NATIONAL SCIENTIFIC CONFERENCJE "UNDERSTAND THE SCIENCE"

VII EDITION on-line SEPTEMBER 16, 2023



What? How? Why?

THE BOOK OF ABSTRACTS



National Scientific Conference "Understand the Science" VII edition

The Book of Abstracts

September 16, 2023

What? How? Why?



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ABSTRACTS OF PRESENTATIONS



HUMANITIES SCIENCES

CSR ANALYSIS OF GPW BEST PRACTISE REPORTS OF POLISH COMPANIES FROM THE GAME DEVELOPMENT SECTOR

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A few words about the author(s):

Szymon Chlebowicz – 3^{rd} year student of Finance management and accounting at the Warsaw University. Michał Szewczyk – 2^{nd} year student of Sociology within Interdisciplinary Individual Studies in Humanities and Social Sciences on the Warsaw University.

Abstract:

The purpose of the presentation is to show results of researching GPW Best Practise reports (pl. Raporty dobrych praktyk GPW) of polish companies from the Game Development sector. Speech functions as an answer to many concerns about ESG standards that have been raised in the video games community. Most of them are connected with issues such as crunch, stress, mental health problems and ineffective style of management in the industry. GPW Best Practise represents how public companies report their actions connected with CSR. They contain information about issues such as gender equality within a company, working conditions and amounts expensed in support of social affairs. By studying those reports it could be stated that most companies don't put much emphasis on communicating their engagement in CSR to their investors. They usually highlight commitment to such ideas, but infrequently describe actions that have been taken in order to improve those matters. Those findings are an important first step in getting to understand the complexity of CSR problems in the video game industry, which are becoming wider and wider commented on.

Keywords:

Gamedev, CSR, GPW, Selfreports

THE RELATIONSHIP BETWEEN ASSERTIVENESS AND SELECTED PSYCHOLOGICAL AND SOCIO-DEMOGRAPHIC TRAITS

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A few words about the author(s):

The researchers are psychology students at the University of Warmia and Mazury in Olsztyn. They are taking their first steps on the academic path and have a particular interest in the application of psychological knowledge in the world of video games.

Abstract:

Assertiveness is an important social competence that significantly contributes to the proper functioning of an individual. The aim of this study was to investigate the relationship between assertiveness and extraversion, shyness, self-esteem, as well as sociodemographic characteristics. A total of 252 adult citizens of Poland (193 females, 59 males), aged 18 to 69, were examined. The Rathus Assertiveness Schedule (RAS), the HEXACO Personality Inventory - Revised subscale for extraversion, a revised shyness scale, and the SES self-esteem scale were used to measurements. Assertiveness was significantly related to extraversion (positive), shyness (negative), self-esteem (positive), and age (positive). A higher level of assertiveness was observed among women, individuals in relationships, and older individuals. The obtained results suggest the importance of fostering assertiveness development among young people, particularly considering its association with self-esteem.

Keywords:

assertiveness, extraversion, shyness, self-esteem, gender

HOW THE CRIMINAL LAW RESPONDS TO THE NEEDS OF SOCIETY?

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A few words about the author(s):

Ph.D. student. During studies, she studied in Germany at Technical University of Dresden – Law Faculty. Her research interests focus on the aiding and abetting and incitment in Polish and German Law.

Abstract:

Obviously, changing reality is causing sudden changes in social life, including the law, which is a part of social life. In the case of criminal law, due to the matter that this law regulates, this phenomenon has a particular importance. These regulations have the greatest importance for the defendant from the point of view of the legal certainty principle. Changes in criminal law are constantly introducing to the substantive criminal law and to the criminal procedure code. In some cases new regulations have permanent nature and in the other they have not. The legislator always had to make difficult decisions. However, in each situations new regulations had to preventing committing a crime and guarantee citizens security. As shown last three years, dealing even with pandemic issue, requires from legislator quick decisions even in criminal matters, to immediately increase the level of public safety. With the abov in mind, it is important to indicate following changes: the possibility of a break from the execution the imprisonment sentence, possibility to confiscation of items of importance to public health. It is also worth to mention about higher penalties in case of crime of exposure to infection and for stalking, new crime in the form of particularly audacious theft or disturbing in performance of official duties the by a Police or Border Guard officer.

Keywords:

changes in criminal law

SURVEYING ARCHIVES' USERS IN THE AGE OF AN INFORMATION SOCIETY

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A few words about the author(s):

Małgorzata Czarnecka – history student on Adam Mickiewicz University in Poznań, the winner of Olimpiada Solidarności. Her research interests include the functioning of consistory of Kalisz and surveying users of scientific libraries.

Abstract:

During this presentation, I am going to introduce a proposition of methods for conducting surveys (of satisfaction) among users of archives, especially archives with historical resources. In the introduction I will present possible interpretations of the phrase "information society". The matter of creating a questionnaire will be based on experiences of librarians. I will focus particularly on the program Analiza Funkcjonowania Bibliotek and methods developed by E. Kędzierska and E. Strzelczyk with A. Zawałkiewicz. There will be thematic blocks suggested for the survey, as well as personal information that should be asked about. Regarding choosing the right questions I will present an idea of M. Cołbecka about "information services" and their division. In the final part of the presentation I will rise the matter of surveys distribution and choosing the right form.

Keywords:

Archives' users, information society, questionnaire surveys

THE PHENOMENON OF INHERITANCE OF POVERTY AND THE PROBLEM OF SOCIAL EXCLUSION AMONG CHILDREN AND YOUTH

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A few words about the author(s):

Beata for years associated with the sphere of education. She is passionate about children's problems. Paulina Storska is a PhD in security sciences. In her scientific research, she deals with the subject of social security.

Abstract:

This presentations outlines the issue of intergenerational transmission of poverty and its consequences regarding social exclusion amongst children and adolescents. Social exclusion is strictly connected with the occurrence of poverty/indigence. Poverty experienced in childhood may be a major threat, as it can be consequential to the personal growth. Living in poverty during this period may lead to physical and psychological disorders, or lower the educational or social achievements. People suffering from poverty in early childhood and adolescence have many problems with establishing apropriate demeanors in various spheres of life. Indigence is not only an educational barrier but also a developmental one.

Keywords:

exclusion, marginalization, indigence, poverty, development

DISCOVERY OF THE REMAINS OF AN UNKNOWN TEMPLE IN CYPRUS

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A few words about the author(s):

Anna Urszula Kordas, project leader, PhD candidate in archaeology, in particular interest in Hellenistic and Roman architecture and epigraphy. Szymon Popławski, architect, an author of architectural projections and reconstructions in the project.

Abstract:

During the research query in the Local Archaeological Museum of Kourion in Episkopi in Cyprus as part of the doctoral dissertation, a coherent set of architectural elements has been noted. It turned out that all these elements were found at the surface of the Latsithkia hill, located nearby Episkopi, and placed one kilometer away from the famous sanctuary and temple of the Apollo Hylates in Kourion. What is interesting, these architectural elements have not attracted the attention of researchers so far, and they were not a subject of publication yet! It appeared that the elements feature the characteristic form of Greek-type temple-building architecture, and they do not belong to any known temple in Cyprus! Based on modern documentation techniques, it was able to reconstruct building architecture: the Corinthian-type blocked-out columns, entablatures, a great round pedestal (probably an altar), and a very interesting pediment most probably crowning a niche. This type of architectural decoration can be preliminarily dated between the middle of the first century BC and the second century AD. The Corinthian-type blocked-out capitals are mostly characteristic of Cypriot temple architecture. The Latsithkia Hill has never been excavated, therefore, it is possible that in the near future, the foundations of this temple-building and other remains will be discovered here, which will provide more pieces of information about this discovery.

Keywords:

archaeology, Cyprus, architecture, temple, new discovery

DIRECTIONS OF INFLUENCE OF INCOME INEQUALITIES ON THE QUALITY OF LIFE OF INHABITANTS OF THE VISEGRAD GROUP COUNTRIES

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A few words about the author(s):

The author is a student at Jagiellonian University who is interested in social issues.

Abstract:

The income inequalities in the Visegrad Group countries (Czech Republic, Hungary, Poland, Slovakia) exert multifaceted effects on residents' quality of life. Economic disparities impact access to education, healthcare, and social services, contributing to unequal opportunities and diminished well-being for marginalized populations. Moreover, income inequality can strain social cohesion, leading to higher crime rates and reduced trust within communities. On the other hand, economic growth driven by market-oriented policies can potentially enhance living standards for all citizens. Addressing income disparities through targeted policies and investments in education and social welfare could promote a more equitable and improved quality of life across the Visegrad Group countries.

Keywords:

income inequalities, quality of life, Visegrad Group

CRIMINAL LIABILITY FOR HATE ON THE INTERNET

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A few words about the author(s):

Damian Skowron – lawyer, graduate student at Cardinal Stefan Wyszynski University in Warsaw.

