irreversible process and its symptoms as well as treatment can seriously reduce the patient's quality of life. While the treatment of gingivitis requires only the removal of its cause - dental plaque - and proper oral hygiene, surgical intervention combined with a long-term treatment process is often needed when treating periodontitis. Along with the development of new branches of medicine, the medical properties of *Cannabis sativa* L. and its compounds were discovered. The most important of them became CBD oil, not affecting human perception, while having a number of health-promoting and therapeutic properties such as antitumor, analgesic, anti-inflammatory, antibacterial, immunological and many others. Many studies have also proved that it is an effective and at the same time a natural remedy that can be used in dentistry both to support the treatment of periodontitis and to prevent its development. Summarizing, CBD oil gives us new possibilities of treatment and prevention of periodontitis.

Keywords:

CBD oil, periodontitis, gingivitis, treatment, dentistry



BACTERIOCINS AND THEIR THERAPEUTIC POTENTIAL

**Jan Milanowski (1)*, Dominik Dudek (1), Weronika Fałęcka (1),
Jarosław Nuskiewicz (2), Marlena Markiewicz (2), Karolina Szewczyk-Golec (2)**

(1) Students Research Club of Medical Biology, Faculty of Medicine, Ludwik Rydygier Collegium Medicum in Bydgoszcz Nicolaus Copernicus University in Toruń

(2) Department of Medical Biology and Biochemistry, Faculty of Medicine, Ludwik Rydygier Collegium Medicum in Bydgoszcz Nicolaus Copernicus University in Toruń

*janek.milanowski@wp.pl

A few words about the author:

Jan Skarbimir Milanowski is a second-year student of pharmacy at Collegium Medicum, Nicolaus Copernicus University; since last year working at the Students Research Club of Medical Biology. Interested in rheumatic diseases and new tumor markers.

Abstract:

Bacterial resistance to antibiotics is becoming an increasingly serious problem, so there is a need to look for substances that fight bacterial infections. Bacteriocins - bactericidal and bacteriostatic proteinaceous or peptidic toxins synthesized by bacteria - are the best successors of classic antibiotics. It is known that small dose of bacteriocins is effective in fighting *Mycobacterium tuberculosis* and many others as bacterial diseases. Simultaneous use of induced osmotic stress and bacteriocins helps in the effective neutralization of many bacterial strains.

The use of bacteriocins can help in the treatment of diseases of viral etiology. It is now known that subtilisin A (*Bacillus subtilis*) fights the *Herpes simplex virus* and others viruses. Also bacteriocin EntB produced by *Enterococcus faecium* L3 have activity to prevent the reproduction of *Influenza A virus in vitro*.

Treatment of cancer requires the use of complex therapy using effective but safe medicines. Bacteriocins have been characterized by low cytotoxicity for healthy cells with simultaneous specific action for cancer cells, as is the case of entap (*Enterococcus spp.*), which is cytotoxic for the colorectal adenoma (HT-29). Also noteworthy are nisin A (*Lactococcus lactis*) which helps in the treatment of colorectal adenoma and others.

The numerous advantages of bacteriocins make them the focus of scientists looking for innovative treatments for both cancer and problematic pathogen infections.

Keywords:

antibiotics, bacteriocins, cancer, viruses



CDKN2A AND CDKN2B GENE DELETIONS IN ACUTE LYMPHOBLASTIC LEUKEMIA

Anna Mroczek

Department of Hematology, Oncology and Pediatric Transplantology, Medical University of Lublin

anna.mroczek94@wp.pl

A few words about the author:

PhD student at the Doctoral School of the Medical University of Lublin.

Abstract:

ALL is the most frequent neoplasm in children. The development of medicine leads to achieving improved results in ALL patients, however one in five children experience a relapse or dies. There is a need to optimise therapy using a classification of patients based on genetic markers. CDKN2A/B are commonly known as tumor suppressors and the loss of its function leads to uncontrolled cell proliferation. The importance of inactivating this genes in ALL is highly questionable.

The aim is to describe current knowledge about the significance of CDKN2A/B deletion in ALL.

Biallelic CDKN2A/B deletions of total represented 39.9% in B-ALL and 100% in T-ALL. Interestingly, in patients with CDKN2A/B deletion, older age and a higher number of white blood cells (WBC) were observed. Worse event free survival (EFS) during 28 months were reported in patients with deletion compared to control group (42% vs 90%). B-ALL patients with above deletion were characterized by shorter 2-year overall survival (OS) and relapse free survival (RFS). Moreover, deletions were related to the relapse. In contrast Genesca et al. proved that deletions involving the CDKN2A/ARF/CDKN2B locus are related to better response to treatment.

The results suggested that CDKN2A/B deletions were associated with poor prognosis in ALL. However, in patients with T-ALL, the prognostic value of CDKN2A/B remains questionable. More research is needed, because it may be important in designing customized therapeutic protocols.

Keywords:

CDKN2A/CDKN2B, acute lymphoblastic leukemia, deletions, prognosis, copy number abnormality



THE ROLE OF THE CCNY/CDK16 COMPLEX IN THE PROCESS OF AUTOPHAGY

**Aleksandra Opacka*, Klaudia Mikołajczyk, Wioletta Zielińska, Adrian Krajewski,
Agnieszka Żuryń, Alina Grzanka**

Department of Histology and Embryology of Collegium Medicum in Bydgoszcz, UMK in Toruń

*aleksandra.opacka.ao@gmail.com

A few words about the author:

I am in the second year of PhD studies. I am interested in cell cycle proteins, mainly cyclins, as well as prognostic markers in cancer.

Abstract:

Cyclins belong to the group of proteins that are cyclically produced and broken down in the cell. They activate cyclin-dependent kinases to form complexes that are involved in many cellular processes. CCNY belongs to the group of less known cyclins. Activates the cyclin-dependent kinases 14 and 16 and is involved in the process of spermatogenesis, as well as in the Wnt signaling pathway, and its overexpression has been showed in many types of cancer. The CCNY-CDK16 complex is a substrate of AMPK. Activation of AMPK and the induction of autophagy such as hunger for nutrients and glucose lead to phosphorylation of CCNY, suggesting that the CCNY-CDK16 complex is involved in the regulation of autophagy.

Keywords:

CCNY, Cdk16, autophagy, AMPK



CCNY CONTRIBUTES TO THE PROLIFERATION OF LARYNGEAL CANCER CELLS

Aleksandra Opacka (1)*, Wioletta Zielińska (1), Klaudia Mikołajczyk (1),
Adrian Krajewski (1), Agnieszka Żuryń (1), Alina Grzanka (1)

Department of Histology and Embryology, Collegium Medicum in Bydgoszcz, UMK in Toruń

*aleksandra.opacka.ao@gmail.com

A few words about the author:

I am in the second year of PhD studies. I am interested in cell cycle proteins, mainly cyclins, as well as prognostic markers in cancer.

Abstract:

Cancer ranks second as the cause of disease and death worldwide. Laryngeal cancer is a common cancer that accounts for 0.5–1% of new cancers or deaths from all tumors throughout the body. Despite the improvement in diagnosis and therapy, the prognosis of patients with laryngeal cancer is still poor. Therefore, it is very important to identify tumor markers involved in the molecular pathogenesis of laryngeal cancer. Cyclin Y (CCNY) is a conserved cell cycle regulator that acts as a growth factor in many cancers. The clinical relevance of CCNY in laryngeal cancer remains unknown. The study assessed the function of CCNY in laryngeal cancer.

Keywords:

CCNY, cell cycle, laryngeal cancer



CHANGES IN THE NURSING PROFESSION IN RELATION TO BASIC NURSING MODELS AND LEGAL ACTS

Magda Orzolek

*Nicolaus Copernicus University in Torun Ludwik Rydygier Collegium Medicum in Bydgoszcz,
Jagiellonska 13-15, 85-067 Bydgoszcz*

orz.magda@gmail.com

A few words about the author:

I am a third year nursing student. So far I have participated in one scientific conference. My interests are focused on the progress of the nursing profession and preventing bedsores.

Abstract:

The presentation will address the development of the nursing profession over the centuries, with particular focus on basic nursing models. This will allow the author to briefly illustrate the path that nursing has taken to reach its contemporary level. An attempt will be made to outline how competences of those involved in nursing the sick (to which the scope of their duties was originally limited) have increased over time. Therefore, an important part of the paper will show the change taking place both in the definition of the discussed profession and in the model of nursing. The description of the origins of professional nursing, as well as the beginnings of the very thought and forms of providing assistance to the sick will constitute the background. In addition, mutual relations between nurses and other members of the therapeutic team will be presented, which will complete the picture of changes within the profession. The conclusions will include an analysis of the growing tendency to transfer more and more competences to nurses, as well as to increase their responsibility for their work and for the patients.

The presentation will be primarily based on legal acts which have shaped the reality of the nursing profession both nowadays and in the past. Moreover, studies on the centuries preceding the statutory regulations, which only appeared as a result of creating the modern form of this profession in the second half of the 19th century, will be taken into account.

Keywords:

nursing, nursing models, nurse competencies



GLYCOGEN STORAGE DISEASES (GSD) TYPE I - CAN WE EFFECTIVELY CONTROL ITS COURSE?

Weronika Pawlik*, Patrycja Drzonek

*Students' Scientific Club in Clinic of Pediatrics, Endocrinology, Diabetology,
Metabolic Diseases and Cardiology of the Developmental Age*

*weronikapawlik7@gmail.com

A few words about the authors:

We are 5th year medical students from Pomeranian Medical University in Szczecin interested in pediatrics.

Abstract:

The most common and severe GSD is a glucose-6-phosphatase complex defect. The disease is inherited autosomal recessively and is the result of a mutation of the G6PC gene (17q21). Symptoms most often appear in the 3rd month of life, but the characteristic hepatomegaly occurs at birth. Hypoglycemia presented as tremors, convulsions, cyanosis, apnea and low tolerance to starvation can be observed. The condition can ultimately lead to liver and kidney failure. We present a 2-year-old patient diagnosed with type Ia glycogenosis, confirmed by genetic test results. The girl was admitted to the hospital for the first time at the age of 4 months with cholestasis, hypercalcemia and weak increase of body weight. In the physical examination was found enlarged abdominal circumference and hepatomegaly. The goal of GSD I therapy is to maintain normoglycemia and prevent distant complications and growth retardation. It is necessary to provide frequent meals, use of glucose polymers, mainly raw corn starch, or night gastric glucose infusions. In patients with GSD I, the caloric content of meals should be constantly monitored. Combined liver and kidney transplantation has been performed in several adult patients, but it is not yet known whether this has reduced the risk of developing chronic kidney disease. It is worth to familiarize yourself with our case to remind yourself of a rare, yet common disease - Ia glycogenosis, as well as its symptoms, complications and treatment effects.

Keywords:

glycogen storage disease, glucose-6-phosphatase, hypoglycemia, hepatomegaly



PRACTICAL ASPECTS OF THE THERAPEUTIC USE OF FOLIC ACID

Katarzyna Pieklarz*, Zofia Modrzejewska

*Lodz University of Technology, Faculty of Process and Environmental Engineering,
Wolczanska 213, 90-924 Lodz, Poland*

*katarzyna.pieklarz@edu.p.lodz.pl

A few words about the author:

MSc. Eng. Katarzyna Pieklarz – PhD student at the Lodz University of Technology at the Faculty of Process and Environmental Engineering. Her research interests focus on issues related to biomedical engineering and nanotechnology.

Abstract:

Folic acid (folacin, vitamin B9) is made of pteridine base (6-methylpterin), p-aminobenzoic acid (PABA) and glutamic acid. This compound was discovered at the turn of the 1930s and 1940s, and the stimulus for its invention was the search for a yeast ingredient with healing properties. It is a substance of major importance for the proper functioning of the human body. Its adequate supply is necessary for the course of biochemical processes, such as: the process of neural tube closure in the fetus, the DNA and amino acid synthesis, the growth of erythrocytes or the nervous system functioning. The body's need for folic acid varies for each age group, but it should be 0.07-0.13 mg/day. The folacin deficiency can cause several symptoms that are visible to the naked eye, including inflammation of the lining of the lips, redness and ulceration of the tongue, pale skin, and early greying of the hair. Additionally, there may be problems with concentration, insomnia, depression, nervousness, and irritability. The most serious effects of folic acid deficiency are megaloblastic anaemia, an increase in homocysteine levels or cancer. For this reason, it is in the interest of public health to educate about nutrition and promote the consumption of folic acid, especially within the indicated population groups.

Keywords:

folic acid, supplementation, deficiency



VIRTUAL REALITY IN HEALTH CARE

Piotr Polechoński*, Jagoda Kansy

*Student Scientific Circle of Physical Activity and Tourism in Virtual Reality,
Academy of Physical Education in Katowice*

*piotr.polechonski.kontakt@gmail.com

A few words about the authors:

We are students interested in using modern technology to improve health.

Abstract:

Virtual Reality (VR) is a technology that is constantly developing and finding new applications not only in the entertainment industry but also in professional use. VR is still an active research field, but it can still be a viable tool in some medical applications. By creating a virtual environment, this technology can support physical rehabilitation, psychological therapy and apply to the education of health professionals and patients. This presentation provides an overview of the possibilities of using VR in particularly important areas of health care. Probable directions of development of this technology in health care and its current limitations are also presented.

Keywords:

Virtual Reality, health care, medicine



POSSIBILITIES OF USING IMMERSIVE VIRTUAL REALITY IN TOURISM

Jacek Polechoński

Institute of Sport Sciences, Academy of Physical Education in Katowice

j.polechonski@awf.katowice.pl

A few words about the author:

Physical education teacher, physiotherapist, PhD.

Abstract:

Immersive virtual reality is increasingly used in various areas of human life, it is also entering into tourism, where it is used to create presentations of hotels and holiday resorts, promoting towns and tourist facilities. Appropriate software and IT equipment also allow for very realistic virtual tours. The purpose of the presentation is to present selected applications that allow sightseeing in immersed virtual reality. The devices offering the potential for active tourism in the virtual world were also reviewed. An attempt was also made to define virtual tourism as all activities carried out by persons who immerse themselves in virtual reality for learning and entertainment purposes in order to experience the illusion of change of their everyday, real surroundings in time and space. Tourism understood in such a way allows us not only to go to almost any place without the necessity of leaving the house. It also allows for visiting areas and objects which cannot be explored in real life. It enables a visitor, among other things, to travel in space and visit historical sites which no longer exist in their original form, but have been recreated in computer applications. Virtual tourism allows also for exploring fictional locations created by designers of photorealistic graphics as well as valuable and sensitive monuments, and taking trips to places which are dangerous or prohibited.

Keywords:

immersive virtual reality, virtual tourism, virtual trips, virtual sightseeing



SELECTED METABOLIC DISORDERS AND THEIR IMPACT ON THE OCCURRENCE OF ACNE IN WOMEN

Patrycja Radosz*, Marcin Setlak, Mateusz Klimek

Doctoral School, Medical University of Silesia, Katowice

*patrycja_radosz1@wp.pl

A few words about the authors:

Three young doctors who love science, medicine and travelling.

Abstract:

INTRODUCTION: Acne is a cardinal component of many systemic diseases and syndromes, such as polycystic ovary syndrome (PCOS).

AIM OF THE STUDY: Evaluation of the associations between insulin resistance, hiperinsulinemia and acne in women without hyperandrogenemia and other hormonal disorders, as well as in women with PCOS and without acne.

MATERIALS AND METHODS: Our retrospective research included 1100 women aged 18-35, BMI 18.5-25 kg/m², who were admitted to the Gynaecological Endocrinology Department between 2014-2019. We divided them into 4 groups: A- 360 controls (healthy women without acne), B- 39 women with acne without hyperandrogenemia and other hormonal disorders, C- 177 women with PCOS and acne and D- 534 women with PCOS without acne. Levels of glucose 0', insulin in 0', 30', 60', 120' of glucose tolerance test, HOMA-IR, QUICKI, glucose/insulin index and other laboratory tests were analyzed. Statistical analysis was performed using Statistica 12.0.

RESULTS: In the study, we observed statistically significant difference in the insulin 30' level between controls and women with acne without hormonal disorders ($p=0.0009$). Similar differences were noted in insulin 30' and 120' level between control group and PCOS women with acne ($p<0.005$).

CONCLUSION: Our study showed that hiperinsulinemia is associated with the higher frequency of acne in women without hormonal disorders as well as in women with PCOS. Dietary counseling may be beneficial in these groups of patients.