Abstract:

The rapid technological development of today is accompanied by an increasing volume of IT-related crimes. Mass media can be used to perpetrate a number of violations, among which one may find the hate speech, which is intrinsically related to terms such as anger, aggression and hatred.

While gradually gaining strength, the phenomenon of hate is being placed under constant supervision and examination. As no individual is anonymous on the Internet today, all that is said with the intention of bringing harm to another person shall be duly punished. Therefore, there are a number of ways to tackle hate such as the administrator's duty to delete a hateful post, or the right to demand an apology, or a financial compensation by the affected party. Depending on the violation category, the claimant will be steered towards a civil or a criminal proceeding.

Considering the hate crime doctrine and its accompanying crime catalogue so well-developed in other European countries, the Polish criminal code seems to be slightly behind in the area of IT-related crime prosecution. Hence, there is a need for implementing changes which will enable the proper utilisation of criminal code procedures for the prosecution of hate speech.

Keywords:

hate speech, cybercrime, dignity, hejt, netiquette, criminal liability

THE CULTURE OF CONSUMPTION AND DESIGN: BRANDS AND IDENTITY

Leon Tabor

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A few words about the author(s):

I am a design student, my field of interest is the influence of culture on design, pro-social design and sustainable design.

Abstract:

The intricate interplay between consumption culture and design shapes contemporary consumer behavior and brand identity. This presentation explores how brands strategically utilize design elements to convey values, establish emotional connections, and achieve recognition. Through diverse examples, it elucidates the symbiotic relationship between consumption culture and design, shedding light on the power of design in shaping brand identity and consumer perceptions.

Keywords:

design, consumption, brands, identity

FACE NETWORK: ANALYSIS OF CORTICAL AREAS INVOLVED IN HUMAN FACE PROCESSING

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A few words about the author(s):

MSc in Cognitive Science at the NCU, scientifically oriented around neuroscience. In her research, she deals with the neurobiological foundations of social bonds, the non-obvious possibilities of neuropeptides, the role of language in cognition.

Abstract:

Face recognition is socially significant and involves highly selective brain regions that are assumed to be organised in a distributed functional network. Many years of research and analyses of brain function have revealed that there is a set of cortical brain regions specialised in face processing (Gobbini & Haxby 2007). The vast majority of research to date is, and has been, oriented towards face-selective brain areas, for example the fusiform gyrus, also known as the fusiform face area (FFA). However, it has been noted that our ability to process facial information involves a much larger number of areas, forming, as it were, a whole network (Face Network). For this thesis, I performed an analysis of fMRI data of the areas involved in processing face information.

Keywords:

FFA, face processing, face network

ALTRUISM AND COOPERATION – A NEUROBIOLOGICAL PERSPECTIVE

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A few words about the author(s):

MSc in Cognitive Science at the NCU, scientifically oriented around neuroscience. In her research, she deals with the neurobiological foundations of social bonds, the non-obvious possibilities of neuropeptides, the role of language in cognition.

Abstract:

Homo sapiens is a rather unique species of creature that stands out on many levels. One of the most intriguing aspects of this difference, in relation to other creatures, is the relatively rich and varied social life, which - in contrast to other animals generally considered to be particularly advanced - is not limited to family ties. The vast majority of mammals lead solitary lifestyles or restrict their social contacts to very narrow kin groups. It is the primates that constitute the order of mammals that contains the most numerous groups of species, capable of organising themselves into compact, well-hierarchised herds of larger or smaller numbers of individuals. This paper will discuss the neurobiological basis of altruism as an effective social strategy developed through evolution.

Keywords:

altruism, cooperation, evolution, neuroscience

POPULARITY OF RETAIL BANKING DISTRIBUTION CHANNELS IN Q4 2022

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A few words about the author(s):

Gabriela Wojtyniak is particularly interested in the subject of modern technologies in finance and the development of retail banking (including for clients from the private banking sector), corporate and investment banking.

Abstract:

The paper examines the popularity of retail banking distribution channels in poland in the fourth quarter of 2022. The work focuses on individual clients, i.e. natural people, students and retirees. The paper divides and describes each distribution channel. The advantages and disadvantages of electronic banking were presented. In order to examine the popularity of retail banking distribution channels among natural people, reference was made to the research of The Polish Bank Association for the fourth quarter of 2022. Research referring to electronic and mobile banking as well as mobile only customers was cited.

Keywords:

distribution channel, electronic banking, mobile banking, individual client

ABSTRACTS OF



HUMANITIES SCIENCES

HOW TO FIND AN EMPLOYEE FROM THE YOUNG GENERATION IN SOCIAL MEDIA?

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A few words about the author(s):

Facebook was created in early 2004 by M. Zukerberg and several other Harvard students. Initially, it was to be a platform for communication and information exchange between students of American universities.

Abstract:

Companies wishing to communicate with Facebook users should use it in such a way as to meet the needs of Internet users. Facebook users are very committed to sharing information with their friends on topics related to the products and services of various companies whose services they have used. Therefore, Facebook is a portal more suitable for promoting products and services related to people's passions12. Thanks to Facebook, local businesses can become co-creators of content by setting up a company profile that is displayed by selected users. An example of such an action may be an organization's fan page on Facebook. It is created and actions are taken to make it as popular as possible. This mechanism works by displaying the organization's page to any Facebook user who has "followed" the organization's page on their private profile13. Using the popularity and specificity of Facebook, you can conduct image communication of a local company in an innovative way, additionally you can reach potential buyers with information in an unobtrusive way, and as a result build the image of a local company that takes into account commitment and emotions.

Keywords:

company, social media, facebook, employee

COMPREHENSIVE SOCIAL SECURITY AND BENEFIT SYSTEM IN FINLAND

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A few words about the author(s):

Graduate of the double diploma programme (Poland and Finland), mainly interested in economics related to insurance (both private and public) and also behavioural economics, public choice theory and economic thought history.

Abstract:

Finland is a country in northern Europe striving to create a socio-economic system based on the Swedish model. Over the past decades, the country has developed comprehensive social benefits and social security solutions. The aim of the poster is to present the social security system that the Republic of Finland offers to its citizens. This poster presents an analysis of the current social security system in Finland. Constitutional economic theory is used as an analytical framework. The analysis discusses the wide range of benefits to which Finnish citizens are entitled and the eligibility criteria, such as age and living situation. The conclusion is to show the coherence and consistency of the social security system in Finland, which covers not only citizens but also all residents of the country, with a special focus on the working population.

Keywords:

social security, Finland, constitutional economics, social security system



DEMENTIA IN SPEECH THERAPY

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A few words about the author(s):

I am a student of MA speech therapy, a graduate of Polish philology of BA studies and a primary school teacher.

Abstract:

The work focuses on the impact of dementia on interpersonal communication. Dementia, which is a complex set of cognitive disorders, affects the communication skills of people affected by this disease. The poster presents the causes of dementia, its characteristic symptoms and effects are also discussed. The value of the speech therapist's role in diagnosing, treating and supporting communication in people with dementia is crucial to improving the quality of life of patients.

Keywords:

dementia, communication disorders, speech therapist

ECONOMIC SITUATION AND HOUSING FOR THE ELDERLY

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A few words about the author(s):

Daria Wrukowska is a PhD student at the Faculty of Economics, Finance and Management of the University of Szczecin. She appeared as a speaker at numerous national and international conferences.

Abstract:

Elderly people in Poland are mostly a group of people who are professionally inactive. According to the report "The situation of the elderly in Poland in 2020", in 2020, over 8,123,000 people aged 60 were economically inactive. Compared to 2019, the number of these people increased by over 85,000. It can definitely be admitted that in Poland there is an increase in the number of seniors who are not professionally active. Taking into account gender, it can be stated that the percentage of economically inactive women is higher than that of men. This is due to the fact that women have the right to early retirement. In Poland, there is a differentiation in the age of retirement among women - 60 years and men - 65 years. Therefore, men are a group of people who are professionally active longer.

Keywords:

Elderly People, ICT

POPULARITY OF THE FINTECH SECTOR AND CUSTOMER TRUST IN BANKING INSTITUTIONS

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A few words about the author(s):

I am a student at Cracow University of Economics.

Abstract:

FinTech firms are increasingly engaging in activities akin to traditional banking operations. The products and services they provide, which occasionally serve as substitutes for conventional banking offerings, enable them to holistically address the financial requirements of individuals who haven't yet explored the potential of modern technological advancements. Although FinTech entities face limitations in competing with banks due to factors like established reputation, financial market credibility, their status as institutions of public trust, and the impact of banking regulations that oversee their operations, it's worth acknowledging that trust, a crucial element in relationship-building, can sometimes become a competitive advantage for non-banking entities. The scientific poster aims to bring closer the relationship between the growing popularity of FinTechs and the level of consumer confidence in banking institutions. It also presents several dimensions of trust in banking sector and premises regarding new technologies in banking.

Keywords:

banking, fintech, trust

ABSTRACTS OF PRESENTATIONS



MEDICAL SCIENCES

RHEOLOGY AND THERMAL ANALYSIS FOR EXTRUSION APPLICATIONS IN DRUG DELIVERY

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A few words about the author(s):

Kinga Biedrzycka – Technology Specialist in pharmaceutical industry and PhD student Poznan University of Technology.

Abstract:

The aim of the work was to conduct preliminary studies on the use of Eudragit EPO as a polymer matrix for the incorporation of drugs by hot-melt extrusion technique. The thermal properties, i.e. temperatures of characteristic phase transitions like glass transition or melt temperature, as well as the thermal stability of investigated ingredients and prepared mixtures, were studied. On the basis of these measurements, different temperatures of the extrusion process (from 90°C to 140°C) were determined. A rheological analysis (oscillatory shearing rheometry and capillary rheometry) was also performed. The amorphous solid dispersion of polymer/API compositions using Eudragit EPO as the polymer matrix and 25 wt% of ibuprofen as the API were successfully obtained which was confirmed by both DSC and XRPD studies. The obtained results can be used as data to determine the process parameters of the hot melt extrusion technique.

Acknowledgments the support by the GRANT RPWP.01.02.00-30-0120/16.

Keywords:

hot melt extrusion, Eudragits, rheology

COGNITIVE AUTOMATION PLATFORM FOR BIG DATA ANALYSIS IN PHARMACEUTICAL INDUSTRY

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A few words about the author(s):

Kinga Biedrzycka – Technology Specialist in pharmaceutical industry and PhD student Poznan University of Technology.

Abstract:

The findings of this study demonstrate that OCT imaging can provide valuable insights into the dissolution process, allowing for accurate predictions of dissolution rates. By utilizing OCT, researchers and pharmaceutical manufacturers can gain a deeper understanding of dissolution kinetics, enabling better formulation design and optimization. Ultimately, the successful application of OCT for dissolution prediction offers potential advancements in drug development and quality control in the pharmaceutical industry, including a potential of use of OCT as an in-line PAT tool for real-time release testing of tablets in dissolution parameter.

Cognitive Automation Platform for European Process Industry digital transformation (CAPRI), EC Horizon 2020 Grant Agreement No. 870062.

Keywords:

CAPRI, OCT, PAT

VR METHODS IN MODERN TECHNOLOGY AND MEDICAL EDUCATION

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A few words about the author(s):

Jakub Sadowski – student scientific society at Institute of Medical Sciences. Joanna Huk – student of the Faculty of Medicine at the University of Opole. Agnieszka Rombel-Bryzek – doctor in biological sciences, assistant in Department of Clinical Biochemistry and Laboratory Diagnostics University of Opole.

Abstract:

In recent years, the intensive development of virtual reality (VR) has enabled its extensive implementation in numerous branches of industry, education, and in particular in narrowly specialized industries. This article focuses on the use of VR in technology and medical education. It provides an overview covering the most relevant areas of interest such as diagnosis, training, therapy and rehabilitation. The article focuses in particular on the impact of virtual reality on the user, taking into account both the benefits, weaknesses and limitations of the above technology. The final part is a summary and discussion of the potential directions of VR development in correlation with the discussed aspects of the medical field.

Keywords:

virtual reality, medical education, medicine, modern technology

SIGNIFICANCE AND DIAGNOSIS OF FETOMATERNAL HEMORRHAGE

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A few words about the author(s):

Aleksandra Antoszek – Master of Medical Analytics. She completed her master's thesis at the Department of Hematology Diagnostics. Anna Czajkowska-Żelazko – academic teacher of immunohematology.

Abstract:

Fetomaternal hemorrhage is defined by the transfer of fetal blood into the maternal circulation when there is a disruption in the placental barrier. Massive fetomaternal hemorrhage may lead to miscarriage or fetal and neonatal anemia. Fetomaternal hemorrhage is particularly dangerous for RhD-negative women, as even a small amount of RhD-positive fetal erythrocytes can cause alloimmunization. During future pregnancies, maternal anti-D antibodies can cross the placenta into the fetal circulation and bind to fetal cells, causing their destruction. This results in the development of hemolytic disease of the fetus and newborn. Quantitative tests are the most important in detection of fetomaternal hemorrhage. Calculating the percentage of fetal cells into the equivalent volume of hemorrhage is used to determine the correct RhIg dosing. One of the diagnostic methods used is the microscopic Kleihauer-Betke test. The test is based on fetal hemoglobin's resistance to acid elution. In a microscopic smear, highly visible, stained fetal cells are counted among "ghost cells" that do not contain fetal hemoglobin. In this study, the validation parameters of two methods for the analysis of microscopic smears prepared in accordance with the Kleihauer-Betke procedure were evaluated. It was examined whether the use of the Miller square would improve the process of counting fetal blood cells and its impact on getting more satisfactory precision, repeatability, accuracy, and linearity results.

Keywords:

fetomaternal hemorrhage

FUNDAMENTALS OF FLUID THERAPY IN VETERINARY MEDICINE

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A few words about the author(s):

I am a 3rd year student of veterinary medicine, at the University of Warmia and Mazury in Olsztyn. My scientific interests are: medical emergencies, diet and nutrition of domestic animals, pets behaviour.

Abstract:

Fluid therapy is a cornerstone of veterinary medicine, encompassing the administration of fluids to address dehydration, maintain electrolyte balance, and support overall patient well-being. This abstract provides a comprehensive overview of the fundamental principles of fluid therapy in veterinary practice.

Keywords:

fluid therapy, veterinary medicine, crystalloids, colloids, dehydration

CHRONIC STRESS AND HEALTH: THE UNSEEN PERIL OF THE MODERN ERA

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A few words about the author(s):

I have completed my first-degree studies in Biomedicine at the Medical University of Lublin. Currently, I am commencing my master's studies, continuing with the same specialization.

Abstract:

Stress is a natural psychophysiological response of the body to situations requiring adaptation and adjustment to challenging circumstances, known as stressors. The impact of stress on the human body's health, particularly on the nervous system, has been known for years. It has been established that chronic stress can lead to structural changes in the brain, such as neuronal atrophy and a reduction in the volume of certain brain regions. These structural changes have diverse effects on cognitive functions and memory, underscoring the detrimental nature of stress's impact on the human brain. There are two main categories of stress: acute and chronic. Acute stress pertains to a short-term adaptive state, whereas chronic stress is a long-lasting and harmful state for the body. Hormones released in response to stress can lead to changes in brain areas responsible for emotional control, memory, and cognitive functions. The consequences of these changes can manifest in mood disorders, anxiety, and even depression. The contemporary lifestyle, associated with a dynamic pace, high expectations, and exposure to various stressors, can have far-reaching health consequences. Increasingly, research indicates a link between chronic stress and the risk of developing cancer. Chronic stress significantly impacts the human body, leading to various health consequences. This impact is not limited solely to psychological realms but also has significant implications for physiological processes.

Keywords:

chronic stress, stress, cancer

EXPLORING THE INTERPLAY BETWEEN GUT MICROBIOTA AND NEUROLOGICAL DISORDERS

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A few words about the author(s):

I have completed my first-degree studies in Biomedicine at the Medical University of Lublin. Currently, I am commencing my master's studies, continuing with the same specialization.

Abstract:

The connection between the gastrointestinal system and the brain has been a subject of research for decades. The specific relationship between the digestive tract and the central nervous system (CNS) has been termed the "gut-brain axis." This two-way exchange of information between these two systems is a focal point of intensive investigation. Recent findings highlight the significant role of gut microbiota in the bidirectional communication between the intestines and the brain, suggesting that microorganisms present in the intestines may influence the development of neurons, regulate neural signaling, and impact behavior. As a result, they might contribute to the emergence and evolution of various neurodevelopmental, neuropsychiatric, and neurological disorders. The gut microbiota influences physiological, behavioral, and cognitive brain functions, even though the precise mechanisms underlying this interaction are not yet fully understood.

Keywords:

gut microbiota, brain-gut axis, neurological disorders

THE STRUCTURE, TRANSMISSION AND CLINICAL MANIFESTATIONS OF HEPATITIS B AND C VIRUSES

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A few words about the author(s):

Fourth year of medicine at Poznan University of Medical Sciences.