Keywords:

acne, polycystic ovary syndrome, hyperinsulinemia



**THE ROLE OF EMT-RELATED TRANSCRIPTION FACTORS
IN THE EMERGENCE OF RESISTANCE TO THE MOST COMMONLY
USED CHEMOTHERAPEUTICS IN BREAST CANCER.
PRECLINICAL RESEARCH**

Anna Roszkowska*, Andrzej Stepulak

Chair and Department of Biochemistry and Molecular Biology

*annros7@gmail.com

A few words about the author:

Medical doctor, PhD student, interested in oncology.

Abstract:

Breast cancer is the most common cancer among women affecting each year 2.1 million women, and the incidence is increasing every year. It is estimated that in 2018 for breast cancer 627,000 patients died - representing around 15% of all cancer deaths among women. Distant metastases, which are major cause of cancer-related mortality, are conditioned by epithelial-mesenchymal transition (EMT) phenomenon. EMT influences among the others cancer cells phenotype, thus enables spreading in the body. Interestingly, EMT-treated cancer cells are highly resistant to conventional chemotherapy and radiotherapy.

Methods: Assessment of SNAIL, TWIST 1, TWIST 2, FOXC2, ZEB1 and ZEB2 expression in lines cells using the qPCR method.

Modification of expression of a selected gene from the EMT family.

The research will extend contemporary knowledge on EMT related resistance within spectrum of TNBC in vitro.

The research might shed a light on overlapping mechanism of resistance between different chemotherapeutics commonly used in TNBC.

Experimental work might help elucidate novel distinctive features within TNBC subentity as TNBC stands for a heterogenous group of cancer.

Keywords:

tnbc, emt, twist



SPA REHABILITATION AFTER COVID-19, WITH COMPLETE RECOVERY IN PEOPLE WITH COMPLICATIONS

Janina Rzeszot

danuta.rz@op.pl

A few words about the author:

Janina Rzeszot, M.Sc. of Physiotherapy.

Abstract:

1. Spa rehabilitation in Poland. Health resorts in Poland. There are 45 spa towns. Spa resorts by the sea - referral is not influenced by personal preferences , but health assessment by a doctor.
2. Symptoms that cannot be ignored. COVID-19 affects everyone differently. Most people infected with disease and recover without hospitalization Symptoms: fever, dry cough, fatigue, aching muscles, sore throat, conjunctivitis, headache, loss of speech or motor skills.
3. Rehabilitation of patients with the respiratory system: products facilitating the removal of bronchial secretions, breathing through closed mouths and training of the respiratory muscles, static and dynamic postural drainage, vibrations in the chest, springing up the chest, effective coughing techniques, training the respiratory muscles.
4. Summary. Each insured person may apply for a stay at the Sanatorium, referrals are issued by a family doctor and other specialist. A referral to spa treatment/ spa rehabilitation is a description of the health condition along with the current test results. The referral should be accompanied by the results of specialist tests, if any, and a photocopy of the information card from the hospital.

Keywords:

Spa, rehabilitation, COVID-19



BIOTIN – A NEW DIRECTION IN THE TREATMENT OF PROGRESSIVE MULTIPLE SCLEROSIS?

Klaudia Sapko*, Marcin Kulczyński, Michał Marciniec

*Chair and Department of Neurology, Medical University of Lublin,
Jaczewskiego 8, 20-954 Lublin, Poland*

*klaudia.sapko@gmail.com

A few words about the authors:

All authors are currently residents and PhD students at the Chair and Department of Neurology at the Medical University in Lublin. They are mainly interested in the issues of multiple sclerosis, strokes and cervical dystonia.

Abstract:

Multiple sclerosis (MS) is a demyelinating, autoimmune, inflammatory disease of the central nervous system and a leading cause of neurological disability among young adults. A considerable portion of these patients have a relapsing-remitting disease type, for which medicines are mostly dedicated, but clinical course of most of these patients will eventually transition to secondary progressive MS. Unfortunately, therapies for progressive MS have not had the same degree of advancement as for relapsing-remitting type, however, for a last few years' attention has been paid to the need for new disease modifying drugs that would focus on the treatment of progressive MS.

One of these drugs is biotin, also known as vitamin B₇, a cofactor of five enzymes involved in the production of energy and fatty acids. Studies using high-dose biotin show that it has a positive effect on the course of the disease by reducing disability as measured by the Expanded Disability Status Scale (EDSS) and it improves visual acuity.

Even though biotin is considered safe and well-tolerated by patients and the first test results are very promising, further research is needed to achieve full success.

Keywords:

multiple sclerosis, progressive multiple sclerosis, biotin, treatment



DOES SHAPE MATTER? MORPHOLOGY OF INTRACRANIAL VESSELS AND ITS INFLUENCE ON THE FORMATION OF ANEURYSMS WITHIN THE CENTRAL NERVOUS SYSTEM

Marcin Setlak*, Patrycja Radosz

*The Department and Clinic of Neurosurgery, Doctoral School,
Medical University of Silesia in Katowice*

*7marcin.setlak7@gmail.com

A few words about the authors:

The authors are graduates of the Medical University of Silesia in Katowice, and currently they continue their studies at the Doctoral School, where they develop their scientific interests. Their passion is travelling and reading interesting books.

Abstract:

According to various estimates, intracranial aneurysms may affect from 2 to 8% of the population. A dozen or so years ago, most cases of intracranial aneurysms were detected only after their rupture, which was associated with poor prognosis and high mortality. Currently, due to the widespread and improvement of imaging diagnostic methods, more and more cases are detected before any symptoms appear.

There are many risk factors for the development and subsequent rupture of intracranial aneurysms, the most common being arterial hypertension, smoking and genetic predisposition. Recently, numerous publications have appeared indicating that one of the most important risk factors for the development and evolution of intracranial aneurysms are haemodynamic forces, resulting directly from the geometry of intracranial vessels. The occurrence of aneurysms in certain specific places within the vascular tree, most often in places where vessels divide or where there is a large change in the direction of blood flow through the vessel, led scientists to attempt an in-depth analysis of the impact of the formation of specific parts of the vascular tree of the central nervous system on the development of aneurysms in a given area. This paper summarizes the most important studies on this topic, with particular emphasis on aneurysms in the anterior communicating artery.

Keywords:

intracranial aneurysms, anterior communicating artery



CAN WE PREDICT COMPLICATIONS AFTER RADICAL CYSTECTOMY?

Damian Sudół*, Michał Godzisz, Iga Kuliniec, Paweł Plaza, Przemysław Mitura, Krzysztof Bar

Department of Urology and Urological Oncology of Medical University in Lublin

*eumedon@gmail.com

A few words about the author:

Damian Sudół – resident doctor in Department of Urology and Urological Oncology in Lublin on the second year, PhD student in doctoral school of Medical University in Lublin. Interests are medicine, urology, urothelial carcinoma.

Abstract:

Radical cystectomy (CR) due to bladder cancer has one of the highest rates of morbidity and complications among urologic surgery. Each year in Poland near 1600 CR are performed. Main indications to CR are: muscles invasive bladder cancer (MIBC) or non muscles invasive bladder cancer (NMIBC) with poor prognostic factors like : recurrent tumor, cases of Bacillus Calmette Guerin (BCG) intravesical immunotherapy treatment –resistant, high grade of tumour and others. 5-years overall survival In Europe is approximately 60-70 percent. Complications following radical cystectomy can be as high as 50-69 %, but ability to predict them remains poor. Identifying the most important factors leading to adverse events after cystectomy will allow to reduce their occurrence and decrease perioperative mortality. Prediction of complications following radical cystectomy can improve overall survival and functioning of patients after CR. Limited data about bladder cancer and poor prognosis after radical cystectomy in Poland inclines to broaden knowledge and analyse postoperative complications.

Keywords:

urology, cystectomy, urothelial cancer, postoperative complications



PROSPECTS FOR ANTI– SARS-COV-2 VACCINES DEVELOPMENT

**Zuzanna Sycz (1)*, Kamil Klimas (2), Małgorzata Korzeniowska (3, 4),
Agnieszka Święcicka-Klama (2, 5)**

(1) Department of Biology and Medical Parasitology, Wrocław Medical University

*(2) Department and Clinic of Angiology, Systemic Hypertension and Diabetology,
Wrocław Medical University*

(3) Department and Clinic of Pediatric Infectious Diseases, Wrocław Medical University

(4) Department of Pathophysiology, Wrocław Medical University

(5) Department of Social Medicine, Wrocław Medical University

*sycz.zuzanna@gmail.com

A few words about the authors:

All authors of this work are the PhD candidates in 2nd and 3rd year of full-time doctoral studies at Wrocław Medical University. Zuzanna Sycz, a presenting person, performs PhD thesis experiments in the field of medical biology and microbiology.

Abstract:

There is currently a world pandemic of COVID-19, which etiological factor is SARS-CoV-2. Intensive work is ongoing to create anti–SARS-CoV-2 vaccine, but unfortunately no such preparation has been produced so far.

The source of previous failures in its development, as well as vaccines against other coronaviruses (SARS-CoV, MERS), is the phenomenon called ADE (antibody-dependent enhancement of infection), in which weakly neutralizing antibodies produced during infection or vaccination, instead of protecting the host, strengthen the course of next infection. Therefore, anti–SARS-CoV-2 vaccine should generate long-term cellular and humoral immunity with protective titers of highly neutralizing antibodies that don't cause ADE.

Currently, about 150 potential vaccines are in various stages of preclinical studies and over a dozen of them – at the stage of clinical trials phase I/II. The most advanced preparations are directed against viral surface glycoprotein (S–spike) and the internal nucleoprotein, because during COVID-19, host organism most often produces antibodies against these virion elements. The European Medicines Agency estimates that anti–SARS-CoV-2 vaccine will be globally available in approx. 18–24 months, provided that clinical trials are completed in 2020 and demonstrate its safety and high immunogenicity profile after just one administration in all age groups, including pregnant women and people with reduced immune response.

Keywords:

vaccine, coronavirus, SARS-CoV-2, COVID-19



SALIVA CORTISOL LEVEL IN CHILDREN AND ADOLESCENTS WITH OBESITY - REVIEW

Magdalena Szalewska (1)*, Jolanta Szymańska (2)

(1) Doctoral School, Medical University of Lublin,

(2) Department of Integrated Paediatric Dentistry, Medical University of Lublin

*magdalena.szalewska@gmail.com

A few words about the authors:

Professor Jolanta Szymańska is Head of Department of Integrated Paediatric Dentistry at Medical University of Lublin. Magdalena Szalewska is a student of Doctoral School at Medical University of Lublin.

Abstract:

Obesity is defined as abnormal or excessive fat accumulation that may impact health. Obesity has genetic, behavioral, socioeconomic, and environmental origins. The number of people with obesity, including children is increasing globally.

Authors analyzed databases and identified studies in which saliva was used as a diagnostic method to demonstrate cortisol levels in children and adolescents with obesity and with normal weight. Four databases were searched: Cochrane, Medline, Scopus, Open Grey. Reviewers selected articles that used saliva to measure cortisol level. Authors used inclusion criteria: original research analyzing the relationship between obesity and saliva cortisol level, types of research: cross-sectional and longitudinal studies, research involving children and adolescents with obesity, research with a control group, thirty and more patients in both groups, both sex, obesity score used: BMI. Exclusion criteria: all reviews articles, letters to editors, editorials, case reports, case series, in vitro studies, animal studies; comorbidities. The authors qualified three articles that comply with all inclusion criteria. Two articles found differences between saliva cortisol levels in group with obesity and control group. The amount of research defining differences in saliva cortisol levels in children and adolescents with obesity is insufficient. Further research on saliva composition differences in children and adolescents with obesity and normal weight is needed.

Keywords:

cortisol, obesity, saliva



METABOLIC SYNDROME IN MEDICAL PRACTICE

**Agnieszka Święcicka-Klama (1, 2)*, Kamil Klimas (1), Małgorzata Korzeniowska (3, 4),
Zuzanna Sycz (5)**

*(1) Department and Clinic of Angiology, Systemic Hypertension and Diabetology,
Wroclaw Medical University, Wroclaw, Poland*

(2) Department of Social Medicine, Wroclaw Medical University, Wroclaw, Poland

*(3) Department and Clinic of Pediatric Infectious Diseases, Wroclaw Medical University,
Wroclaw, Poland*

(4) Department of Pathophysiology, Wroclaw Medical University, Wroclaw, Poland

(5) Department of Biology and Medical Parasitology, Wroclaw Medical University, Wroclaw, Poland

*agnieszkaswiecicka@wp.pl

A few words about the authors:

All authors of the study are PhD students at Wroclaw Medical University. They conduct research in a wide range of subjects, but this study was prepared due to a growing problem of the metabolic syndrome.

Abstract:

Metabolic syndrome is a set of interrelated factors that significantly increase the risk of atherosclerosis, type 2 diabetes, and cardiovascular outcomes. The main components of the metabolic syndrome are as follows: central obesity, hyperinsulinemia, insulin resistance, impaired glucose tolerance or full-fledged type 2 diabetes, atherogenic dyslipidemia and hypertension.

This study aims to discuss the problem of diagnosing metabolic syndrome in everyday medical practice and to emphasize the importance of early identification of patients at risk. Prevention and early treatment of metabolic syndrome can reduce the risk of developing diabetes, hypertension, organ damage and cardiovascular mortality. The increasing prevalence of metabolic syndrome indicates the need to intensify preventive and therapeutic measures.

Keywords:

metabolic syndrome, diabetes, obesity



TRADITIONAL CHINESE MEDICINE – HISTORY AND APPLICATION IN THERAPY OF PATIENTS WITH CHRONIC PAIN

Szymon Urban*, Jerzy Król, Olaf Chmura, Adrianna Wąsińska

Jagiellonian University Medical College

*szy.urban@gmail.com

A few words about the authors:

The authors are 5-year students of the Jagiellonian University Medical College. They are an active participant in the student scientific club of sports medicine and orthopaedics.

Abstract:

Chinese medicine has developed many types of therapy since the ancient times. Some of them have stood the test of time and now, they are currently the subject of numerous research studies, verifying their effectiveness in the treatment of chronic pain, which is a growing problem of modern medicine. The best studied therapy, among all of those classified as traditional Chinese medicine, is Acupuncture. It seems to be a promising therapy in chronic back pain. Some studies also proved that acupuncture can help to moderate exacerbate chronic back pain. The results of research on acupuncture treatments for patients suffering from fibromyalgia are ambiguous. Some studies suggest a positive effect of acupuncture, which is manifested by a decrease in painful areas of the body and a decrease in the level of perceptible pain. However, these studies are of relatively low credibility. Other elements of traditional Chinese medicine such as Tai Chi and Qigong are popular among the gymnastics around the world and are a combination of physical activity and meditation. Tai Chi and Qigong can reduce pain caused by osteoarthritis and reduce chronic back pain. However, no studies are determining the long-term results of such therapy. Unfortunately, the final verification of the health properties of Tai Chi and Qigong is difficult, due to the large number of scientific studies whose results are ambiguous or show different results.

Keywords:

Traditional Chinese Medicine, Tai Chi, acupuncture, chronic pain



NOVEL METHODS OF NONOPERATIVE TREATMENT OF SPORT-RELATED MUSCLE INJURIES

Szymon Urban

Jagiellonian University Medical College

szy.urban@gmail.com

A few words about the author:

The author is a 5-year student of the Jagiellonian University Medical College. He is an active participant in the student scientific club of sports medicine and orthopaedics.

Abstract:

Muscle injuries are frequently observed in various sports disciplines, both in elite and recreational sport. They are also leading cause of training interruption in sport. Although theirs commonly occurs, the mechanism of muscle regeneration is not well known. Nowadays typical nonoperative treatments of damaged muscle are rehabilitation and taking anti-inflammation drugs, depending on the stage of damage of muscle tissue. Neglect treatment of muscle injury or too early return to physical activity can lead to permanent damage to the muscle and a greater risk of re-injuries.

The review identifies two promising methods of treating damaged muscles. The first is extracorporeal shock wave therapy, which has auspicious results in researches on animal models and could be a promising therapeutic method to improve the regeneration process of sports-related muscle injuries. The second method is the hyperbaric oxygen therapy, which has shown affect decreasing inflammation and accelerating healing injured muscular tissue. The review also has shown the necessity to optimize rehabilitation methods and to better understand the mechanism of satellite cells and determine the effect of inflammation on muscle recovery.

Keywords:

muscle injury, sport medicine, extracorporeal shock wave therapy, hyperbaric oxygen therapy



SYNOVIAL FLUID CYTOLOGICAL PARAMETERS IN SELECTED RHEUMATIC DISEASES

**Ewelina Wędrowska (1)*, Arkadiusz Goede (1), Maciej Chmielarski (1),
Paweł Waśniowski (2)**

*(1) Department of Lung Diseases, Neoplasms and Tuberculosis, Collegium Medicum,
Nicolaus Copernicus University in Toruń, Poland*

*(2) Department of Inorganic and Analytical Chemistry, Collegium Medicum,
Nicolaus Copernicus University in Toruń, Poland*

*ewelina.wedrowska@gmail.com

A few words about the authors:

PhD students at the Faculty of Medicine of the CM UMK, conduct research on the use of modern gene therapy techniques and immunotherapy in the treatment of many diseases, e.g. cancer, rheumatic or interstitial lung diseases.

Abstract:

Inflammatory diseases of the connective tissue lead to joint destruction and progressive disability. All changes in the joints are reflected in the composition of the synovial fluid (SF) and its analysis may be crucial for the diagnosis, monitoring of disease activity and treatment. The aim of the study was the cytoimmune analysis of the SF with particular emphasis on cells with cytotoxic properties. SF was collected by arthrocentesis from patients with rheumatoid arthritis, RA; ankylosing spondylitis, AS; psoriatic arthritis, PsA and reactive arthritis, ReA. Cytological evaluation was included total cell count and white blood cell percentage calculation. Phenotype of major lymphocyte populations, the CD4/CD8 ratio and expression of cytotoxicity markers (FasL, TRAIL) was evaluated by flow cytometry. The total number of cells in all groups was significantly high. The inverted CD4/CD8 index indicates an increase in the activity of cytotoxic lymphocytes (Tc). In RA compared to ReA, there was a significant increase in Tc TRAIL+ indicative of the induction of apoptosis by the extracellular pathway associated with TRAIL, DR4 and DR5, but in AS the results indicate an action via the FasL/FasReceptor pathway. In addition, there was a similar level of expression of both FasL and TRAIL which suggests their participation in the direct process of tissue damage. The results indicate the possibility of using the TRAIL and FasL properties in future therapies of inflammatory joint diseases.

Keywords:

synovial fluid, rheumatoid arthritis, lymphocytes



GENETIC BASIS OF RETINOBLASTOMA

Malgorzata Wieteska*, Agnieszka Kaczyńska, Paweł Stanicki, Piotr Wójcik

*Medical University of Lublin, Aleje Racławickie 1, 20-059 Lublin, Poland,
Chair and Department of Epidemiology and Clinical Research Methodology*

*malgosia.wieteska@onet.eu

A few words about the authors:

We are fourth year students of the Faculty of Medicine at the Medical University of Lublin. In study especially interested in unconventional solutions and future directions.

Abstract:

Retinoblastoma is the most common intraocular cancer among children with cumulative lifetime incidence rate of one case of retinoblastoma per 18000 to 30000 live births worldwide. The average age of a child at the time of diagnosis is 18 months. Retinoblastoma is highly malignant autosomal dominant disease, which is accompanied by numerous typical symptoms: leukocoria, deterioration of the vision or strabismus.

This work explains the complexity of retinoblastoma epidemiology, genetic association, clinical features and latest discoveries. The materials used for the analysis are articles available on the PubMed platform and statistics of the American Cancer Society.

According to the Knudson hypothesis the genetic basis of retinoblastoma development are mutations in two alleles of the RB1. This gene is located on a region of the q arm of chromosome 13 designated 13q14. It belongs to the group of suppressor genes, and its protein product (phosphoprotein pRB1) is a negative regulator of the cell cycle. The form of retinoblastoma (sporadic or heritable) determines its character and course. Recent studies show that miRNA, which performs oncogenic function, may be involved in the development of this cancer, as well as viruses such as HPV or adenoviruses.

Despite the development of technology, retinoblastoma remains a huge challenge for contemporary medicine. Early diagnosis and advancements in focal therapy have resulted in improved eye and vision salvage.

Keywords:

retinoblastoma, RB1, cell cycle, miRNA



THE INFLUENCE OF PH ON ANTIOXIDANT ACTIVITY OF SELECTED MONOTERPENES

Karolina Wojtunik-Kulesza (1)*, Daniel Sajdlowski (2), Anna Krajewska (3),
Monika Waksmundzka-Hajnos (1)

(1) *Department of Inorganic Chemistry, Medical University of Lublin*

(2) *Chair and Department of Oral Surgery, Medical Univeristy of Lublin*

(3) *Department of Integrated Pediatric Dentistry, Medical Univeristy of Lublin*

*karolinawojtunikulesza@umlub.pl

A few words about the authors:

Authors of abstract are interested in natural active substances which can be use in medicine. Among them are monoterpenes revealing antioxidant activity. The Authors are strictly connected with Medical University of Lublin where fulfil their studies.

Abstract:

One of the most desirable feature of natural substances is antioxidant activity, which protect our cells from oxidative damages. Nevertheless, in most cases, the antiradical activity is different in various methods and studies conditions such as in vitro/in vivo assays or solvents. The presented studies are focused on impact of pH on antioxidant activity of selected group of terpenes.

The studies encompassed 16 monoterpenes which are constituents of essential oils from plants such as salvia or mentha. The radical scavenging activity of the compounds was determined spectrophotometrically by using DPPH and ABTS methods with modification. Studies were divided into two parts: acidic conditions (pH 1.9 -2.2) and basic conditions (pH 8.5).

In the case of DPPH method, increase in antioxidant activity of terpenes was observed in acidic solution. The most active were: α -phellandrene, pulegone, α -terpinene, citral and menthone. In basic solution, the most active terpene turned out to be carvone. In the case of ABTS method, addition of acid caused decrease in antiradical activity of the following terpenes: citronellal, carvone and isopulegol. Significance increase in antioxidant activity of terpinen-4-ol, linalool, α - and β -pinene was observed in basic solution.

The presented results showed differences in antioxidant activity of potential free radical scavengers in our organism due to the activity is associated with pH in our digestive system.

Keywords:

antioxidants, monoterpenes, DPPH



EFFECTS OF THE COVID-19 PANDEMIC IN PATIENTS WITH A HEART ATTACK

**Piotr Wójcik*, Ania Sobstyl, Małgorzata Chyćko, Milena Leziak, Małgorzata Wieteska,
Halina Pieciewicz-Szczęsna**

*Student Research Circle at the Department of Epidemiology and Clinical Research Methodology,
Medical University of Lublin*

*piotrek1444@gmail.com

A few words about the author:

I'm third year medicine student interested in urgent emergency cases.

Abstract:

INTRODUCTION: Myocardial infarct usually has etiology of atherosclerosis, caused by rupture of atherosclerosis plaque in the coronary vessel. A blocked artery causes cardiac ischemia, which in the consequence may death of the patient. Fast opening of vessels lumen is extremely important. In the United States alone, about 2000 people deaths is caused by this factor.

MATERIAL AND METHODS: An analysis of the work from the Pubmed database was carried out, which most accurately described the issue of myocardial infarction during the SARS-CoV-2 pandemic. The keywords used for search were: 'heart attack', 'medicine', 'emergency department'.

RESULTS: After the outbreak of a pandemic, significantly fewer patients with coronary heart disease symptoms were seen arriving at emergency rooms. The time from the first symptoms to contact with a specialist has extended. Medical procedures have been extended due to sanitary rigor.

CONCLUSIONS: Patients should not ignore the undesirable symptoms presented by their body. Postponing medical intervention has the irreversible effects of myocardial ischemia. The fear of the population of what you can get may be greater than the fear of what a person is already sick with, so society should be more aware of the consequences of the symptoms that may occur.

Keywords:

medicine, COVID-19, heart attack, emergency department



IMPACT OF DEXAMETHASONE (DEX) AND DOXORUBICIN (DOX) COTREATMENT ON HEPG2 HEPATOCELLULAR CARCINOMA CELL LINE

Wioletta Zielińska*, Marta Hałas-Wiśniewska, Klaudia Mikołajczyk, Alina Grzanka

*Department of Histology and Embryology, Faculty of Medicine,
Collegium Medicum in Bydgoszcz Nicolaus Copernicus University in Toruń*

*w.zielinska@cm.umk.pl

A few words about the author:

I graduated from biotechnology and since then I have been an employee of Histology and Embryology department of Collegium Medicum in Bydgoszcz.

Abstract:

TACE is commonly used in patients with liver cancer. It includes the local administration of a high dose of the cytostatic followed by the embolization of the tumor-supplying vessels. It should reduce the side effects associated with chemotherapy and limit further tumor growth by limiting nutrients access. In practice, however, TACE extends patients' lives by 4 months. This may be related to either the induction of hypoxia due to occlusion of the vessel or the use of DOX in the procedure. Studies show that DOX leads to the selection of cells with the most invasive phenotype. In turn, the hypoxia-induced EMT allows cells to move and form distant metastases.

The study aimed to assess how DOX and/or DEX treatment impacts the viability and migration of HepG2 cells.

To analyze cell viability and the type of interaction between the drugs MTT assay was used. Double staining with AV and PI was applied to study the type of cell death. Western blot analysis was used to determine levels of the proteins connected with EMT and apoptosis. Transwell migration assay allowed us to assess cell migration.

Our study showed that the cotreatment of HepG2 cells with DOX and DEX results in synergistic interaction on cell viability and migration.

The results allow us to suggest that developed DOX: DEX combination limits hypoxia-induced increase in the migratory potential of HCC cells, which is connected with the inhibition of the EMT process and directing cells to death on the cellular level.

Keywords:

Transarterial chemoembolization, doxorubicin, dexamethasone, hepatocellular carcinoma



ROLE OF CALCIUM IONS IN CELL MIGRATION

**Wioletta Zielińska*, Marta Halas-Wiśniewska, Klaudia Mikołajczyk,
Aleksandra Opacka, Alina Grzanka**

*Department of Histology and Embryology, Faculty of Medicine,
Collegium Medicum in Bydgoszcz Nicolaus Copernicus University in Toruń*

*w.zielinska@cm.umk.pl

A few words about the author:

I graduated from biotechnology and since then I have been an employee of Histology and Embryology Department of Collegium Medicum in Bydgoszcz.

Abstract:

Cell migration is a phenomenon involved in both physiological processes, like embryonal development, and pathological events, e.g. tumor metastasis. Many changes within the cell are associated with migration. Loosening of intercellular connections, reorganization of the cytoskeleton, and change in cell morphology are observed together with the formation of invasive structures such as filopodia, lamellipodia, or invadopodia.

Calcium ions are a secondary messenger necessary for the proper functioning of the cell. In the cytosol, the concentration of calcium ions is much lower than in the intercellular space (about 2000x the gradient). Cellular events are very often associated with the local peak in Ca^{2+} concentration.

The presentation aims to summarize the latest literature reports concerning the role of Ca^{2+} in cell migration and to determine whether the regulation of this phenomenon may be of clinical importance.

In the case of migrating cells, local changes in the concentration of Ca^{2+} are observed mainly on the leading-edge of the cell. It is related to the regulation of the actin filaments polymerization process involved in the formation of invasive structures. Calcium channels located in both the cell membrane and the endoplasmic reticulum are involved in the release of Ca^{2+} . Regulation of the expression of these channels can form the basis for inhibiting cell migration in processes such as migration of cancer cells.

Keywords:

calcium ions, cell migration, invasive structures, cancer

MEDICAL SCIENCES

POSTERS



PERIPHERAL BLOOD INVARIANT NATURAL KILLER T CELLS IN PREECLAMPSIA

**Aleksandra Ludwin (1)*, Krzysztof Galuszka (2), Dorota Darmochwał-Kolarz (3),
Jacek Tabarkiewicz (1, 4)**

*(1) Centre for Innovative Research in Medical and Natural Sciences, Medical College,
University of Rzeszow, Rzeszow, Poland*

(2) Provincial Clinical Hospital No. 1, Rzeszow, Poland

*(3) Department of Obstetrics and Gynecology, Institute of Medical Sciences, Medical College,
University of Rzeszow, Rzeszow, Poland*

*(4) Department of Human Immunology, Institute of Medical Sciences, Medical College,
University of Rzeszow, Rzeszow, Poland*

*aleksandra.ludwinn@gmail.com

A few words about the authors:

The team of scientists consists of a biotechnologist and medical doctors who work at the University of Rzeszow and/or clinical hospitals in Rzeszow. They are interested in the immunological basis of various diseases, including preeclampsia.

Abstract:

Preeclampsia is a pregnancy specific disease, associated with high maternal and fetal morbidity and mortality. Invariant natural killer T (iNKT) cells are thought to play a regulatory role in preeclampsia. iNKT cells are a minor subpopulation of T lymphocytes, that combines features of T cells and natural killer cells. They are able to produce a large quantity of various cytokines, such as IFN- γ and IL-4, so they can act as both effector and regulatory cells. A small subset of iNKT cells express regulatory T cells specific FOXP3 marker, which emphasizes their regulatory role. The aim of our study was to assess the percentage of classical and regulatory iNKT cells and their cytokine profile in peripheral blood of patients with preeclampsia and healthy pregnant women. Flow cytometry was used to estimate the iNKT cells percentage, the expression of cytokines: IFN- γ , IL-4, IL-10 and IL-13 and the expression of FOXP3 marker. We observed a higher percentage of iNKT cells producing all analyzed cytokines in preeclampsia and slightly higher percentage of FOXP3⁺ iNKT cells, while the expression of IFN- γ and FOXP3 was significantly lower in preeclampsia. Our results suggest that iNKT cells are more activated in preeclampsia and FOXP3⁺ iNKT cells seem to be dysfunctional and accumulated in blood of preeclamptic patients. Because these changes can affect intrauterine environment and cause pregnancy failure, further analysis of the role of iNKT cells in preeclampsia is needed.

Keywords:

iNKT cells, preeclampsia, cytokines, FOXP3⁺ iNKT cells



PREVENTION OF COGNITIVE IMPAIRMENT AND DEMENTIA

Klaudia Łożuk*, Przemysław Zań

*Student Scientific Circle at the Department of Neurology,
Collegium Medicum of the University of Rzeszów*

*klaudia.email@yahoo.com

A few words about the authors:

Fifth year medical students at Collegium Medicum, University of Rzeszów, involved in the projects of Student Scientific Circle at the Department of Neurology.

Abstract:

Dementia is a progressive cognitive impairment in which deterioration in memory, thinking, orientation and behavior can be observed. It is one of the most common causes of disability and dependency among older adults. The most prevalent cause of dementia is Alzheimer's disease (AD) and it is recognized by the World Health Organization as a global public health priority. Currently there are 50 million people with AD and other forms of dementia living in the world. Moreover, the numbers are predicted to increase as populations are ageing. Memory impairment correspond with measures of oxidative stress and cholesterol in brain cells. Research shows that nutrition can modulate the immune system and may influence cognitive ageing via multiple neuroinflammatory pathways. Proper dietary patterns, physical and cognitive exercise can preserve memory function during ageing.

Keywords:

prevention, dementia, diet, physical activity, cognitive activity



DEMENTIA – TREATMENT METHODS AND WHAT IS NEW ON THE HORIZON?

Katarzyna Pieklarz*, Zofia Modrzejewska

*Lodz University of Technology, Faculty of Process and Environmental Engineering
Wolczanska 213, 90-924 Lodz, Poland*

*katarzyna.pieklarz@edu.p.lodz.pl

A few words about the author:

MSc. Eng. Katarzyna Pieklarz – PhD student at the Lodz University of Technology at the Faculty of Process and Environmental Engineering. Her research interests focus on issues related to biomedical engineering and nanotechnology.

Abstract:

Over the past decades, the phenomenon of progressive aging societies has been observed, and thus the growing problem of people suffering from neurodegenerative diseases, which include a complex of incurable diseases that lead to the gradual degeneration and death of nerve cells, resulting in problems with movement or decreased mental performance. Currently, Alzheimer's disease as a senile dementia is the most frequent reason for dementia syndromes. Standard treatment of neurodegenerative diseases is based on symptomatic therapy including pharmacological management with the implementation of educational activities, mainly memory training. However, it should be remembered that the use of pharmacotherapy is a low-efficiency solution, which is associated with too late diagnosis of this type of dementia. Therefore, new methods of treatment are intensively sought, among which the key role is played by therapy with the use of stem cells, gene therapy, ultrasound treatment and administration of immunoglobulins.

Keywords:

aging, dementia, Alzheimer's disease, therapy



ARTERIAL HYPERTENSION IN POLAND- THE PREVALENCE AND HEALTH COMPLICATIONS

Anna Maria Zoń

Wroclaw Medical University, Wybrzeże Ludwika Pasteura 1, 50-367 Wrocław, Polska

anna.zon@student.umed.wroc.pl

A few words about the author:

Anna Maria Zoń is a PhD student at Wrocław Medical University, who also works in cardiology outpatient clinic.