Abstract:

Hepatitis B and C are liver diseases caused by hepatitis viruses. The World Health Organization (WHO) estimates that over 2.3 billion people are infected with hepatitis viruses, which cause almost 1.5 million deaths each year. Types B and C are responsible for around 90% of these cases. Both types of viruses occur as chronic or acute infections and can be manifested by similar symptoms like fever, loss of appetite, vomiting, abdominal pain, and jaundice. Integral parts of chronic disease are acute exacerbations or flares, which are intermittent with recovery or remission periods. Viruses are classified into different groups based on their morphology and structure. Both infections are transmitted through blood-to-blood contact, but hepatitis B can also be spread through body fluids. Knowledge about biology's structure is a key to understanding the mechanisms of infections and their clinical manifestations. Even though we have improved knowledge about viral infections, hepatitis remains challenging for health care organizations all around the world.

Keywords:

hepatitis B, hepatitis C, hepatitis viruses
MYASTHENIA GRAVIS: CLINICAL MANIFESTATIONS, CLASSIFICATION, AND TREATMENT

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Fourth-year medicine student at Poznan University of Medical Sciences.

Abstract:

Myasthenia gravis is characterized by defective transmission at the neuromuscular junction, mostly associated with the presence of antibodies against acetylcholine receptors. It is a heterogeneous autoimmune disease manifested by muscle weakness, especially facial muscles, double vision, and eyelid drooping. Even though some patients experience spontaneous remission, symptoms tend to progress over time. Manifestations aggravate when affective muscles are used and usually improve at rest. There is no targeted treatment for this disease, but some medications help to cope with the symptoms of myasthenia gravis. Depending on clinical manifestations and stage, patients can be put on a course of cholinesterase inhibitors, corticosteroids, or immunosuppressants.

Keywords:

Myasthenia gravis, acetylcholine receptors, muscle weakness

CLINICAL COURSE AND MANAGEMENT OF PULMONARY EMBOLISM

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A few words about the author(s):

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Abstract:

Pulmonary embolism (PE) may be a life-threatening condition that occurs when embolic material, such as thrombus, blocks the lungs blood flow. The symptoms of PE are non-specific and can vary widely, from chest pain and shortness of breath to coughing up blood. Blood tests, imaging tests and sometimes invasive procedures are obligatory to make a proper diagnosis. The treatment of PE depends on the severity and the risk of bleeding. It may include anticoagulants, thrombolytics, surgery or catheter-based interventions. The prevention of PE involves identifying and modifying the risk factors, such as immobilization, surgery, trauma, cancer or inherited disorders.

Keywords:

pulmonary embolism, pulmonary hypertension, anticoagulants, well's score

ECG FINDINGS IN ELECTROLYTE IMBALANCE

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A few words about the author(s):

Joanna Loda, 4th year medicine student at Poznan University of Medical Sciences.

Abstract:

The cardiac action potential is influenced by the electrolyte balance in the body. Some electrolytes have no significant impact on the heart's electrical activity, while others can alter it. The most important electrolytes for the heart are potassium, magnesium and calcium. This review presents how various levels of these electrolytes affect the image of ECG. It also discusses the common causes of electrolyte disturbances. The ECG can help to assess the severity of electrolyte imbalance and the risk of arrhythmias for patients by showing some characteristic changes.

Keywords:

ECG, electrolyte imbalance, dyselectrolytemia, arrythmias



QUALITY OF LIFE

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A few words about the author(s):

I am a 1st year student of dietetics. I am interested in healthy eating, sociology and photography.

Abstract:

The presentation shows the topic of quality of life. The subject of quality of life depending on the state of health is discussed. The term 'health-related quality of life' means quality of life determined existing diseases, disability, natural aging process. An important moment of the presentation are the components of quality of life. These elements are: family and professional life, inter-neighborly relations, social relationships, state of health, way of spending free time. We also have an approximate Spilker model and one of the methods of studying the quality of life, i.e. the SF-36 scale. Research on the quality of life has a threefold function in medicine, which is described in the presentation.

Keywords:

quality of life, Spilker, WHO, SF-36



EXTRUDED FOOD

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A few words about the author(s):

I am a 1st year student of dietetics. I am interested in healthy eating, sociology and photography.

Abstract:

The presentation shows the subject of extrusion. It explains to us the concept of extrudation. We distinguish warm, cold and hot extrusion. With each type of extrusion, we can get different products. Thanks to this method, we can produce well-known breakfast cereals, corn crisps, instant pasta or chewing gum. The presentation also touched on the subject of changes in physico-chemical properties that occur during this process. Attention was also paid to the advantages and disadvantages of extruded products. One of the advantages of this process is to increase the digestibility of products. Examples of nutritional values and the possibility of refining extruded products are also presented.

Keywords:

extrusion-cooking, physico-chemical properties, advantages, disadvantages

FEMOROACETABULAR IMPINGEMENT – ETIOLOGY, DIAGNOSTICS, TREATMENT. REVIEW OF THE LITERATURE

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A few words about the author(s):

Students of the Faculty od Medicine at the University of Opole.

Abstract:

Femoroacetabular impingement (FAI) was first defined in 2003 by Reinhold Ganz et al., being an interest to orthopedists, radiologists and physiotherapists ever since. The pathomechanism in FAI is bone deformation of the head-neck area of the femur in the cam type, and the anterosuperior acetabular rim in the pincer type. This condition results in abnormal contact of the proximal end of the femur with the acetabular rim leading to damage of the joint surface. This causes pain and hip dysfunction in young adults and is considered to be one of the major causes of osteoarthritis of the hip later in life.

A number of available diagnostic tools make it possible to diagnose FAI in the early stages, allowing implementation of treatment, enabling a chance to eliminate pain and inhibit the progressive degenerative process of the joint. Non-surgical treatment includes, above all, avoidance of extreme movements of the hip joint, combined with physiotherapy and use of NSAIDs. For patients planning to return to physical activity, a more suitable option is surgical treatment, including osteochondroplasty of the hip with or without joint dislocation and, in selected cases, hip arthroscopy as a minimally invasive alternative. These methods, combined with targeted physiotherapy, allow satisfactory treatment of the above ailments.

Keywords:

femoroacetabular impingement, pincer type, cam type, Surgical hip dislocation, Hip arthroscopy

THE ROLE OF AKKERMANSIA MUCINIPHILA IN THE DEVELOPMENT OF OBESITY

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A few words about the author(s):

Healthcare students. We love broadening our knowledge and gaining new experiences, especially in good company. And that is why we are here!

Abstract:

Akkermansia muciniphila is a bacterial strain isolated in 2004. The mucosa of the large intestine is its habitat. It colonizes it at an early stage of human life. Numerous studies conducted on this microorganism suggest that a decrease of level or absence of the bacteria contributes to the development of various diseases, such as for expample obesity and diabetes. For a long time the development of a probiotic containing Akkermansia muciniphila has been in progress, and it was only in recent years it was possible to produce such a capsule - in pasteurized form, or postbiotic. It is currently available on the market.

Keywords:

Akkermansia muciniphila, postbiotic, obesity

LOW-FODMAP DIET IN IRRITABLE BOWEL SYNDROME (IBS)

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Abstract:

Irritable bowel syndrome (IBS) is a chronic intestinal disease. IBS is one of the functional disorders, which means its cause is not known, and there are no significant organic or biochemical abnormalities on examination. It manifests as abdominal pain and abnormal bowel movements. The treatment includes various groups of medications, such as amitriptyline, drotaverin, macrogol, rifaximin, but also treatment includes psychotherapy and an appropriate diet. One of the recommended diets is low-FODMAP. Studies confirm its positive effects on the severity of symptoms and functioning of patients with IBS.

Keywords:

low-FODMAP diet, IBS, irritable bowel syndrome

HYPOPLASTIC LEFT HEART SYNDROME – ETIOLOGY AND TREATMENT

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A few words about the author(s):

Michał Sikorski, Michał Pelczarski, Jakub Sadowski – 3^{rd} year students of the Faculty of Medicine at the University of Opole.

Abstract:

Hipoplastic left heart syndrome (HLHS) is one of the most severe form of congenital heart defect where the left-sided structures of the heart are underdeveloped leading to circulatory insufficiency. It was first defined in 1958 by Nadas and Fontan who referred to it as combined aortic and mitral atresia. The first successful intervention was performed by Norwood in 1983. Since then, significant progress has been made in surgical treatment.

Nowadays, thanks to advances in early diagnostic management, prenatal interventions, innovative diagnostic methods and constantly modified surgical techniques, it is possible to choose the appropriate treatment for patients with HLHS. Currently, treatment is carried out in 3 stages. The first is the Bridge to Norwood performed shortly after birth, the next stage is the Glenn or Hemi-Fontan operation and the last is the Fontan operation. The first and third stages can be performed by hybrid or interventional methods, and only the second stage of treatment must be performed surgically.

Keywords:

hypoplastic left heart syndrome, HLHS, Single ventricle

PSYCHOBIOTICS AS THE POTENTIAL THERAPEUTIC OPTION IN DEPRESSION

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A few words about the author(s):

Medical students at the Medical University of Lublin. We love broadening our knowledge and gaining new experiences, especially in good company. And that's why we are here!