Abstract:

Arterial hypertension is one of the major cardiovascular disease risk factors. In Poland, it is estimated that arterial hypertension affects about 11 million Poles (9.7 million adults aged 18-79 years and 1 million adults above 80 years). It means that about one-third of adults have arterial hypertension. The prevalence of arterial hypertension arises with age from 11.3% (among patients aged 18-39 years) to 68% (in people above 60 years). It is an independent predisposing factor for coronary artery disease, heart failure, peripheral artery disease, renal disease and stroke. Although 70% of patients take at least two antihypertensive drugs, only one-fifth to one-fourth of patients is treated effectively. The high prevalence of hypertension is common in the world- irrespective of income status. Hypertension worldwide will continue to grow in prevalence, because of the aging of the population, more sedentary lifestyle, rising rates of overweight and obesity. Arterial hypertension increases cardiovascular risk and death rate. It should be diagnosed and appropriately treated. The presence of the other risk factors, organ damage and comorbidities must be obtained during anamnesis. Special emphasis should be placed on appropriate blood pressure measurement. It is necessary to conduct intensive education in the field of upper limits of normal blood pressure and on complications of untreated hypertension.

Keywords:

arterial hypertension, diagnosis, epidemiology, complications, awareness

NATURAL AND TECHNICAL SCIENCES

PRESENTATION



OPTIMIZATION OF THE PICKING PROCESS IN THE WAREHOUSE

Natalia Bartczyk

Lodz University of Technology

nataliabartczyk@interia.pl

A few words about the author:

I am a second-degree student of the Lodz University of Technology at the Faculty of Engineering Management.

Abstract:

In the era of dynamic technology development, for a company to maintain its position on the market, it is necessary to continually improve the processes implemented within its operations. Companies should monitor and implement appropriate strategies or ways to verify gaps in the link of the logistics chain to minimize the harmful effects that they can have in the context of the total flow of resources as quickly as possible. The flow of materials from one point to another is mainly associated with continuous movement activities.

Completion involves the collection of products from appropriate and assigned places in the assembly area, and in the next stage of order creation in accordance with the needs of a specific supplier.

A properly selected method of storing goods influences the calculation of the most optimal route during which orders are completed. Specifying the route correctly allows you to shorten the lead time.

Keywords:

optimization, completion, order picking, logistic



FTIR/ATR TECHNIQUE IN THE ANALYSIS OF INORGANIC-ORGANIC COMPOSITES

Alicja Bosacka

*Maria Curie-Skłodowska University, Institute of Chemical Sciences,
Maria Curie-Skłodowska Sq. 3, 20-031 Lublin, Poland*

alicja.bosacka@poczta.umcs.lublin.pl

A few words about the author:

I am PhD student at Maria Curie-Skłodowska University in Lublin (Poland). I am interested in physical chemistry, material synthesis, their functionalization and investigation.

Abstract:

The science that deals with the analysis of spectra and explains the mechanisms of their formation is spectroscopy. Spectroscopic methods rely on the observing the interaction of electromagnetic radiation with matter. One of the important spectroscopic method is Fourier-Transform Infrared Spectroscopy (FTIR), which is a widely used to identify the structure of chemical compounds on the basis of an infrared spectrum. Connection the Attenuated Total Reflection (ATR) technique with FTIR spectroscopy supports valuable tool to investigation various samples. The main advantages of this combination are the ability to measure samples without pre-treatment and in all three states: solid, liquid and even gaseous using a suitable chamber. This work focuses on the description of the FTIR/ATR technique and the studying of inorganic-organic composites using this technique.

Keywords:

composites, surface functionalization, FTIR spectroscopy



TITANIUM DIOXIDE AND ITS ASPECT

Klaudia Chuchracka

Adam Mickiewicz University, Faculty of Chemistry, Poznań, Poland

klaudia.chuchracka@onet.pl

A few words about the author:

First-year student of the second degree of chemical analytics.

Abstract:

When you hear ‘titanium dioxide’ a pigment in white paint is usually the first thing you think about. However it is only a little about TiO_2 , as it can take on many structures, that differ in appearance, properties and thus in applications. Apart from this, size is the thing that determines behaviour of titanium (IV) oxide: nano-scale TiO_2 tends to act completely different from its bulky equivalent, it could seem as if they were two unrelated compounds. In this review we’re going to take a better look at titanium dioxide and its various forms.

Keywords:

titanium dioxide, nanoparticles



INDUSTRIAL USING OF COMBUSTION BY-PRODUCTS DERIVED FROM ENERGY PLANT

Aleksandra Czajkowska

University of Science and Technology in Bydgoszcz, Faculty of Mechanical Engineering

czajkowska.aleksandra91@gmail.com

A few words about the author:

Aleksandra Czajkowska, is a PhD student in the Mechanical Engineering Faculty at the University of Science and Technology in Bydgoszcz. She specializes in the field of Energy Plant. The main area of research are electrostatic precipitators.

Abstract:

The Polish energy sector is still based on the combustion of conventional fuels. It is estimated that in Poland about 15 million tons of by-products are produced every year from coal combustion and about 2.5 million tons of gypsum from flue gas desulphurization. New solutions should be sought for the use of combustion by-products to minimize the wastes from the energy sector.

Keywords:

combustion by-products, regulations of proper energy waste usage, energy sector



THE INFLUENCE OF BIOMASS COMBUSTION IN POWER UNITS ON EFFECTIVENESS OF EXHAUST GAS DEDUSTERS

Aleksandra Czajkowska

University of Science and Technology in Bydgoszcz, Faculty of Mechanical Engineering

czajkowska.aleksandra91@gmail.com

A few words about the author:

Aleksandra Czajkowska, is a PhD student in the Mechanical Engineering Faculty at the University of Science and Technology in Bydgoszcz. She specializes in the field of Energy Plant. The main area of research are electrostatic precipitators.

Abstract:

In Poland, electricity is produced mainly by conventional power plants, fired with hard coal or lignite. The result of the fossil fuel combustion process is the generation of toxic dust and gas pollutants, which can get through to environment. Exhaust gas purification system allows to remove dust and gases remaining after the combustion process and includes dedusting, desulphurization and denitrification. In particular, the use exhaust gas purification installations in power plants allows to prevent the excessive emission of sulfur oxides (SO_x), nitrogen oxides (NO_x) and $\text{PM}_{2.5}$ and PM_{10} particulates matter to the habitat.

Keywords:

conventional thermal power plants, hard coal, power units, electrostatic precipitators



CHARACTERIZATION OF THE PROPERTIES OF COMPLEXES COMPOUNDS OF WHEAT STARCH WITH FERULIC ACID

Kamil Dędek*, Justyna Rosicka-Kaczmarek, Ewa Nebesny, Gabriela Kowalska

*Lodz University of Technology, Faculty of Biotechnology and Food Sciences,
Institute of Food Technology and Analysis, 4/10 Stefanowskiego Street, 90-924 Lodz, Poland*

*kamil.dedek@dokt.p.lodz.pl

A few words about the author:

Kamil Dędek is a PhD candidate at the Institute of Food Technology and Analysis at Lodz University of Technology. His primary interests focus on issues related to the study of carbohydrates, hydroxy acids and healthy properties of food ingredients.

Abstract:

Amylose is a linear component of fundamentally all types of starch. It is composed of glucose residues connected by $\alpha(1-4)$ glycosidic bonds. Thanks to its single-helical structure, amylose creates inclusion complexes with various hydrophobic ligands such as iodine and fatty acids. In association with such molecules, amylose can create a left-handed single helix, which has a hydrophilic outer surface and hydrophobic helical channel that receive the guest molecules. The amylose-guest inclusion complex can be usable as a delivery composition for bioactive guest molecules.

The aim of the study was to conduct interaction between native wheat starch and ferulic acid using various reaction parameters, i.e. starch gelatinization temperatures (95 and 135°C), temperatures (60 and 90°C) and time (1 and 3h) of complexation and retrogradation of starch. The obtained preparations were evaluated in terms of complexing efficiency, antioxidant activity (ABTS and DPPH) and appearance of the external structure (SEM).

The results of the analyzes carried out showed that the best results were obtained in the preparation, which was obtained by complexing reaction of then gelled and autoclaved starch, using 24h retrogradation at 4°C. The obtained results proved that the increase in starch gelatinization temperature (135°C) resulted in obtaining twice as much antioxidant activity, three times higher content of bound ferulic acid and increased content of soluble fiber in the tested sample.

Keywords:

wheat starch, ferulic acid, complexation reaction



THE EFFECT OF LARGE REGIONAL DISLOCATIONS (FAULT ZONES) IN SHAPING THE METHANE CONTENT AND EMISSION IN THE UPPER SILESIA COAL BASIN, POLAND

Marcin Dreger

University of Silesia, Poland

marcin.dreger@interia.pl

A few words about the author:

PhD Student of geology in the University of Silesia.

Abstract:

The Upper Silesian Coal Basin (USCB) is one of the most seismically active area in the Europe. The large, wide range dislocations and many smaller faults have been “working” constantly. As a result, the magnitudes of tremors are usually low, unnoticeable to the surrounding environment. The most important fault zones in the USCB are e.g. Jawiszowice, Bzie-Czechowice and Książ faults. These dislocations are the Variscan age and were rejuvenated during the Alpine orogenesis. The vertical distribution of methane in the USCB coal bearing strata is very complex and not homogeneous. The regional faults drop the coal seams with high methane content according to the throw direction – southwards. The coal mines producing coal from deposits where methane rich coal seams were dropped in the geological past, have to struggle with big volumes of emitted methane to the coal workings and faces. The absolute methane emission in the Mysłowice – Wesółà coal mine increased from 13.25 to over 70 million m³ of CH₄ /year in 1974 – 2018 studied period. The “Wesółà” coal deposit is separated on two parts by the Książ fault zone. In the southern part (dropped by fault) the higher methane content and emissions are observed.

Keywords:

The Upper Silesian Coal Basin, fault zone, methane content, methane emission



RESISTANCE TO OXIDATION OF DIESEL OILS AND METHYL ESTERS OF RAPESEED OIL FAT CONTENT

Ilona Dziobek

Military University of Technology

ilona.dziobek@wat.edu.pl

A few words about the author:

Didactic assistant of the Military University of Technology.

Abstract:

Due to the persistently significant number of diesel oil samples checked by UOKiK and not meeting quality requirements in terms of oxidation resistance, it was appropriate to test this parameter. The purpose of the work was to determine the oxidation resistance of diesel oil, rapeseed oil fatty acid methyl esters and mixtures thereof. The samples were tested for baseline parameters and then exposed to oxygen, light, heat and water for 16 weeks. The determination was made based on the PN-EN 16091: 2011 standard, using the PetroOxy device. The work contains information on the aging process with particular emphasis on oxygen from the air, a description of the oxidation processes of fuel and its determinants. The final result is the conclusions that oxidation significantly degrades the performance of the fuel.

Keywords:

oxidation resistance, oxidation, PetroOxy



ELECTROCHEMICAL IMPEDANCE SPECTROSCOPY IN RESEARCH ON ALUMINIUM CORROSION IN LI-ION BATTERIES

Agnieszka Gabryelczyk (1)*, Svetlozar Ivanov (2), Andreas Bund (2), Grzegorz Lota (1)

*(1) Poznan University of Technology, Faculty of Chemical Technology,
Berdychowo 4, 60-965, Poznan, Poland*

*(2) Technische Universität Ilmenau, Electrochemistry and Electroplating Group,
Gustav-Kirchhoff-Straße 6, 98693, Ilmenau, Germany*

*agnieszka.a.gabryelczyk@doctorate.put.poznan.pl

A few words about the author:

Agnieszka Gabryelczyk is a PhD student at Poznan University of Technology. Scientific interests: chemical power sources, sustainable energy, and statistics.

Abstract:

Lithium-ion batteries play a key role as chemical power sources in portables and electric vehicles. In time, their performance gradually fades due to ageing. One of the ageing processes is the corrosion of the aluminium current collector of the positive electrode. It results in capacity fading and impedance growth in the battery. This work presents the progress in standardising the research on aluminium corrosion by the Taguchi method (TM). TM links several factors (operating temperature, chemistry of lithium salt, the composition of the electrolyte) to distinguish their influence on corrosion. In this study, the most imminent technique is electrochemical impedance spectroscopy (EIS). Cyclic voltammetry and microscopic observations support the interpretation of results. Information on the state of the electrolyte/aluminium interface, corrosion potential and current, as well as TM analysis reveals that the choice of lithium salt is crucial. It determines the mechanism of aluminium corrosion to a greater extent than the temperature. The careful design of the battery components can prolong its lifetime. EIS can aid this by supplying insight on the influence of those components on the resistance of the electrodes.

This work was supported by the National Science Centre, Poland, grant number 2018/31/B/ST8/01619.

Keywords:

corrosion, current collector, aluminium, lithium-ion batteries, electrochemical impedance spectroscopy



HYDROGELS BASED ON WHEY PROTEIN ISOLATE MODIFIED WITH HYDROXYAPATITE

**Magdalena Głąb*, Dagmara Słota, Wioletta Florkiewicz, Sonia Kudłacik-Kramarczyk,
Anna Drabczyk, Agnieszka Tomala, Bożena Tyliczszak, Agnieszka Sobczak-Kupiec**

Cracow University of Technology

*magdalenaglab@op.pl

A few words about the authors:

The authors create a scientific team at the Cracow University of Technology. For several months, special attention has been focused on the problem related to the regeneration of bone tissue and the treatment of a large problem which is osteoporosis.

Abstract:

WPI (whey protein isolate) contains at least 90% of proteins, mainly β -lactoglobulin and α -lactoglobulin. WPI solutions can be gelatinized by high temperature, which results in the creation of new bonds forming a three-dimensional network. Hydrogels produced in this way can be used in tissue engineering due to their biocompatibility and the possibility of controlled release of active substances. In the case of application of such hydrogels in bone tissue regeneration, these polymers are modified with calcium phosphates such as e.g. hydroxyapatite. In this research work the synthesis of WPI hydrogels modified with different hydroxyapatite content was conducted. Synthetic hydroxyapatite was prepared by two methods: (1) at boiling temperature using hydrated calcium acetate and potassium hydrogen phosphate as substrates and (2) at room temperature using hydrated calcium nitrate and ammonium dihydrogen phosphate. Physicochemical properties of the composites obtained were determined by Fourier transform infrared spectroscopy and scanning electron microscopy analyses. In addition, incubation tests were conducted in stimulated body fluids. Moreover the cytotoxicity of the obtained composites was also evaluated.

The “Multifunctional biologically active composites for applications in regenerative bone system medicine” project is carried out within the TEAM-NET programme of the Foundation for Polish Science financed by the European Union under the European Regional Development Fund.

Keywords:

hydroxyapatite, WPI, hydrogels, composites



RENEWABLE AMALGAM FILM ELECTRODE - APPLICATION IN ELECTROCHEMICAL ANALYSIS

Anna Górska*, Nikola Lenar, Dominika Róžańska, Beata Paczosa-Bator, Robert Piech

*Faculty of Materials Science and Ceramics, AGH University of Science and Technology,
Kraków, Poland*

*agorska@agh.edu.pl

A few words about the author:

Student, PhD students and employees of Department of Analytical Chemistry at the Faculty of Materials Science and Ceramics interested in electrochemical analysis.

Abstract:

Hanging mercury drop electrode (HMDE) is one of the most popular electrode used in voltammetric measurements. Mercury is a great electrode material due to its properties. It has smooth and clean surface and it is a liquid at room temperature. For many years, mercury based electrodes were used in voltammetry for analysis of multiple organic and inorganic analytes. In recent years environmental awareness has increased and researchers are trying to reduce mercury consumption. Therefore, a great alternative for typical mercury electrodes is renewable amalgam film electrode Hg(Ag)FE (constructed by B. Baś). The amount of mercury used for construction of mentioned electrode is negligibly small (approximately 10 μ L) but the properties of the sensor are typical for mercury. One sensor can perform at least hundreds measurement what is an excellent results. In addition Hg(Ag)FE might be characterized by relatively high surface area (in comparison with typical mercury electrodes) what means that register signals are also higher.

In the work, examples of determination of inorganic and organic substances using renewable amalgam film electrode were presented, as well as comparison with results obtained using typical HMDE.

Acknowledgement:

The publication is financed from the subsidy no 16.16.160.557 of the Polish Ministry of Science and Education.

Keywords:

renewable amalgam film electrode, hanging mercury drop electrode, voltammetry, electrochemical analysis



THE EFFECT OF PROCESS CONDITIONS ONTO REMOVAL OF CHLOROPHENOLS FROM AQUEOUS SOLUTIONS BY LACCASE IMMOBILIZED ONTO CELLULOSE ACETATE FIBERS

Katarzyna Jankowska (1)*, Ziran Su (2), Jakub Zdarta (1), Oliwia Degórska (1),
Manuel Pinelo (2), Teofil Jesionowski (1)

(1) *Institute of Chemical Technology and Engineering, Faculty of Chemical Technology, Poznan University of Technology, Poznan, Poland*

(2) *Department of Chemical and Biochemical Engineering, Technical University of Denmark, Kongens Lyngby, Denmark*

*katarzyna.a.antecka@doctorate.put.poznan.pl

A few words about the author:

MSc Eng. Katarzyna Jankowska studied Chemical Technology at Poznan University of Technology and graduated her MSc in 2017. She then joined the research group of Prof. Teofil Jesionowski at the Institute of Chemical Technology and Engineering at PUT.

Abstract:

The large-scale production of paper and paper products are associated with the discharge of huge amounts of wastewater, in which chemicals used for bleaching and delignifying of pulp in paper production are omnipresented. Among them phenolic compounds, especially chlorophenols, are the most dangerous one, being extremely toxic even at low concentrations. They can get through to groundwaters and may have negative impact on the natural environment as well as on human health. As a result, intensive research is carried out to find effective, economical and environmentally friendly method that allows removal of those hazardous compounds from contaminated waters. In this work, 2-chlorophenol (2-CP) and 4-chlorophenol (4-CP) were degraded using laccase immobilized onto cellulose acetate electrospun fibers. The crucial step was selection of optimal removal process conditions, which were found to be pH 5 and 25 °C. In these specific conditions the removal efficiencies of 2-CP and 4-CP were almost 100%.

Acknowledgements:

This research was supported by grant funds from the Polish National Agency for Academic Exchange, the Iwanowska Programme.

Keywords:

chlorophenols, laccase, enzymatic conversion, cellulose acetate



STABILITY AND ANTIOXIDANT ACTIVITY OF ALGINATE-CHITOSAN CAPSULES OF POLYPHENOLIC COCOA BEAN EXTRACT

Milena Kaczmarzka*, Dorota Żyżelewicz, Joanna Oracz, Karina Kłodawska

*Lodz University of Technology, Faculty of Biotechnology and Food Sciences,
Institute of Food Technology and Analysis, ul. B. Stefanowskiego 4/10, 90-924 Lodz, Poland*

*milena.kaczmarzka@dokt.p.lodz.pl

A few words about the author:

I am PhD student at the Lodz University of Technology. My research interests lie in the fields of encapsulation of polyphenols from cocoa beans using different methods and the application of the resulting preparations to food products.

Abstract:

Sodium alginate is a naturally occurring polysaccharide polimer. Its structure involves the formation of stable of connections with divalent cations and chitosan to create gels. Due to the thermolability and oxidation of many polyphenolic compounds, their application to food is limited. The formation of alginate-chitosan capsules of polyphenolic cocoa bean extract may contribute to the improvement of functional properties of the preparations obtained from them. The aim of the study was obtaining and characteristic of the alginate-chitosan capsules of polyphenolic cocoa bean extract. Two methods were used to obtain capsules. The total polyphenolic content and the antioxidant activity were determined in the capsules and cocoa extract using the Folin-Ciocalteu method and in vitro tests (DPPH, FRAP, the iron chelating activity) respectively. Short- and long-term stability were also evaluated.

Encapsulation with sodium alginate and chitosan caused a decrease in the total polyphenol content, ability to reduce iron ions (FRAP) and iron ion chelation activity as compared to the initial extract. Alginate-chitosan capsules do not show the ability to scavenge DPPH free radicals. The preparations obtained by method A (alginate + extract → calcium chloride + chitosan) showed higher antioxidant and antiradical activity than those obtained by method B (alginate + extract → calcium chloride → chitosan). Capsules A also had higher short-term stability than capsules B.

Keywords:

encapsulation, chitosan, alginate, cocoa bean, antioxidant activity



INFLUENCE OF SELECTED METHODS OF REHABILITATION ON JUVENILE ARTHRITIS AND DEGENERATION IN GUINEA PIGS

Dominika Karasiewicz

University of Science and Technology, Al. prof. S. Kaliskiego 7, 85-796 Bydgoszcz, Poland

karasiewicz96@wp.pl

A few words about the author:

I am a zoophysiotherapist, specialize in physiotherapy of companion animals. My scientific interests relate to the physiotherapy of exotic animals and the physical preparation of sport dogs and show dogs.

Abstract:

The aim of this study was to evaluate the use of selected techniques of manual therapy and kinesitherapy in order to increase the activity and range of motion in the joints of limbs affected by arthritis and degenerative conditions in guinea pigs. The research was conducted from November 2018 to January 2019 in the Zoophysiotherapy Laboratory of UTP in Bydgoszcz. The experimental material was a group of 6 guinea pigs, which showed a reduced in physical activity and pain associated with dysfunction of the skeletal and articular system. The animals have undergone a series of rehabilitation training with the use of classical massage elements, passive and active exercises. Next, goniometric measurements of the range of mobility in the joints of the thoracic and pelvic rim were made. The evaluation cards for activity and chronic pain before and after the rehabilitation program were also used. The results of the conducted research indicate that the rehabilitation techniques applied improve the range of movement in elbow and knee joints. It was also found that the occurrence of symptoms related to juvenile arthritis and degeneration of the joints in guinea pigs decreased due to rehabilitation. Additionally, thanks to the survey conducted among the owners, it was observed that the physiotherapeutic method improves the living comfort of guinea pigs.

Keywords:

rehabilitation, guinea pig, massage, passive exercises, kinesitherapy



THE EFFECT OF CORIANDRUM SATIVUM L. SEED POWDER AND EXTRACT ON ANIMALS HEALTH – A REVIEW

Marlena Księżarczyk (1)*, Paulina Leśniak (2), Jose Luis Valverde Piedra (2)

(1) Student's Scientific circle - Veterinary Toxicology section, Sub-Department of Pharmacology, Toxicology and Environmental Protection, Faculty of Veterinary Medicine, University of Life Sciences, Akademicka 12, 20-950, Lublin, Poland

(2) Sub-Department of Pharmacology, Toxicology and Environmental Protection, Faculty of Veterinary Medicine, University of Life Sciences, Akademicka 12, 20-950, Lublin, Poland

*marlena.ksiezarczyk@gmail.com

A few words about the author:

Member of the Student's Scientific circle - Veterinary Toxicology section at the Sub-Department of Pharmacology, Toxicology and Environmental Protection.

Abstract:

Coriander (*Coriandrum sativum* L.) is a plant of the Apiaceae Lindl. family, used in traditional medicine and in veterinary medicine because it has many biological and pharmacological activities. Previous studies on coriander seed show that bioactive phenolic compounds and flavonoids contained in its leaves and seeds contribute to the increase of antioxidant activity. Phenolic compounds such as coumarins, flavonoids and caffeic acid esters present in the extract of coriander seed are the main substances protecting the body against the degenerative effects of oxidative processes. In addition, coriander seed extract has chelating properties that limit the accumulation of heavy metals such as cadmium in the body. Moreover, it has been shown that coriander-extract has antiinflammatory, diuretic, antibacterial and also hepatoprotective effects. Taking into account the positive influence of coriander to the organism function, many researchers suggest that coriander can be an important natural feed additive. Therefore, based on world literature, the aim of this paper was describe the therapeutic influence of coriander extract on animals health.

Keywords:

animal, coriander, biological and pharmacological activities



RUTHENIUM DIOXIDE AS MEDIATION LAYER IN POLYMERIC MEMBRANE SENSORS FOR K⁺ AND H⁺ IONS DETERMINATION

Nikola Lenar*, Anna Górska, Beata Paczosa-Bator, Robert Piech

*Faculty of Materials Science and Ceramics, AGH University of Science and Technology,
Kraków, Poland*

*nlenar@agh.edu.pl

A few words about the authors:

Nikola Lenar and Anna Górska are PhD students interested in analytical chemistry, Beata Paczosa-Bator and Robert Piech are employees of the Faculty of Materials Science and Ceramics specialized in electrochemical analysis.

Abstract:

This work presents the fast and easy method of designing potentiometric sensors with polymeric membrane and RuO₂ as mediation layer. Two types of electrodes were presented and described: K⁺-selective and pH-selective electrodes. The procedure of preparing sensors is easy and do not require any special conditions or apparatus therefore both presented types of sensors can be obtained using basic laboratory equipment. Moreover, designed electrodes exhibit analytical properties nearly as excellent as conventional electrodes with internal solution and, in comparison with conventional electrodes (e.g. glass electrode) they are less fragile, smaller and easier to use.

Ruthenium dioxide implemented into electrodes' construction as a mediation layer turned out to exhibit remarkable electrical parameters, what resulted in noticeably high electrical capacitance of designed electrodes (more than 1 mF for both studied types).

As electrical parameters of electrodes determine their analytical performance, for potassium selective electrodes the linear range was wide - from 10⁻⁶ to 10⁻¹ M. For pH sensor, the pH range covered values from 2 to 12, which is comparable to results obtained with the use of traditional glass electrode. Implementing the ceramic nano-sized material into sensors' construction enabled to achieve fast and stable potentiometric response in the wide pH and potassium concentration range.

Keywords:

potassium sensor, pH sensor, ruthenium dioxide, solid-contact, ion-selective electrode



PARACETAMOL (ACETAMINOPHEN) POISONING IN CATS AND DOGS

Paulina Leśniak (1)*, Marlena Księżarczyk (2)

(1) Sub-Department of Pharmacology, Toxicology and Environmental Protection, Faculty of Veterinary Medicine, University of Life Sciences, Akademicka 12, 20-950, Lublin, Poland

(2) Student's Scientific Circle - Veterinary Toxicology section, Sub-Department of Pharmacology, Toxicology and Environmental Protection, Faculty of Veterinary Medicine, University of Life Sciences, Akademicka 12, 20-950, Lublin, Poland

*paulina.lesniak91@wp.pl

A few words about the author:

My name is Paulina Leśniak, I am a veterinarian, I graduated in 2018 at the University of Life Sciences in Lublin.

Abstract:

Acetaminophen is widely available analgesic and antipyretic contained in many over-the-counter preparations intended for human use. Exposure to dogs and cats occurs through administration of one of these preparations by an uninformed but well-meaning owner intending to treat fever or pain perceived in the pet or by accidental ingestion of a toxic dose. Accidental ingestion of a toxic dose has been the most common cause of toxicosis in dogs. The reported dose required to produce signs of toxicity in dogs is approximately 600 mg/kg, although clinical signs of toxicity have been seen in dogs at doses in the range of 200 mg/kg. Compared with dogs, cats are extremely sensitive to the toxic effect of acetaminophen and can have clinical signs of toxicity with doses in the range of 50 to 100 mg/kg.

Keywords:

acetaminophen, poisoning, toxicity, dogs, cats



METRONIDAZOLE TOXICITY TO CATS AND DOGS

Paulina Leśniak (1)*, Marlena Książarczyk (2)

(1) Sub-Department of Pharmacology, Toxicology and Environmental Protection, Faculty of Veterinary Medicine, University of Life Sciences, Akademicka 12, 20-950, Lublin, Poland,

(2) Student's Scientific Circle - Veterinary Toxicology section, Sub-Department of Pharmacology, Toxicology and Environmental Protection, Faculty of Veterinary Medicine, University of Life Sciences, Akademicka 12, 20-950, Lublin, Poland

*paulina.lesniak91@wp.pl

A few words about the author:

My name is Paulina Leśniak, I am a veterinarian since 2018. I am a PhD student at the faculty of pharmacology, toxicology and environmental protection at the University of Life Sciences in Lublin.

Abstract:

Metronidazole is an antibacterial, antiprotozoal and anthelmintic medication approved for veterinary use and commonly used to treat systemic and enteric obligate anaerobic bacterial and some protozoal infections. Metronidazole is widely used in different medical conditions such as trichomoniasis, amoebiasis, and giardiasis among others. There is a strong correlation between dosage and duration of treatment and the time of onset and the severity of clinical signs associated with toxicity. In dogs, doses as low as 60 mg/kg have been shown to cause neurotoxicity when treated for a short a time as 3 to 14 days. Doses above 250 mg/kg will show acute signs of poisoning shortly after metronidazole therapy is initiated. Cats have been shown clinical signs of metronidazole poisoning at doses of 111 mg/kg daily for 9 weeks, and 58 mg/kg given daily for 6 months. Although fetal abnormalities have not been documented at suggested dosages, metronidazole has been shown to be mutagenic and genotoxic in some species. As a result, metronidazole is not recommended for use during pregnancy.

Keywords:

metronidazole, poisoning, doses, cats, dogs



USE OF NANOSILVER TO IMPROVE LITTER QUALITY AND WELFARE IN BROILER CHICKENS PRODUCTION

**Joanna Piotruk (1), Damian Bień (1), Arkadiusz Matuszewski (2),
Monika Łukasiewicz (2)***

(1) Scientific Circle “Aves”, Warsaw University of Life Sciences

(2) Institute of Animal Science, Warsaw University of Life Sciences

*monika_lukasiewicz@sggw.edu.pl

A few words about the author:

Arkadiusz Matuszewski, is a PhD student at Animal Breeding Department, Warsaw University of Life Sciences. His research area concerns different poultry scientific areas with special regard to using nanoparticles and feed additives in poultry.

Abstract:

The aim of the study was to assess the impact of the nanosilver in litter, and optionally per os in drinking water on production results, health status and the skin quality of the broiler chicken soles. A total of 980 fast-growing chickens - cocks, reared for 42 days were included in the experiment. The nanosilver product was used in the experiment in a drinking system as well as a drinking + spraying system. During the experiment, basic zootechnical observations and a visual assessment of the skin quality of chicken soles were carried out. After slaughtering the chickens, the carcasses were chilled for 12 hours at 4°C, slaughter analysis was carried out. There was no significant interaction effect between the drinking and drinking x spraying groups. Generally, there was no significant difference in body weight of chickens at the end of rearing at 42 days of age in reference of used specimen. The results only indicate a tendency of an average slightly higher body weight in the spraying group. There was no effect of the used specimen on feed consumption. Generally, slightly lower feed consumption (not statistically confirmed) was observed in the groups in which spraying and higher nanosilver proportions with water was applied. In the groups where no spraying was used, feed consumption was even, and in the 5 and 5x2 groups a significant reduction in mortality was observed. In relation to the analyzed parameters, no significant differences in slaughter performance were found.

Keywords:

broiler, rearing, disinfection, nanosilver, FPD



THE USE OF POLYMER SUPERABSORBENTS - HYDROGELS TO IMPROVE LITTER QUALITY AND WELFARE IN BROILER CHICKEN PRODUCTION

**Damian Bień (1), Arkadiusz Matuszewski (2)*, Joanna Piotruk (1),
Monika Łukasiewicz (2), Paweł Piętka (3)**

(1) Scientific Circle “Aves”, Warsaw University of Life Sciences

(2) Institute of Animal Science, Warsaw University of Life Sciences

(3) ArtAgro Polska Sp. z o.o.

*arkadiusz_matuszewski@sggw.edu.pl

A few words about the authors:

Arkadiusz Matuszewski, is a PhD student at Animal Breeding Department, Warsaw University of Life Sciences. His research area concerns different poultry scientific areas with special regard to using nanoparticles and feed additives in poultry.

Abstract:

The aim of the study was to evaluate the use of polymer superabsorbents - hydrogels in the litter for its quality and welfare of broiler chickens. The research material consisted of 260 Cobb 500 broiler chickens. The birds were randomly divided into four groups: control and I, II and III experimental, and then placed in boxes. The broilers were kept on chopped straw litter under standard conditions for six weeks (42 days) The experimental groups were differentiated by the addition of a hydrogel (AGRONANOGE[®] - HYDROGEL NANO BASIC) to the litter, applied prior to the insertion of the chickens in three different concentrations (15, 30 and 60 g/m²). The hydrogels did not negatively affect production results and meat quality of broiler chickens. Enrichment of the litter with a superabsorbent in the amount of 60 g/m² gave the most satisfactory effect. Chickens reared on litter with the addition of hydrogel had the lowest amount of footpad dermatitis (FPD) with a score of 0 (the highest quality of footpad). The use of 60 g/m² hydrogel for litter significantly increases the water capacity of the litter material used, acting as a water buffer, i.e. maintaining a constant level of humidity, which can reduce FPD.

Keywords:

hydrogels, superabsorbents, broiler, litter, FPD



THE INFLUENCE OF NEUTROPHIL- DERIVED PRODUCTS ON THE ACTIVITY OF ISOLATED MACROPHAGES DURING INSERTION OF TITANIUM IMPLANT IN A SHEEP MODEL.