Abstract:

INTRODUCTION: Depression currently affects almost 4% of the world's population and WHO forecasts of further increases in incidence are alarming. The disease interferes with daily functioning and also can lead to suicide, and current treatment is still imperfect. One of the exploring approaches is psychobiotics use. The aim of the study was to review the literature and present the potential role of psychobiotics as one of the therapeutic options in this disease.

METHODS: Review of articles published on PubMed in the last 5 years.

RESULTS: Probiotics can affect the intestinal microbiota beneficially. The available reports indicate the favorable influence of psychobiotics used as an adjuvant treatment of depression, as well as in monotherapy on mood and clinical improvement of patients. In addition, supplementation of these substances was not associated with side effects and they were well tolerated by people.

CONCLUSIONS: Further research is needed in this area, including the promising use of psychobiotics for modifying gut microbiota and as a consequence to treat depression.

Keywords:

probiotics, gut microbiota, depression, psychobiotics

MIGRATION AS THE POTENTIAL RISK FACTOR OF THE SPREAD OF TUBERCULOSIS IN THE FACE OF WAR

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A few words about the author(s):

Medical students at the Medical University of Lublin. We love broadening our knowledge and gaining new experiences, especially in good company. And that's why we are here!

Abstract:

INTRODUCTION: Tuberculosis (TB), caused by bacteria from the Mycobacterium tuberculosis group, is a disease known since antiquity, but still 10 million people worldwide suffer from it every year. Ukraine is at the forefront of one of the largest outbreaks of this disease in Europe, including multidrug resistant tuberculosis. Due to the ongoing armed conflict in this area, there is a significant number of migrants from Ukraine to other European countries. The aim of the study was to review the literature and reports and present the effects of migration as a result of war on the spread of tuberculosis.

METHODS: Review of articles published on PubMed, WHO reports and the latest epidemiological data on the incidence of tuberculosis.

RESULTS: Migrants are a group at risk of contracting TB due to migration stress, inadequate nutrition and the presence of comorbidities. Most refugees from Ukraine came to Poland, Germany and the Czech Republic, and the epidemiological data collected from this countries indicate an increase in the incidence of tuberculosis among foreigners, including those born in Ukraine after the outbreak of the war, compared to the period before the war.

CONCLUSIONS: Specialists should increase their vigilance towards people at risk of contracting tuberculosis in this special situation. Additionaly, further research and action are needed, which requires multi-sectoral cooperation to monitor in detail and prevent the dramatic consequences of the spread of TB.

Keywords:

tuberculosis, tuberculosis epidemiology, war in Ukraine, migration, refugees

ESSENTIALS OF DERMATOSCOPY IN EVERY DOCTOR'S PRACTICE. A THREE-POINT CHECKLIST

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A few words about the author(s):

Our dedication to medicine and healthcare is centered on the holistic well-being of every patient. We share the goal of making a positive contribution to medical practice.

Abstract:

The presentation titled "Essentials of Dermatoscopy in Every Doctor's Practice. A Three-Point Checklist." discusses the mentioned method, its effectiveness, and touches upon other methods of dermoscopic diagnosis for pigmentary lesions. The 3-point checklist serves as a straightforward tool for early skin cancer detection, with a focus on melanoma. By fulfilling two out of the three criteria in the checklist, pigmentary skin changes are likely to indicate malignancy. While the checklist offers accessibility to non-experts, its specificity is compared with more advanced pattern analysis techniques. The presentation explores the practicality and sensitivity of the 3-point checklist, while also acknowledging the broader landscape of dermoscopic approaches to pigmented lesion diagnosis.

Keywords:

dermatology, oncology, prevention, dermatoscopy

ABSTRACTS OF **POSTERS**



MEDICAL SCIENCES

THE LEGITIMACY AND SAFETY OF USING A KETOGENIC DIET IN CANCER

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A few words about the author(s):

I am a PhD student at the Doctoral School of the Medical University of Wrocław. I combine academic activities with working with patients in my practice. I also share my knowledge and recipes on social media: @dobrowolska.dietetyk.

Abstract:

Death from cancer and cardiovascular disease is diagnosed in almost 70% of people who die in Poland. Based on epidemiological data published by the by the WHO and its Agenda, the IARC and UICC, it appears that cancer will be the most common cause of death for people worldwide within 10-20 years. Due to the ineffectiveness of conventional therapies for many patients, unconventional treatments, including diets, are becoming increasingly popular. A review of the scientific literature on the validity of the ketogenic diet in cancer was presented. The authors of the studies noted the regression of cancer cells following a low-carbohydrate ketogenic diet in patients whom conventional treatments, is particularly therapeutic among patients with nervous system tumours, especially multiform glioma. Further studies are needed on the usefulness of the ketogenic diet for oncology patients, but the scientific data collected so far are promising.

Keywords:

cancer, alternative diets, ketogenic diet, alternative treatment



CANCER STEM CELLS

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A few words about the author(s):

My name is Justyna. I am a student of medical biotechnology. My main interests are microbiology and oncology related topics. Participation in scientific conferences gives me the opportunity to explore my knowledge in these areas.

Abstract:

For many years, research has been conducted with the goal of finding an effective anti-cancer therapy. A breakthrough in this research was the discovery of cancer stem cells (CSCs). These are cells that are responsible for the sustained and uncontrolled growth of tumors and play a key role in cancer metastasis and recurrence. These cells are a highly dynamic population, in constant contact with the surrounding tumor microenvironment. Their origin is not fully known. Cancer stem cells are slow-dividing cells and highly adaptable. Currently known anticancer therapies primarily target rapidly proliferating cells, which enables CSCs to evade the negative effects of chemotherapeutics. In addition, CSCs have many defense mechanisms that allow them to hide from the effects of administered drugs. New research, learning about cancer stem cells, and searching for markers for these cells, offers the possibility of improving anti-cancer therapies, so that cancer treatment will become more and more effective.

Keywords:

cancer stem cells, cancer therapy, cancer

THE ROLE OF THE HUMAN GUT MICROBIOME AND ITS IMPACT ON THE NERVOUS SYSTEM

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A few words about the author(s):

Student of medical biotechnology at the Maria Curie-Skłodowska University in Lublin.

Abstract:

The total number of micro-organisms inhabiting the human gastrointestinal tract is called the gut microbiome. It consists mainly of bacteria, fungi, protozoa and viruses. The human gut microbiome is dynamic and changes during the life of the host, and its composition can be regulated by diet or medication, among other factors. The microorganisms inhabiting the human gastrointestinal tract gain easy access to nutrients from the food consumed by humans. Humans also benefit from the presence of microorganisms in the digestive tract. The gut microbiome is helpful in digestive processes and also enhances the body's defence responses and forms a protective barrier against pathogens with an affinity for the digestive system. The gut microbiome can also regulate nervous system function. The link between the functioning of the nervous system and the state of the gut microbiome has been termed the brain-gut axis. This bidirectional communication pathway between the brain and the gastrointestinal tract is extremely important for maintaining the body's homeostasis. A weakened mental state or prolonged stress can affect gastrointestinal function, while changes in the composition of the gut microbiome result in a deterioration of a person's mental state, cognitive function and emotional state. Therefore, a balance in the composition of the gut microbiome ensures homeostasis and proper functioning of the body.

Keywords:

gut microbiome, microorganisms, brain-gut axis

THE AMBIVALENT ROLE OF MINI – III RNASE – RNA BINDING AND CLEAVAGE

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A few words about the author(s):

4th year medicine student at the Faculty of Medicine of the Cardinal Stefan Wyszynski in Warsaw, interested in immuno–onco–hematology both from the clinical and research side (focusing on development in neuro–oncology).

Abstract:

Mini – III RNAse (mR3) is a protein and enzyme belonging to the endonucleases with the ability to bind and cut double – stranded RNA (dsRNA). It comes from Bacillus subtilis. In the absence of mR3 activity (due to the absence of the α 5 β - α 6 loop in the chemical structure), the enzyme cannot cleave RNA, but the binding capacity is preserved.

The cleavage of endoribonucleolytic bonds can affect gene expression. Studies also indicate the involvement of Mini - III in the regulation of introns and non-coding RNA. It also catalyzes the maturation of ribosomal RNA.

Thanks to the discovery of this type of enzyme and its properties, it becomes possible to study RNA molecules in a similar way to DNA. This translates into the effectiveness and quality of research. The use of Mini - III RNAse in basic research may subsequently influence the development of clinical medicine.