**Joanna Michalska (1)*, Joanna Wessely- Szponder (1), Tomasz Szponder (2),
Grzegorz Starobrat (3)**

*(1) Department of Preclinical Veterinary Sciences, Faculty of Veterinary Medicine,
University of Life Sciences, Lublin, Poland*

*(2) Department and Clinic of Animal Surgery, Faculty of Veterinary Medicine, University of Life
Sciences, Lublin, Poland*

(3) Department of Pediatric Orthopaedics, Medical University, Lublin, Poland

*joanna.michalska15@gmail.com

A few words about the authors:

My name is Joanna Michalska, I'm a PhD student at the Department of Pathophysiology at the Faculty of Veterinary Medicine at the University of Life Sciences in Lublin. Professor Joanna Wessely-Szponder is my supervisor.

Abstract:

The aim of the study was to assess the effect of neutrophilic products on macrophage activity (monocyte-derived macrophages-MDM) as potential regulators of increased inflammatory response during implantation of titanium implants in the area of growth cartilage of the tibia.

The study was conducted on 12 BCP sheep, female, 4-5 months old.

The material (whole blood) necessary to obtain two autologous products: neutrophilic antimicrobial extract (ANE) and neutrophil degranulation products (DGP) was collected 7 days before titanium implantation. To establish the MDM culture, blood was collected 4 months after surgery from sheep with an implant (research group, n = 8) and without an implant (control group, n = 4).

After establishing two MDM cultures, part of the material was simulated with the addition of 40 µg / ml ANE, part 1 µg / ml DGP, the part was left without stimulation (marked as BCS), the whole was incubated for 72 hours at 37 °C 5% CO₂. To assess macrophage activity, levels of superoxide anion radical, nitric oxide and arginase activity measured at 3 time points were observed: after 24 hours from stimulation (A), after 48 hours (B) and after 72 hours (C).

The results show that the addition of ANE to MDM caused a decrease in the release of reactive oxygen and nitrogen species (RONS) by macrophages, the activity of arginase was increased. Stimulation of macrophages with DGP led to increased release of RONS, and arginase activity was reduced.

Keywords:

neutrophilic antimicrobial extract, titanium implantation, sheep, macrophages



REMOTE SENSING METHODS FOR CROP STATUS ASSESSMENT

Ewa Agnieszka Panek

Department of Biometry, Warsaw University of Life Sciences

ewa.a.panek@gmail.com

A few words about the author:

The author is a Ph.D. student, dealing with remote sensing methods in assessing the condition of crops, main cereals such as wheat. Additional interest is the assessment of the effect of fertilization on the condition of crops.

Abstract:

Satellite remote sensing deals with the acquisition, processing, interpretation, and use of satellite images, i.e., images of the Earth's surface taken from space by artificial Earth satellites. Thanks to satellite images, it is possible to analyse the state of crops, precise fertilization, estimate damage caused by adverse weather phenomena, as well as forecast yields. It can also analyse the soil condition, e.g., moisture content. The presentation aims to introduce the remote sensing methods of assessing the state of plants and show how the processed satellite data looks.

Keywords:

remote sensing, crops, vegetation



PRECISE FERTILIZATION OF CROP PLANTS BASED ON SATELLITE IMAGES

Ewa Agnieszka Panek

Department of Biometry, Warsaw University of Life Sciences

ewa.a.panek@gmail.com

A few words about the author:

The author is a Ph.D. student, dealing with remote sensing methods in assessing the condition of crops, main cereals such as wheat. Additional interest is the assessment of the effect of fertilization on the condition of crops.

Abstract:

The concept of precision agriculture, including fertilization, is subject to very dynamic development, directly related to the progress in the field of satellite navigation, variable fertilizer dosage, crop mapping, and precise machine management. Fertilization and plant protection could be planned based on the map of varied crops within the field. Thanks to the ability to quickly process the amount of information related to the implementation of new technologies, it is possible to maintain production profitability and meet the requirements related to environmental protection. The presentation aims to present methods for assessing cereal fertilizer needs based on satellite images from various platforms.

Keywords:

fertilization, remote sensing, vegetation



AGE-DEPENDENT CHANGES IN THE FLIGHT PERFORMANCE OF DROSOPHILA MELANOGASTER IN DIFFERENT OXYGEN CONDITIONS

Valeriya Privalova*, Jakub Sablik, Marcin Czarnołęski

Institute of environmental sciences, Jagiellonian University, Krakow, Poland

*valeriya.privalova@doctoral.uj.edu.pl

A few words about the author:

V. Privalova is a PhD student of life history evolution team at the Institute of Environmental Sciences, Jagiellonian University. Dr M. Czarnołęski is group leader of the team and supervisor of V. Privalova and master student J. Sablik.

Abstract:

Although the research focused on senescence has used *Drosophila melanogaster* as a study system, the flight performance was not frequently studied in this context. Therefore, our experiment aimed to check the effect of ageing on flight performance in *Drosophila melanogaster*. Additionally, we hypothesized that limited oxygen conditions can decrease the flight performance throughout flies' life even more drastically. During the performed experiment we measured the wing-beat frequency every five days in the course of an adult fly's life (starting from the emergence of imago till the physiological death). The experiment was performed in a specialized apparatus which was set to a neutral temperature. The flies were forced to fly under normoxia (standard oxygen level) and hypoxia (reduced oxygen level) generated inside of the apparatus. An average wing-beat frequency of sustained flight recorded during the session was used as a final measure of flight performance of individual fly. Collected data showed that there was no significant difference in flight performance in young flies (both in normoxia and hypoxia) until they reached a certain age. The flight performance of older flies showed a tendency to decrease throughout time; furthermore, older flies showed lower flight performance when experiencing hypoxia in comparison to normoxia.

Keywords:

Drosophila melanogaster, ageing, flight performance, oxygen conditions



COMPARISON OF SELECTED MINERALS CONTENT IN MILK FOR INFANTS

Aleksandra Purkiewicz*, Renata Pietrzak-Fiećko

University of Warmia and Mazury in Olsztyn, Oczapowskiego 2, 10-719 Olsztyn

*ola-purkiewicz@wp.pl

A few words about the author:

I am a student of Food Technology and Human Nutrition at University of Warmia and Mazury in Olsztyn. I am interested in bioactive compounds of food, in particular in milk and infant's food.

Abstract:

The aim of the study was to compare the content of selected minerals - magnesium, calcium, iron and zinc, in two selected products for feeding infants in the first 6 month of life (infant formula: Humana and Hipp) with breast milk obtained from nursing mothers in the period of 4 - 6 month of lactation.

Milk samples for the determination of magnesium, calcium, iron and zinc were mineralized using the "dry" method and the method of flame atomic absorption spectroscopy with iCE 3000 SERIES - TERMO spectrometer.

The content of Mg, Ca, Fe and Zn in breast milk were: 2.98 ± 0.38 ; 24.20 ± 1.96 ; 0.27 ± 0.04 and 0.35 ± 0.05 mg / dm³, respectively. Humana modified milk contained: 6.36 ± 0.65 ; 65.76 ± 5.73 ; 0.71 ± 0.05 and 0.69 ± 0.07 mg / dm³ respectively, while in Hipp milk the contents of mentioned minerals were: 6.11 ± 0.60 ; 64.99 ± 6.44 ; 0.67 ± 0.06 and 0.54 ± 0.04 mg / dm³. None significant difference was found in the mineral composition between the tested infant formulas (Humana and Hipp), however there were statistical differences in the content of Mg, Ca, Fe and Zn between the formulas and breast milk. The lower content of special mineral macronutrients in breast milk does not burden the sensitive digestive system of infants.

Keywords:

breast milk, modified milk, minerals



AGRO-TECHNICAL BIOFORTIFICATION AS AN EFFECTIVE METHOD OF REDUCING SELENIUM DEFICIENCY

Aleksandra Radawiec

*Warsaw University of Life Sciences, Institute of Agriculture,
Independent Department of Agricultural Chemistry*

aleksandra.kowalczyk150@gmail.com

A few words about the author:

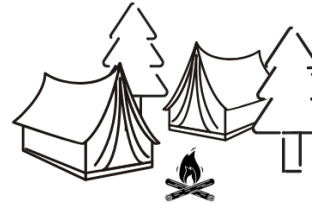
PhD student at the Independent Department of Agricultural Chemistry. She deals with the subject of selenium deficiency and conducts research on the agrotechnical biofortification of wheat in Se.

Abstract:

Selenium is an essential micronutrient for animals and humans. Its deficiency diagnosed in the mid-twentieth century in many countries prompted the analysis of possible strategies for increasing the level of selenium in the human diet. One of the ways to combat the Se deficit is agrotechnical biofortification, which has been successfully tested in other countries struggling with this problem (Finland, Great Britain, Australia, New Zealand). The implementation of this strategy in Poland may have a beneficial effect on human health. The most promising for agrotechnical biofortification in selenium in Poland are crops, especially cereals. They have a large share of the area in domestic crops and thanks to their metabolism they can provide selenium compounds desired for consumers. Based on the current knowledge and experience in the biofortification of crops with selenium, further research in this area should be carried out and ultimately the method of increasing the level of selenium in edible parts of some plants in Poland should be implemented.

Keywords:

biofortification, selenium, fertilization, wheat



IMPACT OF ERRORS DURING THE COMPLETION PROCESS ON THE ENTERPRISE

Monika Robak

Lodz University of Technology

*monikarobak2906@gmail.com

A few words about the author:

I am second-degree students of Lodz University of Technology at the Faculty of Engineering Management.

Abstract:

Completion process, as one of the most important and complex operations performed in the warehouse process, is prone to making numerous mistakes. The resulting errors have negative consequences for the company, they are associated with an increase in the costs associated with warehouse management.

Literature shows that picking is identified with the storage phase, which generates the most operating costs of the warehouse, and its percentage share is equal to 60%, while taking into account the fact that more than half of them are activities related to the movement of the person completing the order in the picking area.

Keywords:

completion errors, warehouse cost, management, logistic



SYNTHESIS AND CHARACTERIZATION OF BIOACTIVE CERAMICS WITH POTENTIAL APPLICATION IN BONE SYSTEM REGENERATION

**Dagmara Ślota*, Magdalena Głąb, Wioletta Florkiewicz, Sonia Kudłacik-Kramarczyk,
Anna Drabczyk, Agnieszka Tomala, Bożena Tylińczak, Agnieszka Sobczak–Kupiec**

Cracow University of Technology

*slota.dagmara@gmail.com

A few words about the authors:

The authors create a scientific team at the Cracow University of Technology. For several months, special attention has been focused on the problem related to the regeneration of bone tissue and the treatment of a large problem which is osteoporosis.

Abstract:

Osteoporosis currently affects 200 million people worldwide, mainly women, which is related to the change in the hormonal economy after the menopause. It manifests itself as a decrease in bone density. As a result bones become brittle and prone to fractures.

The most frequently used compound for bone replacement material is hydroxyapatite (HAp). It is characterized by bioactivity and osteoinduction. Therefore, it is readily used in biomedicine as a component for the regeneration of the skeletal system. The biggest limitation of the use of ceramics is its brittleness. For this reason, it is often combined with polymers to form a composite, where the polymer matrix is able to transmit stresses, and ceramics provide the mechanical strength and bioactive properties.

The presented work focuses on the synthesis and characteristics of HAp. Materials were obtained by two methods. First was carried out at room temperature from $\text{NH}_4\text{H}_2\text{PO}_4$ and $\text{Ca}(\text{NO}_3)_2$. Another, at boiling point, using Na_2HPO_4 and $\text{Ca}(\text{CH}_3\text{COO})_2$. In both cases, a number of syntheses were carried out by changing the pH value and reagent concentrations. The obtained powders were analysed for their physicochemical properties and biologically examined.

The “Multifunctional biologically active composites for applications in regenerative bone system medicine” project is carried out within the TEAM-NET programme of the Foundation for Polish Science financed by the European Union under the European Regional Development Fund.

Keywords:

hydroxyapatite, biomaterials, osteoporosis



FLOW CYTOMETRIC ANALYSIS OF MICROORGANISMS

Paulina Smaruj (1)*, Katarzyna Bocian (2)

*(1) Department of Bacterial Genetics, Institute of Microbiology, Faculty of Biology,
University of Warsaw*

*(2) Department of Immunology, Institute of Functional Biology and Ecology, Faculty of Biology,
University of Warsaw*

*p.smaruj@student.uw.edu.pl

A few words about the authors:

I have been studying Biotechnology as a student of the Inter-faculty Individual Studies in Mathematics and Natural Sciences College. My main field of interest is biochemistry, cell and molecular biology and bioinformatics.

Abstract:

Flow cytometry is an old technique, which is commonly associated with studies of mammalian cells. However, historically this method was primarily utilized to research on air-borne microorganisms. Now, the microbial application of flow cytometry is undergoing a renaissance. The technique is a perfect tool for studying phytoplankton communities, describing water quality during its treatment, and detecting pathogens in clinical samples. The range of applications is extending. This review describes briefly how useful method flow cytometry is now.

Keywords:

flow cytometry, environmental microbiology, clinical microbiology



THE QUALITY OF COLOSTRUM AS A CRUCIAL FACTOR INFLUENCING THE DEVELOPMENT OF CALVES

Paweł Solarczyk*, Daniel Radzikowski, Piotr Kostusiak, Kamila Puppel

Department of Animal Breeding, Institute of Animal Sciences, Warsaw University of Life Sciences

*pawel_solarczyk@sggw.edu.pl

A few words about the author:

PhD student at the Department of Animal Breeding.

Abstract:

Colostrum is undoubtedly the most important food in the life of a calf. First of all, it is a source of antibodies for a calf, the so-called immunoglobulins. Due to the specific structure of placenta, when a calf is born the immunoglobulins do not circulate in its blood or only a small amount does because these compounds are not distributed from the mother's blood circulation system to the fetus unlike among humans. These compounds are distributed to a calf via colostrum. The effectiveness of the calf's immunological system in the first 2-3 weeks of life depends on receiving the colostrum and effectively the antibodies as the calf does not produce its own antibodies, or produces them in very small amounts.

Keywords:

colostrum, quality, immunological



BASIC PROBLEMS IN DAIRY CATTLE BREEDING

Pawel Solarczyk*, Piotr Kostusiak, Daniel Radzikowski, Kamila Puppel

Department of Animal Breeding, Institute of Animal Sciences, Warsaw University of Life Sciences

*pawel_solarczyk@sggw.edu.pl

A few words about the author:

PhD student at the Department of Animal Breeding.

Abstract:

Breeding of dairy cattle is one of the most important branches of agricultural production. It owes its high quality to consistently conducted breeding works in terms of milk features and features of the type and structure. This would not be possible without the development of insemination, the great advantage of which (as a breeding method) is that the sperm of the best breeders, after prior assessment of their genetic value, can be used on a large scale. Unfortunately, apart from the positive effects of breeding works being carried out (e.g. high productivity), negative ones connected with low-inherited traits are also becoming more and more frequent, which include deterioration of cow's health and immunology as well as inflammatory conditions of mastitis, fertility and longevity. Both the global and national population of Holstein cows is becoming more and more inbred, which consequently translates into an increase in inbreeding depression. This is due to the reduction of genetic diversity within the entire population and the increase in relatedness, which is largely due to the excessive use of sperm from the best breeders.

Keywords:

mastitis, fertility, inbreeding depression



EFFECT OF GLOBAL CHANGES ON THE RATE OF LITTER DECOMPOSITION IN MIXED OAK-PINE FOREST AND OAK-HORNBEAM

Ewa Szlachcic*, Anna Rožen

Institute of Environmental Sciences, Jagiellonian University, Cracow

*ewa.szlachcic@doctoral.uj.edu.pl

A few words about the authors:

Ewa Szlachcic – PhD student. Currently her interests focus on the role of cell size in the functioning of organisms.

Anna Rožen DSc – topics of interest: forest ecosystem functioning, soil ecology and zoology, earthworm ecology and taxonomy.

Abstract:

Nowadays ecosystems are facing climate changes caused by global warming. Carbon dioxide is one of the main global change drivers, as well as the increased anthropogenic deposition of elements like nitrogen and phosphorus into the environment. Nutrients influence the activity of soil organisms and hence organic matter decomposition. The number of studies on impact of nutrient deposition on forest litter decomposition rate is growing. However, obtained results are inconsistent. The aim of our study was to answer the question of how global changes (increased nutrients supply and temperature growth) may affect litter respiration rate in two types of forests with different fertility (hardwood and conifer). Experiment was conducted in a laboratory using mesocosms. Litter was fertilized with nitrogen, phosphorus, sodium and potassium and kept in two temperatures, 14°C and 22°C. Respiration rate was measured in each mesocosm 5 times (every 6-8 days) during 4 weeks for both types of forest. Our results show that in present climatic conditions additional supply of nutrients will slow respiration rate of litter and therefore increase carbon deposition in deciduous forests, but not in conifer forests. Growing temperature will change this trend, except for nitrogen, and result in increased release of carbon dioxide from decomposing deciduous forest litter. To predict future carbon balance on Earth more studies about decomposition of litter is needed.

Keywords:

respiration rate, nutrients, response ratio, Q10, mesocosm



MIXED DIFFUSION-KINETIC CONTROL OF H₂O₂ OXIDATION AT PT IN AN ALKALINE ELECTROLYTE: IMPLICATIONS FOR OXYGEN ELECTROREDUCTION STUDIES WITH RRDE

Katarzyna Szwabińska*, Grzegorz Lota

*Institute of Chemistry and Technical Electrochemistry, Poznan University of Technology,
Berdychowo 4, 60-965 Poznan, Poland*

*katarzyna.m.szwabinska@doctorate.put.poznan.pl

A few words about the authors:

Katarzyna Szwabińska is a PhD student at Poznan University of Technology. Her research interests include electrochemical capacitors and oxygen reduction catalysts for fuel-cell application.

Abstract:

The rotating ring disk electrode (RRDE) with a Pt ring is widely applied for the studies of oxygen reduction reaction (ORR), ignoring the fact that H₂O₂ oxidation at platinum deviates from pure diffusion-controlled reaction required by RRDE theory. We showed that for H₂O₂ oxidation at Pt ring in 0.1 M KOH, the ratio of empirical ring current to corresponding ring current under pure diffusion control varies monotonically with rotation rate so that at ring potential of +350 mV vs. Hg/HgO/6 M KOH the ratio is equal to 79.9% and 61.4% at 400 rpm and 2500 rpm, respectively. By the example of ORR at glassy carbon electrode in 0.1 M KOH, we demonstrated that this significant deviation leads to overestimated electron transfer number values and prevents the correct diagnosis of ORR mechanism with i_D/i_R vs. $\omega^{-1/2}$ plot. To eliminate error in RRDE measurements which occurs when ring electrode reaction is not purely controlled by diffusion, we employed simple procedure based on Koutecký-Levich method.

This work was supported by the National Science Centre, Poland (Grant No. 2018/31/B/ST8/01619).

Keywords:

oxygen reduction reaction, rotating ring disk electrode, hydrogen peroxide oxidation, diffusion control, electron transfer number

NATURAL AND TECHNICAL SCIENCES

POSTERS



REMODELING OF THE ACTIN CYTOSKELETON DURING EHV-1 INFECTION IN GLIOBLASTOMA MULTIFORME A172 CELLS: MORPHOLOGICAL IN VITRO RESEARCH.

**Michalina Bartak*, Anna Słońska, Marcin Chodkowski, Marcin W. Bańbura,
Joanna Cymerys-Bulenda**

*Division of Microbiology, Department of Preclinical Sciences, Institute of Veterinary Medicine,
Warsaw University of Life Sciences, Ciszewskiego 8, 02-786, Warsaw, Poland*

*michalina.bartak@gmail.com

A few words about the authors:

The authors are researchers in the Laboratory of Virology at the Institute of Veterinary Medicine, WULS-SGGW. Their main field of interest is the mechanisms of the pathogenesis of herpesviral infections using in vitro models.

Abstract:

In the current study we have investigated the influence of equine herpesvirus type 1 (EHV-1) infection on actin network in human highly malignant and metastatic glioblastoma multiforme (GBM) A172 cells. Here, we examined actin filaments morphology during productive infection with three EHV-1 strains: EHV-1 26 – neuropathogenic strain, Jan-E EHV-1 - non-neuropathogenic strain and Rac-H EHV-1 – reference, non-neuropathogenic strain. The glioblastoma A172 cells were infected with EHV-1 for 2, 24, 48, 72, 96 h and for 1 week. Filament structure of actin was visualized using TRITC-phalloidin conjugate. The presence of viral antigen was detected by direct immunofluorescence, using polyclonal antiserum EHV-1/ERV conjugated to FITC. Nuclei were stained using Hoechst. Images were obtained using confocal microscope FV10i Olympus. All three investigated EHV-1 strains caused rearrangement of actin network as well as induced cytopathic effect (focal degeneration), however different changes were observed after infection with each EHV-1 strain. Actin condensation in the peri-nuclear area was observed as well as the disappearance of the stress fibers forming the filopodia. The occurring changes in the condensation of actin fibers most likely facilitate the penetration of the nucleocapsid into the cell nucleus. Thus, EHV-1-infection which caused changes in actin cytoskeleton, consequently, leads to a disorder of GBM cell migration. This may indicate the oncolytic potential of the EHV-1.

Keywords:

equine herpesvirus type I, A172 cell line, glioblastoma multiforme, actin cytoskeleton



ALTERNATIVE POLLINATION METHOD AS A RESPONSE TO THE PROBLEM OF DECREASING HONEY BEE POPULATION (APIS MELLIFERA)

Katarzyna Bodasińska

*Warsaw University Of Life Sciences – SGGW, (WULS-SGGW),
Nowoyrsynowska 166 St. 02-787 Warsaw, Poland*

katarzyna.bodasinska@gmail.com

A few words about the author:

My name is Katarzyna Bodasińska. I am studying veterinary medicine at Warsaw University of Life Sciences - SGGW. I am interested in broadly understood biology, especially forensic biology and entomology.

Abstract:

Pollination is a process that occurs in the flowers of seed plants. It involves the transfer and development of pollen grains and in result fertilization of the egg cell. One of the species with the largest share in pollination is the honey bee (*Apis mellifera*). Honey bee is an insect species of the Hymenoptera order and Apidae family. The Food and Agriculture Organization of the United Nations (FAO) estimates that over 100 species of useful plants are pollinated by bees (mainly wild bees). Those plants provide 90 percent of the food supply of 146 countries. Over the past few decades, a significant decrease in bee population has been noticed. The reason for this situation may be the so-called honeybee mass loss syndrome (Colony Collapse Disorder). Taking into consideration that global agriculture needs honey bees and as there are fewer bees, many groups of scientists have undertaken work to solve the problem of bee deficit in terms of pollination.

Keywords:

pollination, honey bee, agriculture



DEPENDENCE OF DOCETAXEL-RESISTANCE ON THE PROSTATE CANCER CELLS SENSITIVITY TO METFORMIN

Jessica Catapano*, Tomasz Wróbel, Marcin Luty, Karolina Warzecha, Jarosław Czyż

*Department of Cell Biology, Faculty of Biochemistry, Biophysics and Biotechnology,
Jagiellonian University in Kraków, Poland*

*1catapanojessica@gmail.com

A few words about the authors:

I am young scientist, currently fifth year PhD student with experience based on prostate cancer.

Abstract:

Metronomic approach represents a promising strategy for the chemotherapy of drug-resistant tumors because it can reduce the effective doses and adverse effects of chemotherapeutics. Metabolic blockers reduce energy supply for multi-drug resistance systems, thus increasing tumor cells' reactivity to chemotherapeutics. Metformin is an anti-diabetic drug that blocks mitochondrial respiration, interferes with ATP production, and with the proliferation of cancer cells. However, the effect of drug-resistance of prostate cancer cells on their reactivity to metformin has not yet been evaluated. Here, we analyzed short- and long-term cytotoxic effects of metformin on the phenotype of human prostate cancer PC3 and DU145 cells and their docetaxel (DCX)-resistant lineages (PC3_DCX20 and DU145_DCX20). We concentrated on their DCX-resistance pattern and compared their EMT-related phenotype and invasive potential in the presence of metformin and/or DCX. Metformin increased the sensitivity of drug-resistant PC-3 and DU145 cells to DCX; even though PC-3_DCX20 cells displayed reduced sensitivity to combined metformin/DCX treatment. When administered alone, metformin exerted less prominent cytostatic effects on PC_DCX20 cells than on their DU145_DCX20 counterparts. This effect was accompanied by EMT-related morphological changes. These data indicate that reactivity of drug-resistant prostate cancer cells to metformin may depend on the efficiency of metabolic stress-induced EMT.

Keywords:

metformin, docetaxel, prostate cancer, EMT



CONDUCTIVE POLYMERS AS ANTIBACTERIAL SURFACES

**Dominika Czerwińska-Główka(1)*, Katarzyna Krukiewicz (1), Wioletta Przysaś (2),
Ewa Zabłocka-Godlewska (2), Sebastian Student (3), Beata Cwalina (2),
Mieczysław Łapkowski (1)**

*(1) Department of Physical Chemistry and Technology of Polymers, Silesian University of
Technology, Gliwice, Poland*

*(2) Department of Environmental Biotechnology, Silesian University of Technology,
Gliwice, Poland*

(3) Department of Automation, Electronics

*dominika.czerwinska-glowka@polsl.pl

A few words about the author:

Dominika Czerwińska-Główka is a PhD student at the Silesian University of Technology in Gliwice. Her scientific interests are conducting polymers, biofilms, and surface modification.

Abstract:

Conductive polymers are organic compounds that combine electrical activity with biocompatibility, which gives them an innovative nature. This connection significantly increases the range of potential applications of polymers. Due to the ability to immobilize any particles inside the structure, one of the ideas might be to create unique coatings with antibacterial properties.

In this work, the electroactive matrices based on poly(3,4-ethylenedioxythiophene) (PEDOT) was obtained via electropolymerization process. They have been further modified by immobilizing of antibiotic (tetracycline) into the structure. Matrices have been extensively studied by electrochemical methods, UV-Vis - spectroscopy, IR spectroscopy and SEM microscopy. Antibacterial effect of drug-loaded surfaces was assessed with E.coli strain. Samples were characterized by SEM microscopy, LIVE/DEAD assay and BCA protein analysis.

The obtained results allowed for the correlation between physicochemical and biological properties of the surfaces. Antibacterial activity was compared between both polymers, polymers with drug as well as platinum layer.

Keywords:

conducting polymer; poly(3,4-ethylenedioxythiophene); tetracycline; bacterial biofilm



THE THIRD OPPORTUNITY OF POSTMODERNISM. THEORETICAL DESIGN OF A SINGLE-FAMILY HOUSE

Jan Dziadek

Graduate of the Faculty of Architecture, Cracow University of Technology, Cracow

jan.adam.dziadek@gmail.com

A few words about the author:

Jan Dziadek - architect, graduated from the Faculty of Architecture at the Cracow University of Technology in 2018.

Abstract:

This article provides an analysis of circumstances which lead to the situation, when aesthetics stylistically referring to the idea of postmodernism is used in contemporary architecture. Using the example of a single-family house project, the author shows, that careful use of forms and elements originating from the history of architecture does not exclude the modern character of buildings created with their use. The presented original design of a single-family house designed according to postmodern aesthetics, as well as a post-modern space arrangement was used as an example and illustration. In addition description of the assumptions of postmodernism, with the differences in the development of this style in Poland and in the world is discussed. The article also presents the reception of postmodern aesthetics and describes possible use of these architectonical features in the upcoming future.

Keywords:

postmodernism, house design, architecture, postmodern aesthetic, specified space



CONSTRUCTION, PROPERTIES AND APPLICATIONS OF MODERN INTELLIGENT MATERIALS

**Anna Fenyk (1)*, Marek Zieliński (1), Ewa Miękoś (1), Ewa Chrzęścijańska (2),
Anna Masek (3)**

(1) University of Lodz, Department of Inorganic and Analytical Chemistry

(2) Lodz University of Technology, Institute of General and Ecological Chemistry

(3) Lodz University of Technology, Institute of Polymer and Dye Technology

*anna.fenyk@chemia.uni.lodz.pl

A few words about the author:

Anna Fenyk is PhD student at the Department of Inorganic and Analytical Chemistry of the University of Lodz. Scientific interests: inorganic chemistry, magnetochemistry, ecology.

Abstract:

The development of technology and the search for new materials, as well as the improvement of their properties, is part of modern research. An example of innovative materials that are increasingly used in the automotive industry, construction industry, and even medicine are the so-called "intelligent materials" that change their properties as a result of external stimuli. An important advantage of functional materials is the possibility of controlling their properties according to the strategy assumed in advance. In practical use, intelligent materials can stand alone or be part of a functional structure. The combination of knowledge in such fields as automotive, construction, medicine, electronics, materials science allows for the wide application of newly created materials. Emerging issues related to intelligent materials are a consequence of their popularity, which is confirmed by the constantly growing number of works devoted to this topic. Analysis of the literature about the use of intelligent materials indicates numerous fundamental problems which are still to be solved in further scientific work. These materials have been developed significantly in recent years, is only a small fraction of the expected improvement and progress in this field. This presentation aims at describing intelligent materials and their classification. The applications of these unique materials, with particular emphasis on their important importance in our daily lives, will be also summarized.

Keywords:

smart materials, modern structures, functionality



A-VPO₄@MWCNT AS A PROMISING ANODE MATERIAL FOR SODIUM-ION BATTERY

Ewelina Gajko-Jurkowska*, Anna Basa

University of Białystok, Konstantego Ciołkowskiego 1K, 15-245 Białystok, Poland

*ewelinagajko@wp.pl

A few words about the authors:

The authors conduct research at the University of Białystok. Main area of interest of the authors includes synthesis and electrochemical characterisation of various electrode materials used in lithium and sodium batteries.

Abstract:

The research for new energy sources is the topic of the work of many scientists. Sodium batteries have a real chance to replace lithium batteries. They have a long lifespan, high energy densities, environmental friendliness and good safety. Furthermore, sodium deposits are ubiquitous and have low mining costs. Sodium metal isn't an appropriate replacement for application as a negative electrode in batteries. It has poor cycling performance, easy short-circuits, high chemical reactivity and dendritic growth during of charge/discharge process. VPO₄ is a promising electrode material as anode for sodium batteries. It has a theoretical capacity equal 550 mAh/g and low potential of the redox reaction. The compounds exhibit stable structure due to big volume PO₄³⁻ ion what lead to slight volume changes during of discharge/charge process and low polarization of electrode material. Unfortunately the electron conductivity of VPO₄ is poor and aggregation of compound particles is strong. The solution to these problems is the use of carbon structures. In our work, we used oxidized nanotubes and synthesized the composite of a-VPO₄@MWCNT_{ox}. The work of the sodium cell constructed by us is based on conversion. The role of MWCNT is to ensure good electron conductivity of the composite and to reduce the stress arising in the electrode material. The above solution assured us that we have obtained high capacities equal about 450 mAh/g in the first cycle and batteries work stable and reproducible.

Keywords:

VPO₄; Anode; Sodium ion battery



THE EFFECT OF SYNTHESIS CONDITIONS ON THE PHYSICOCHEMICAL PROPERTIES OF HYDROXYAPATITE

**Magdalena Głąb*, Dagmara Słota, Wioletta Florkiewicz, Sonia Kudłacik-Kramarczyk,
Anna Drabczyk, Agnieszka Tomala, Bożena Tyliczszak, Agnieszka Sobczak-Kupiec**

Cracow University of Technology

*magdalenaglab@op.pl

A few words about the authors:

The authors create a scientific team at the Cracow University of Technology. For several months, special attention has been focused on the problem related to the regeneration of bone tissue and the treatment of a large problem which is osteoporosis.

Abstract:

Along with the intensive technological progress and the continuous development of civilization, the diseases of civilization are becoming a growing problem. The most common diseases of civilization include cardiovascular diseases, cancer and osteoporosis. According to the International Osteoporosis Foundation, the problem of osteoporosis affects approx. 200 million people. Osteoporosis is a disease characterized by the loss of bone density. As a result, the weakened bone fractures due to very small injuries. One of the materials which is very often used in regenerative medicine and implantology is hydroxyapatite.

In this work, synthetic hydroxyapatite was obtained by wet precipitation. The synthesis at boiling point was carried out using hydrated calcium acetate and potassium hydrogen phosphate as substrates. In the second method hydroxyapatite was obtained at room temperature using hydrated calcium nitrate and ammonium dihydrogen phosphate. In order to determine the physicochemical properties, the hydroxyapatite powders obtained were analysed by the following methods: Fourier transform infrared spectroscopy, X-ray diffraction and scanning electron microscopy.

The “Multifunctional biologically active composites for applications in regenerative bone system medicine” project is carried out within the TEAM-NET programme of the Foundation for Polish Science financed by the European Union under the European Regional Development Fund.