Keywords:

Mini – III RNAse, mR3, dsRNA

ESTRIOL AS A POTENTIAL WAY OF NEUROPROTECTION IN MULTIPLE SCLEROSIS

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Abstract:

Multiple sclerosis is a chronic demyelinating neurological disease that usually affects people between the ages of 20 and 40. It is still a challenge for modern medicine. Recent studies indicate the potential use of estriol – the main estrogen during pregnancy. It has long been noticed that the symptoms of autoimmune diseases in women are usually relieved during pregnancy. Estriol has immunomodulating properties, among others. By reducing pro-inflammatory cytokines. Attempts are made to use it in multiple sclerosis therapies.

Research results indicate a great potential of such an approach. MacKenzie-Graham et al. Conducted a phase 2 study on a group of patients. One group of patients received estriol, the other a placebo. Neuroprotection was studied by voxel-based morphometry. The focus was on one of the symptoms of multiple sclerosis – progressive atrophy of the gray matter. Patients receiving estriol had less progression of gray matter atrophy and patients showed improvement in cognitive function.

The use of immunomodulatory and neuroprotective potential of estriol seems to be promising in the treatment of multiple sclerosis.

Keywords:

estriol, multiple sclerosis, neuroprotective

FIXED-DOSE COMBINATIONS DRUGS WITH NSAIDS AND SPASMOLYTICS

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Magdalena Janczura is a PhD student at the Department of Pharmacognosy and Biomaterials of the Poznan University of Medical Sciences. She has many years of experience in the pharmaceutical industry as a technologist and a qualified person.

Abstract:

The pharmacotherapy of pain is often based on the need for polytherapy. There are many advantages of combined pain pharmacotherapy, including, above all, the possibility of obtaining an additive or synergistic effect. On the other hand, combinations allow one to increase the therapeutic effect while reducing the risk of drug-related side effects and using lower doses of individual drugs. The available scientific studies confirm the benefits of the combined administration of antispasmodic drugs and non-steroidal anti-inflammatory agents (NSAIDs) with analgesics and in the treatment of pain accompanying smooth muscle spasms of the urogenital system (renal colic, dysmenorrhea), gastrointestinal tract (intestinal colic, irritable bowel syndrome) and pathways cholecystitis (cholecystitis, cholangitis). The proposed fixed-dose combinations should always be based on valid therapeutic principles and consider the combined safety profile of all active substances included in the medicinal product. This review aims to identify which combinations are still under development.

Keywords:

fixed-dose combination drug (FDC), polytherapy, pain pharmacotherapy, synergistic effect, spasmolytics

LUMATEPERONE IN THE TREATMENT OF PSYCHIATRIC DISORDERS – A REVIEW OF THE LITERATURE

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A few words about the author(s):

Ada Kaczmarek – 5th year medical student of the Faculty of Medicine in Poznan and the Student Scientific Association of Adult Psychiatry chairperson.

Abstract:

OBJECTIVES: The treatment of psychiatric disorders, in- cluding schizophrenia and bipolar disorder, is constantly changing. There are new medications that reduce treat- ment-related side effects and present new mechanisms of action. This article aims to describe characteristics, mechanism of action, and medical use, but also the safety of lumateperone – a drug classified as antipsychotic medication, which was approved by the FDA (Food and Drug Administration) for the treatment of patients with schizophrenia and depressive episodes associated with bipolar disorder in 2019.

LITERATURE REVIEW: The review includes up-to-date publications concerning the efficacy of lumateperone in the treatment of psychiatric disorders – schizophrenia, bipolar disorder, but also insomnia, and dementia. The pharmacokinetic and pharmacodynamic characteristics of lumateperone and its precise mechanism of action were presented. The adverse reactions and possible drug interactions were likewise discussed.

CONCLUSIONS: Lumateperone is a medication with an interesting mechanism of action, which is unique com- pared to other antipsychotic drugs. The analysis of clin- ical trials suggests that lumateperone is an effective and safe medication for the treatment of schizophrenia, as well as bipolar affective disorder. There are high hopes for the use of lumateperone in the treatment of insomnia and dementia.

Keywords:

bipolar disorder, dementia, schizophrenia, insomnia, lumateperon

PHOTODYNAMIC THERAPY AGAINST NON-CANDIDA ALBICANS CANDIDA STRAINS

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A few words about the author(s):

I belong to Students Scientific Society of Microbiologists association. In our research we are interested in new perspectives on antibacterial properties of different peptides and photodynamic therapy.

Abstract:

Photodynamic therapy (PDT) is widely used in medicine. It can be an alternative to traditional therapies in the treatment of certain infections. This is particularly important in the era of increasing drug resistance of microorganisms. Its effectiveness depends, inter alia, on the type of laser or photosensitizer used. The aim of the study was to evaluate the effectiveness of PDT against NCAC strains. The study was conducted on reference strains of fungi: Candida tropicalis ATCC 750, Candida glabrata ATCC 90030 and Candida parapsilosis ATCC 90018. Methylene blue was chosen for the study. The optimal time of absorption of the photosensitizer by fungal cells was determined by real-time microscopic observation (Nikon Eclipse 80i light microscope). Photographic documentation was made for 10 minutes, every 30 seconds. The effectiveness of phototherapy in relation to planktonic forms of fungi was determined by the quantitative method (determination in CFU/mL units) after 1, 3, 5, 7 and 10 min. absorption of the dye. The study used the MMO laser Laser DUO (650 nm; 400 mW; 30 sec). The optimal absorption time of the photosensitizer was from 6 to 8 minutes. Reductions in CFU/mL values were demonstrated in all analyzed reference strains. This reduction was in the ranges 46%-77%, 6%-32%, and 53%-57% for C. tropicalis, C. glabrata, and C. parapsilosis, respectively. Differences were demonstrated in the rate of dye absorption and reduction in CFU/mL values depending on the fungal species.

Keywords:

photodynamic therapy, methylene blue, laser, NCAC

MYASTHENIA GRAVIS – NEW TREATMENT OPPORTUNITIES

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A few words about the author(s):

My name is Katarzyna Koszarska, I am 22 years old, I am a 4th year medical student at the University of Rzeszow. My scientific interests revolve around neurology, neurosurgery and cardiology, and outside of medicine I enjoy cooking.

Abstract:

Myasthenia gravis (MG) is an autoimmune disease involving the neuromuscular junction. IgG autoantibodies are a primary factor in the pathogenesis of MG. Muscle fatigue is characteristic, and depending on the muscle group involved, can cause a variety of symptoms - impaired vision, speech, swallowing and even breathing. About 20% of patients have spontaneous regression, but it is impossible to determine the factors affecting this, so each patient receives treatment. Until recently, pharmacological therapeutic options were limited to symptomatic treatment with acetylcholinesterase inhibitors and, in more severe cases, immunomodulatory drugs. A particular type of treatment is surgical removal of the thymus gland or emergency plasmapheresis and intravenous immunoglobulin (IVIG). Over the past decade, monoclonal antibodies such as rituximab, eculizumab or rawalizumab have also found application in the treatment of MG. The latest revolution, however, is a biological therapy in the form of efgartigimod alfa, which is a fragment of the IgG1 antibody. It is involved in the process of antibody recirculation in vascular endothelial cells because, with the help of the neonatal receptor as a ligand, it causes lysosomal degradation of IgG-class antibodies, thus nullifying the pathogenic nature of autoantibodies. This is a very promising drug, which is still currently undergoing clinical trials for use in other diseases involving IgG autoantibodies as well.

Keywords:

myasthenia gravis, efgartigimod alfa

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MOLECULAR DETERMINANTS OF CANCER CELL MIGRATION USING GLIOBLASTOMA MULTIFORME AS AN EXAMPLE

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A few words about the author(s):

Medical biotechnology student and vice-president of the Faculty Council of the Student Government – Faculty of Biology and Biotechnology UMCS in 2021-2023, interested in cancer biology and molecular mechanisms of metastasis and anti-cancer therapies.

Abstract:

Neoplastic diseases (including glioblastoma multiforme) are one of the most serious illnesses affecting humankind. Tumours are caused by the process of carcinogenesis, which occurs in normal cells as a result of carcinogens from the environment, but also through spontaneous genetic mutations. A very important factor that determines the malignancy of tumours is their high migratory potential. Despite treatment methods such as chemotherapy or radiotherapy, these therapies do not have a satisfactory effect, so targeted therapies tailored directly to the patient are increasingly being used.

Glioblastoma multiforme forms secondary tumour foci at a very rapid rate by migrating via the respective structures. These are filopodia and lamellipodia, which are formed by rapid rearrangements of the cell cytoskeleton. The expression of the relevant genes by the tumour cells and the tumour microenvironment, enable cell migration due to their detachment from the primary site and the epithelial-mesenchymal transition. These are key processes during metastasis. Equally important factors in migration are hypoxic tumour regions and glutamate. This hypoxia induces the formation of migration-stimulating factors, and glutamic acid facilitates cytoskeletal rearrangements by inducing the action of local kinases.