Keywords:

osteoporosis, hydroxyapatite, physicochemical properties



INFLUENCE OF THE ACTIVE PHASE COMPOSITION OF THE HETEROGENIC CATALYST ON SELECTIVITY AND CONVERSION IN THE PROCESS OF HYDROGENOLYSIS OF GLYCYROL TO PROPYLENE GLYCOL

Marek Głowka*, Przemysław Boberski, Jan Wójcik

The ŁUKASIEWICZ Research Network - The Institute of Heavy Organic Synthesis "Blachownia"

*marek.glowka@icso.lukasiewicz.gov.pl

A few words about the author:

MSc. Marek Głowka is a technologist at the ŁUKASIEWICZ Research Network - The Institute of Heavy Organic Synthesis "Blachownia" in Kędzierzyn-Koźle. His specialization is organic chemical technology, mainly hydrogenation process.

Abstract:

In recent years, hundreds tone of glycerin appeared on the chemical market, which is a by-product of the biodiesel production process. That is why it is important to find a way to use it. One of the possibility is to use glycerin as a raw material for the production of propane-1,2-diol (propylene glycol), which is extremely desirable, especially in European Pharmacopeia quality. This product is used in the food, cosmetic and pharmaceutical industries. The use of glycerin for the production of glycol enters the trends of the "green chemistry", competing with the typical propylene glycol production technology that uses petrochemical product, propylene, which is transformed into propylene oxide and then into propylene glycol.

The main aspect of the research was to determine the effect of various copper catalyst promoters (Zn, Mg) on the reaction parameters of the obtained propylene glycol from glycerol. Heterogenous catalysts were obtained by impregnation method. Reactions were carried out in a trickle bed reactor. The analysis of process parameters such as conversion and selectivity was carried out using FID-GC.

Keywords:

hydrogenolysis, heterogeneous catalyst, renewable resources, glycerol



APPLICATION OF NANOMATERIALS MODIFIED SENSORS IN THE DETERMINATION OF BIOLOGICALLY ACTIVE SUBSTANCES

**Anna Górska*, Nikola Lenar, Marcelina Łysoń, Ewa Wójcik,
Beata Paczosa-Bator, Robert Piech**

*Faculty of Materials Science and Ceramics, AGH University of Science and Technology,
Kraków, Poland*

*agorska@agh.edu.pl

A few words about the authors:

Students, PhD students and employees of Department of Analytical Chemistry at the Faculty of Materials Science and Ceramics interested in electrochemical analysis.

Abstract:

In the following work glassy carbon electrodes were modified with carbon black and with carbon black with addition of $\text{RuO}_2 \cdot x\text{H}_2\text{O}$ nanoparticles. Developed sensors were applied in organic substances determination: metformin, sumatriptan and nimesulide. During the research optimal conditions for determination of each substance were specified, including: instrumental parameters, preconcentration potential and time, type, concentration and pH of supporting electrolyte. Interferences study was also conducted. Linear range (LR) and limit of detection (LOD) for each substance were determined: metformin LR: 10 – 70 μM , LOD = 0.7 μM ; sumatriptan: LR: 0.25 – 2.25 μM , LOD = 0.022 μM ; nimesulide: LR: 0.25 – 1.75 μM , LOD = 0.06 μM . The usefulness of developed procedures was confirmed by analysis of commercially available products containing each drug. Conducted research proved the usefulness of carbon nanomaterials and $\text{RuO}_2 \cdot x\text{H}_2\text{O}$ nanoparticles in GCE modifications. In addition, it might be concluded that developed methods might be introduced into routine laboratory practice for medications quality control.

Acknowledgement:

The publication is financed from the subsidy no 16.16.160.557 of the Polish Ministry of Science and Education.

Keywords:

voltammetry, glassy carbon electrode, surface modification, nanomaterials



DYNAMIC THERMOGRAHY IN ASSESSING THE MOTORY DISORDERS OF THE HORSE'S PELTAL LIMB WITH DEGENERATIVE DISEASE

Dominika Gulda*, Malwina Jankowska

*Scientific Council of the Zoological Garden in Bydgoszcz
Forest Park for Culture and Leisure Myślęcinek*

*zoo.rada@myslecinek.pl

A few words about the authors:

The authors work in the Zoological Garden in Bydgoszcz, they are zoophysiotherapists. In their daily work with animals, they develop methods of non-invasive therapeutic actions that have a positive impact on animal welfare.

Abstract:

In zoos, the life expectancy of animals is significantly higher than the average for wild species, breeding and productive animals. Therefore, these animals have old age-related conditions. Animal welfare measures seek non-invasive methods to assess the prevalence and progress of pathological changes. In this case of horse (*Equus caballus*), degenerative changes in the right pelvic limb were recorded for a period of 3 months at intervals of 2-3 days, with concomitant administration of preparations nourishing articular cartilage and the use of zoophysiotherapeutic kinetic exercises. Real-time thermal assessment allows you to record the current condition of the animal, which is a non-invasive and non-stressful method.

The aim of the work was to assess the progress of physiotherapy through the use of a pyrometric video recorder. Average values measured at 3 points within the pastern, ankle and knee joints and section measurements for the entire limb were assessed before and after exercise. The exercises included bending and straightening in the pastern and ankle joint, walking around the circle (volte on both sides), slalom and daily hoof care (cleaning).

The program of kinetic exercises used in the zoo caused a return to the pattern of movement of the horse. In addition, the limb was also more flexible during bending and walking on the volte.

Keywords:

kinetic exercises, zoological garden, zoophysiotherapy, thermography, horse



IMPROVING OF HORSERADISH PEROXIDASE ACTIVITY BY IMMOBILIZATION ONTO NYLON 6 ELECTROSPUN FIBERS

Katarzyna Jankowska (1, 2)*, Jakub Zdarta (1), Adam Grzywaczyk (1),
Manuel Pinelo (2), Teofil Jesionowski (1)

(1) *Institute of Chemical Technology and Engineering, Faculty of Chemical Technology,
Poznan University of Technology, Poznan, Poland*

(2) *Department of Chemical and Biochemical Engineering, Technical University of Denmark,
Kongens Lyngby, Denmark*

*katarzyna.a.antecka@doctorate.put.poznan.pl

A few words about the author:

MSc Eng. Katarzyna Jankowska studied Chemical Technology at Poznan University of Technology and graduated her MSc in 2017. She then joined the research group of Prof. Teofil Jesionowski at the Institute of Chemical Technology and Engineering at PUT.

Abstract:

Nowadays, the importance of immobilized enzymes is rapidly growing due to their applications at various process conditions and possibility to reuse. In order to obtain heterogeneous biocatalysts characterized by the highest biocatalytic activity, it is important to determine the immobilization conditions. In the presented work, nylon 6 material was produced by electrospinning method and applied as a support for horseradish peroxidase immobilization by adsorption and covalent binding. The highest relative activity of immobilized oxidoreductase was obtained after immobilization at 50°C and pH 7 after 60 min for adsorption method, and using 3% of glutaraldehyde solution, 70 min of process time, at 60°C and pH 7 for covalent binding. The obtained results showed that the obtained biocatalytic systems produced might find application in biocatalytic reactions, such as conversion of phenolic compounds from aqueous solutions.

Acknowledgements:

This research was supported by research grant funds from the National Science Centre, Poland (2018/29/N/ST8/01026) and the Polish National Agency for Academic Exchange, the Iwanowska Programme.

Keywords:

horseradish peroxidase, enzymatic activity, enzyme immobilization, electrospinning



METAL NANOPARTICLES' (COPPER, GOLD, PLATINUM AND SILVER) INFLUENCE ON CELL LINE HS-5 PROLIFERATION

Agata Lange*, Sławomir Jaworski

*Department of Nanobiotechnology and Experimental Ecology, Institute of Biology,
Warsaw University of Life Sciences, Ciszewskiego 8, 02-786, Warsaw, Poland*

*agata.m.lange@gmail.com

A few words about the authors:

The authors conduct research in the field of broadly understood biology at the Institute of Biology (WULS-SGGW). Particular interests relate to nanobiotechnology and its more detailed components – various types of nanoparticles.

Abstract:

At the present time, using metal nanoparticles has become a common trend which is useful in many branches of science. They are widely used in cancer therapy or in regenerative medicine providing promising results. Nonetheless, an influence of nanoparticles on functioning of living organisms and their cells physiology is currently under investigation. The aim of research was to better understand mechanisms affecting activity of eukaryotic cell line HS-5 which may substantially enhance the level of medicine in the future. The research was focused on determining the ability of migration which was preceded by cell viability test and physicochemical analysis of each nanoparticle. It was documented that silver nanoparticles are the most toxic ones, a dose-dependent factors causing the highest percentage of cell death. The results showed that gold nanoparticles (besides copper) indicate a great potential of mesenchymal movement and cells proliferation. All types of tested metal nanoparticles were colloiddally unstable and thus created an agglomerates. Due to physicochemical properties nanoparticles thought to act with cell membrane or internal organelles but not in destroying way, hence not extensive toxicity. Summarizing, variety of biological properties of metal nanoparticles make them an attractive material to use as a new source of treatment.

Keywords:

metal nanoparticles, HS-5 cell line, proliferation



WHAT MAKES THE MATERIAL SUITABLE FOR MEDIATION LAYER OF ION-SELECTIVE ELECTRODES?

Nikola Lenar*, Anna Górska, Beata Paczosa-Bator, Robert Piech

*Faculty of Materials Science and Ceramics, AGH University of Science and Technology,
Kraków, Poland*

*nlenar@agh.edu.pl

A few words about the authors:

Nikola Lenar and Anna Górska are PhD students interested in analytical chemistry, Beata Paczosa-Bator and Robert Piech are employees of the Faculty of Materials Science and Ceramics specialized in electrochemical analysis.

Abstract:

Solid-contact ion-selective electrodes consist of two layers: the mediation layer, which simplifies the ion-to-electron exchange processes and ion-selective membrane itself, which is responsible for selective recognition of analyzed ion. Both elements turned out to be equally important to ensure the good performance of ion-selective electrodes, with mediation layer being responsible for fast, stable and reversible response and the membrane ensuring high selectivity.

Intensive studies over ion-selective membranes allowed optimizing the membrane composition, therefore nowadays membranes may be considered as well-known materials. The current trend in research on ion-selective electrodes is focused on finding new electroactive materials that can be used as mediation layers.

Before being implemented onto electrode, mediation layers must be studied carefully in order to get to know their properties. How do we know that the certain material may be suitable for potentiometric sensors? One of the approaches to design the robust ISEs is to implement the material of high electrical capacity, which can either result from a high redox capacitance or high surface area.

The capacitance of material can be evaluated using various electrochemical techniques such as chronopotentiometry, cyclic voltammetry and electrochemical impedance spectroscopy. Since high surface area results from small materials' particles, Scanning Electron Microscopy is also used to examine the microstructure.

Keywords:

ruthenium dioxide, solid-contact, ion-selective electrode, mediation layer, high capacitance



BREEDING OF THE GROUND BUMBLEBEE BOMBUS TERRESTRIS (L. 1758) IN POLAND

Monika Lik

University of Science and Technology, Department of Biology and Animal Environment

molik@utp.edu.pl

A few words about the author:

PhD Eng, zoologist, member of the Scientific and Educational Council of the zoo in Bydgoszcz.

Abstract:

Wild bumblebee populations around the world are dying at a rapid pace. In comparison with bees, whose role in pollination of plants is widely known, references to bumblebees appear rather occasionally.

Breeding bumblebees is one of the methods of their protection, thanks to which it becomes possible not only to use these hymenoptera to pollinate crops grown by man, but also to supply local populations with healthy and strong bumblebee families. In Poland, mainly bumblebee *Bombus terrestris* is bred, sometimes bumblebee *Bombus lapidarius*), which is only a small part among domestic species. Unfortunately, instead of encouraging breeders to choose Polish bumblebees as breeding species, families from the Mediterranean basin that are not adapted to life in our climate are brought in, which cross with native populations, weakening genetic material.

Keywords:

bombus terrestris, bumblebee breeding, protects of Apidae



WPI-BASED HYDROGEL MATERIALS MODIFIED WITH CERAMIC PHASE FOR BONE SYSTEM REGENERATION

Dagmara Ślota*, Magdalena Głąb, Wioletta Florkiewicz, Sonia Kudłacik-Kramarczyk, Anna Drabczyk, Agnieszka Tomala, Bożena Tylińczak, Agnieszka Sobczak–Kupiec

Cracow University of Technology

*slota.dagmara@gmail.com

A few words about the authors:

The authors create a scientific team at the Cracow University of Technology. For several months, special attention has been focused on the problem related to the regeneration of bone tissue and the treatment of a large problem which is osteoporosis.

Abstract:

Whey protein isolate (WPI) is the by-product of the dairy industry. However, it has an impressive biological value as it contains at least 90% of proteins. At elevated temperature, WPI solutions can be subjected to gelation, thus obtaining a three-dimensional network. These unique structure of hydrogels obtained this way facilitates modification through the introduction of active substances and drugs. Hydrogel itself does not show sufficient mechanical strength to be used for bone tissue regeneration, however, the suspension of ceramics in the WPI matrix increases the strength of the biomaterial.

The ceramic phase in the presented studies was hydroxyapatite (HAp). This material was chosen considering its impressive bioactivity and biocompatibility. In addition, HAp demonstrates the ability to osteoconduction as well as osteoinduction.

The aim of this study was to synthesize hydrogels based on 40% solution of whey protein isolate, which was subjected to gelation at elevated temperature. Hydrogels contained HAp powders of various concentrations obtained by wet synthesis methods. The obtained hydrogel materials were analyzed in physicochemical and biological aspects.

The “Multifunctional biologically active composites for applications in regenerative bone system medicine” project is carried out within the TEAM-NET programme of the Foundation for Polish Science financed by the European Union under the European Regional Development Fund.

Keywords:

hydroxyapatite, biomaterials, osteoporosis



CELL WARS: CANCER MICROEVOLUTION

Karolina Warzecha

*Department of Cell Biology, Faculty of Biochemistry, Biophysics and Biotechnology,
Jagiellonian University, Cracow, Poland*

karolina.warzecha.8@gmail.com

A few words about the author:

I am the student of Master studies of molecular biotechnology major at Jagiellonian University, especially interested in the molecular biology of cancer cells. I completed Bachelor studies of neurobiology major.

Abstract:

Cancer is a group of diseases characterised by unlimited growth of cells and ability to infiltrate tissues of the body. It originates from a single cell that undergoes mutation, which enables it to unlock one of hallmarks of cancer, widely embraced in scientific field as an accurate frame for the nature of the disease. These specific features are – unlimited and independent proliferation, evasion of apoptosis, avoidance of growth suppressors, replicative immortality, inducement of angiogenesis, and invasion and metastasis. The mutant cell gives rise to a group of mutants, that with time acquire more hallmarks of cancer and divide to give more cells. This leads to creation of heterogenous population of cells, that constitute a tumour.

Tumour is a dynamic system, in which microevolutionary selection pressures start to occur. This factors grow stronger with time as the tumour becomes bigger, its energy expenditure grows, and simultaneously the availability of nutrients and oxygen is more diverse across it. Any advantage possessed by the cell by mutation entitles it to be more successful in this difficult environment, and manifests in reproduction success. This natural selection leads to directed changes in population that increase their adaptation.

The microevolutionary model is a refreshing view that provides researchers with insight into the nature of cancer and mechanisms of its drug resistance.

Keywords:

molecular biology, cancer, tumour, microevolution, drug resistance



THE PROCESS OF PREPARING NUMERICAL MODEL OF ANATOMICAL STRUCTURE USING FINITE ELEMENT METHOD (FEM)

Wiktoria Wojnarowska

Doctoral School of Engineering and Technical Sciences at the Rzeszów University of Technology

d510@stud.prz.edu.pl

A few words about the author:

The author is a PhD student at the Rzeszów University of Technology. Her research work focuses on modeling and simulation in medical applications. She is also interested in biomaterials and the use of Rapid Prototyping techniques in medicine.

Abstract:

Internal anatomical structures such as bones are unique and complex. They are characterized by complicated anatomy, inhomogeneous material composition and non-linear material behaviour, exposed to complicated loading conditions. Finite element method (FEM) became one of the basic tools used for biomechanical investigations of such structures due to their ability to represent highly irregular domains. Today, this tool is one of the most reliable simulation tools for evaluating wear, fatigue, crack propagation, and so on forth, and is used in many types of preoperative testing.

Computational modelling allows a proper understanding of joint behaviour, as well as of more complex articular biomechanics that are encountered in several conditions. Understanding the biomechanics and loading of each element during movement using motion analysis is helpful for studying disease aetiology, making decisions about treatment, and evaluating treatment effects.

The process of preparing FEM model of anatomical structure is complex. It consists, among others, of data acquisition, preparing geometry, preprocessing, simulation and validation. The purpose of the work is to present this process and discuss its stages, highlighting the most common problems.

Keywords:

finite element method, anatomical structure, simulation, modelling, numerical model



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