Keywords:

glioblastoma multiforme, epithelial-mesenchymal transition, migration-stimulating factors, molecular determinants

ACTIVITY OF B3 LIPOPEPTIDE AGAINST PSEUDOMONAS AERUGINOSA

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A few words about the author(s):

We are a collective of researchers from Wrocław Medical University and Gdańsk Medical University. In our research we are interested in new perspectives on antibacterial properties of different peptides.

Abstract:

Non-fermenting bacilli are widespread in the hospital environment. They can be the etiological factor of respiratory diseases, systemic infections, infections of wounds or of the urinary tract. The multidrug resistance of these microorganisms significantly impedes the treatment of infections and prompts the search for alternative options.

The aim of the study was to evaluate the activity of the B3 peptide against planktonic and biofilm forms of P. aeruginosa. The research resources consisted of clinical strains (11) and reference strain P. aeruginosa ATCC 27853. The clinical strains were isolated from patients hospitalized in the ICU.

The activity of the B3 lipopeptide was evaluated by determining the values of minimum inhibitory concentration, minimum bactericidal concentration, minimum biofilm inhibitory concentration and minimum biofilm eradication concentration. The studies were performed using 96-well polystyrene plates.

The minimum inhibitory concentration and minimum bactericidal concentration values of the peptide against the analyzed strains were in the range 4-16 μ g/mL and 8-128 μ g/mL, respectively. MBIC and MBEC values were 8-16 μ g/mL and 16-256 μ g/mL.

The lowest peptide concentration that inhibits the adhesion of P. aeruginosa and the formation of biofilm was equal to or 2 times higher than the minimum inhibitory concentration. In the case of the minimum bactericidal concentration, the increase was 16-64 fold. MBIC values were 8-32 times lower than MBEC.

Keywords:

non-fermenting bacilli, MIC, antimicrobial peptides, antimicrobial activity

APOPTOSIS AND AUTOPHAGY AS TARGETS OF ANTICANCER THERAPY

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A few words about the author(s):

Karolina Surowiec 4th year biotechnology student at Maria Curie-Sklodowska University in Lublin.

Abstract:

Apoptosis and autophagy are fundamental cellular mechanisms with complex roles in cancer pathogenesis and therapy. This poster presents a comprehensive analysis of their importance as therapeutic targets in anticancer strategies.

Apoptosis is a process of programmed cell death, and plays a key role in maintaining tissue homeostasis by eliminating damaged cells. In the context of cancer, avoidance of apoptosis drives uncontrolled cell growth and resistance to therapies. Autophagy, whose role is to degrade redundant or damaged cellular elements, is crucial in the process of tumorigenesis. By analyzing the interplay between apoptosis and autophagy, this poster reveals their dynamic contribution to cancerogenesis. Importantly, the poster also explores the growing role of apoptosis and autophagy in cancer immunotherapy. Modulating these processes can increase the immunogenicity of cancer cells, facilitating their recognition by the immune system and improving therapy outcomes.

In conclusion, this poster highlights the crucial role of apoptosis and autophagy in cancer biology and their promising implications for innovative anticancer therapies. Understanding the molecular mechanisms driving these processes is key to advancing precision medicine and improving treatment outcomes.

Keywords:

apoptosis, autophagy, cancer therapy, immunotherapy, carcinogenesis

POTENTIAL POSSIBILITIES AND DANGERS OF CHAT GPT IN MEDICINE – A REVIEW

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A few words about the author(s):

I am a 3rd year medical student in Wrocław.

Abstract:

Chat GPT (Chat Generative Pre-trained Transformer) is a language model driven by Artifficial Intelligence that is capable of generating a human-like text and providing a detailed and precise response to a question or problem. This makes it a very powerful tool that could bring plenty of opportunities for various aspects of science.

Its potential applications in the medical field range from supporting children's and adolescents' mental health in low income countries to assisting doctors with making proper diagnoses. Moreover it could provide the healthcare workers with newest updates and developments in their medical field, create virtual assistents for patients to help manage their health and many more.

On the contrary we are not to ignore the potential limitations and ethical dilemmas that come with the use of AI such us determining who is to blame when AI makes a mistake. Is it AI or is it the physician? Additionally Chat GPT is incapable of differentiating between reliable and unreliable sources which poses a huge problem in terms of patients' wellbeing.

Keywords:

Chat GPT, AI, Medicine

CONNECTION BETWEEN CHILD OBESITY AND SCREEN TIME – A REVIEW

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A few words about the author(s):

I am a third year Medical student in Wrocław.

Abstract:

Childhood obesity is considered one of the most alarming public health issues. It is estimated that there are around 42 million overweight and obese children worldwide. In the US the amount of obese children has doubled in the past 30 years and the amount of obese adolescents has quadrupled. According to WHO reports 32% of Polish children between the Ages of 7 and 9 are overweight/obese.

It is particularly concerning because childhood obesity is often associated with many other issues such as depression, poor school performance, social problems, substance misuse and increased suicide risk. Moreover childhood obesity often leads to obesity in adulthood which is correlated with cardiovascular problems and premature mortality.

Research shows that there is a connection between the amount of screen time and overweight/ obesity in children. Recent studies proved that the total time of sedentary behaviours among 10- to 12-year-old European children was 8h per day while screen time was reported to be 2h or longer. Increased screen time is not only related to decreased physical activity but it also disrupts sleep patterns which leads to greater desire to eat at night as well as snack during the day.

Keywords:

children obesity, screen time

ABSTRACTS OF PRESENTATIONS



TECHNICAL AND NATURAL SCIENCES

THE NEURAL BASIS OF FREE WILL

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Double major student at Jagiellonian University in Kraków. Pursuing a degree in neurobiology and psychology.

Abstract:

The topic of free will has been debated for centuries, and recent studies on the neurobiology of free will have shed new light on this complex issue. The research on this topic suggests that our decisions are often made by biological processes before conscious intention arises. For instance, according to the results of various experiments, the intention to act occurs after the actual readiness to act. This finding implies that our conscious awareness of making a decision is retrospective and that our brains inform us of our choices after they are made. Neuroscience research has significant implications for our beliefs about free will and our social behaviors. For example, studies have shown that our beliefs, or lack thereof, in free will can influence our social behaviors, such as how we judge the actions of others. Additionally, neuroscience research has shown that our decisions are not entirely within our conscious control, which raises questions about the nature of accountability and responsibility. Despite the fascinating insights provided by neuroscience research, there are still limitations to consider. The experiments regarding free will are often conducted in artificial laboratory conditions that do not reflect real-world decision-making processes. Moreover, the interpretation of results can be challenging, as alternative explanations may exist for the observed findings.

Keywords:

neurobiology, volition, consciousness

STENT IMPLANTATION AS A TREATMENT FOR URETHRAL STRICTURE IN COMPANION ANIMALS

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A few words about the author(s):

My research interests are in histology, veterinary medicine and biomedicine.

Abstract:

The use of stents to widen the lumen of a narrowed tubular organ is common in human medicine. This method is characterised by low cost, low invasiveness of treatment, rapid patient recovery and ease of implementation. Fewer side effects are also observed. The purpose of this presentation is to discuss stents and their usefulness in the treatment of urethral strictures in companion animals. Veterinarians are increasingly using stents to treat urethral strictures in dogs, cats and horses. However, animals are mainly implanted with metal stents, which are generally abandoned in human medicine due to the occurrence of serious side effects. Therefore, more research using bioresorbable stents should be conducted. A review of the literature indicates that stent implantation is often performed as a form of palliative therapy. As a result, the survival rate of veterinary patients is generally lower than in humans. Currently, it is more of a 'medical novelty' and a type of innovation aimed at wealthy pet owners.

Keywords:

urethral stent, urethral stricture, veterinary medicine, companion animals

MULTI-MATERIAL HAND PROSTHESIS PRINTING IN FFF TECHNOLOGY

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A few words about the author(s):

The authors are students and employees of the Institute of Materials Science and Engineering at the Lodz University of Technology. They specialize in 3D printing, especially in FFF technology.

Abstract:

FFF technology has found its application in prosthetics. However, the prosthesis must have a number of different properties. It should be durable while remaining flexible. This is especially important in the case of a prosthetic hand, where the flexible material additionally strengthens the grip. However, multi-material printing does not provide sufficient adhesion between materials. The aim of our research was to improve the adhesion between materials by using mechanical connections.

To select a pair of materials that retains the best adhesion as a result of printing, a three-point bending test was performed. Rigid-elastic combinations were tested for PLA, ABS, TPU85, TPU98. The best results were obtained with the PLA-TPU85 connection. It transferred the greatest forces without destroying the sample.

In order to increase the adhesion, a sandwich structure was developed, in which layers were arranged at an angle of 90° . Designed structure was put into the samples prepared for shear testing. During the test, two types of combined samples were tested, with and without the developed structure. The tests showed that the applied structure significantly increased the adhesion between the two materials, preventing them from unsticking at the interface between the materials, which occurred in the samples without the structure.

The tests confirmed the effectiveness of the designed structure, which was then used in the multi-material printout of the hand prosthesis.

Keywords:

FFF, multi-material, PLA, TPU, prosthesis

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DEVELOPMENT OF POPULATION PATTERNS IN ORDER TO CREATE A SERIES TYPES OF ORTHOSES MADE BY 3D PRINTING

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A few words about the author(s):

A PhD student at AGH, pursuing an industry PhD where he conducts R&D projects related to the development of medical device solutions for the forearm injuries treatment. His scientific work focuses on issues related to the 3D printing application.

Abstract:

The currently used methods of supplying patients with forearm injuries is the use of a classic, white plaster cast. Work is underway on the use of 3D printing technology for the production of forearm orthoses. Due to the size of the population, standards should be introduced to unify the sizes of forearm orthoses based on application of 3D printing. This case study presents the implementation of measurement methods and 3D scanning technology to create a 3D model of a forearm brace. The presented concept is based on the performance of population research, the development of a series of types of forearm orthosis sizes as well as the preparation of a 3D model of the forearm to design a 3D printed orthosis in a specific size. It is expected that the developed method will become a solution in the production of standard sizes of orthoses with the help of 3D scanning technology using for this purpose an industrial 3D printing system in the field of production of orthopedic supplies intended for the treatment of forearm injuries.

Keywords:

3D printing, 3D scanning, CAD, 3D model, forearm orthosis



PERSISTENT DECIDUOUS TEETH IN DOGS

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A few words about the author(s):

I am a fourth year student of veterinary medicine. At this stage of my studies, I still have many interests. I am still looking for my future specialization, but I am currently interested in diseases of dogs and horses.

Abstract:

The dog's dentition is described as two-generation, diphyodont. The first premolar and molars are not replaceable and belong to unigeneration, monophyodont dentition. As a result of the mechanical pressure of the developing teeth on the roots of the deciduous teeth, the tooth replacement process is initiated. This process is called vertical exchange and is found in most mammals. Small breeds of dogs, such as Pinscher, Shihtzu, Chihuahua or brachycephalic dogs, tend to have abnormal teeth replacement, in which the deciduous tooth does not fall out. The presence of a persistent milk tooth and its permanent successor is associated with abnormalities in the oral cavity, such as malocclusion, chronic inflammation or tissue damage.

Keywords:

dog's dentition, deciduous teeth

STREPTOCOCCUS EQUI SUBSP. EQUI INFECTION IN HORSES

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I am a fourth year student of veterinary medicine. At this stage of my studies, I still have many interests. I am still looking for my future specialization, but I am currently interested in diseases of dogs and horses.

Abstract:

Infection caused by gram positive streptococci - Streptococcus equi subsp. equi, colloquially known as "strangles", is a highly contagious disease of equines. It is one of the most commonly diagnosed horse diseases in the world. The course of the disease depends on the virulence of the pathogen, the immunity of the animal and its age. The characteristic symptoms are lymphodenopathy, cough and breathing problems. Due to its easy spread, this disease is a serious problem in large studs, during auctions and competitions, which is related to the movement of animals. In order to prevent the disease and reduce its negative consequences, it is worth educating yourself and employees dealing with horses. Proper hygiene, quarantine and prompt response to symptoms can reduce the morbidity and adverse effects of the disease.

Keywords:

strangles, Streptococcus equi



DOG NUTRITION

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I am a fourth year student of veterinary medicine. At this stage of my studies, I still have many interests. I am still looking for my future specialization, but I am currently interested in diseases of dogs and horses.

Abstract:

Dogs are relative carnivores, which means that their diet can include vegetables and fruits in addition to meat. A dog's diet is affected by factors such as breed, size, age, activity, pregnancy and diseases. Dogs, like humans, perceive taste with the help of taste buds, but this sense is not as sensitized as in humans. Meals don't really have to be so varied in taste. A properly selected diet with the correct proportions of meat, vegetables and cereals increases the chances of the animal for a long and healthy life. A dog's diet should definitely not resemble a human diet. In the average kitchen there are many products that can be toxic to dogs, cause poisoning, manifested by diarrhea and vomiting. In the worst cases, the animal may die. In addition, a very common problem resulting from the lack of education and ignorance of the owners is the obesity of their animals.

Keywords:

dog's diet, relative carnivore

THE USE OF THE UNIAXIAL TENSILE TEST IN THE TESTS OF STRESSES AND DEFORMATIONS OF JOINTS MADE ON ALUMINUM ALLOYS AND MAGNESIUM ALLOY – ANALYSIS OF USE IN THE AVIATION INDUSTRY

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Aviation and astronautics engineer. A graduate of the Faculty of Mechanical Engineering and Aviation at the Rzeszow University of Technology.

Abstract:

The presentation will present research on the static tensile test of joints most commonly used in aviation technology. They were prepared by means of forming - riveting, gluing, TIG welding, FSW method and clinching. Samples of metals frequently used in aviation engineering - aluminum 2014, aluminum alloy 2024, magnesium alloy AZ-31, aluminum alloy 7475, brass rivet and aluminum rivet were tested, and a two-component epoxy adhesive was prepared. The FSW joint and clinching was a butt joint, and the glued joint was made in an overlapping manner. The made joints were tested successively on the machine in a uniaxial tensile test. The test was carried out on a testing machine - a Zwick-Roell Z100 ripper with a nominal force of 100 kN and with the use of an extensometer installed in the machine, with which the elongation of each joint was tested. The diagrams of the contractual stress σ from the relative deformation ε and the dependence of the standard force F as a function of the standard path ΔL were analyzed successively - presented for the clinch joints of alloy 2014 and alloy 7475; riveted joints with brass, aluminum and torn rivets. Of all the tested samples, as expected, the highest contractual stress was obtained for welded joints.

Keywords:

static tensile test, aluminum alloy, aerospace industry
THE APPLICATION OF BIOTECHNOLOGY IN POTENTIAL SPACE EXPLORATION

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A few words about the author(s):

I am a 5th year student of biotechnology at Maria Curie-Skłodowska University in Lublin. I am an active member of science clubs and am interested in biotechnology in general, especially in the field of molecular biology and microbiology.

Abstract:

With current technological advances, space exploration is becoming an increasingly viable goal. Currently, one of the biggest scientific projects in this field seems to be the planned exploration of Mars. Apart from the fact that this is a very serious technological challenge, due to the limited cargo space of space stations, scientists will also have to develop methods to sustain human life on another planet without the possibility of supplying all resources from Earth. To help with this comes biotechnology, the development of which seems essential to achieving the plan put forward by scientists. The main goals of biotechnological science therefore seem to be to obtain transgenic organisms that would make it possible to provide food for the crew and to produce medicines or necessary biomaterials. Another important issue is the development of efficient waste management systems using carefully selected micro-organisms and plants. Consequently, the development of biotechnology, which includes, among others, agrobiotechnology, biocatalysis and genetic engineering processes, seems to be necessary for space exploration both in terms of crew life support and bioproduction providing food and essential raw materials for survival. The following paper aims to provide a literature review on the potential use and application of biotechnology in space exploration.

Keywords:

biotechnology, space exploration, bioengineering



CYBERSECURITY

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A few words about the author(s):

I am a student of the 1st year of Master's studies in the field of Internal Security at the University of Warmia and Mazury in Olsztyn. I am interested in common concepts with cybersecurity.

Abstract:

The presentation is included and discussed the concept related to cyber security. Threats that we may encounter when using the Internet and information on how we can comply in this way, using, for example, social networking sites.

Keywords:

cybersecurity, internet, digital service provider

PROTECTION OF POLAND'S SEA AND LAND BORDER

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A few words about the author(s):

I am a student of the 1st year of Master's studies in the field of Internal Security at the University of Warmia and Mazury in Olsztyn. I am interested in common concepts with cybersecurity.

Abstract:

The presentation discusses the borders of the Polish state, shows which services on which part of the territory deal with the protection of the state border. It presents examples of violations of the state's territory, and discusses cooperation with other states related to the protection of the state border.

Keywords:

security, border guards, border protection

ABSTRACTS OF





NUTRIENTS IN OIL CAKES

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A few words about the author(s):

The authors conduct research on, among others, the determination of fatty acids in vegetable oils and various techniques for extracting chemical components, for example supercritical fluid extraction.

Abstract:

Oil cake, which until recently was used mainly for fodder purposes or processed as bio-waste, is now successfully used as a food component. The reason to use oil cake in the food industry is, among others, content of health-promoting substances, such as tocopherols, antioxidant substances, minerals, protein, dietary fiber, as well as a wealth of unsaturated fatty acids. An important factor that encourages the use of oil cakes is also the preferences of consumers, who often choose products of plant origin and look for substitutes for products of animal origin.

Keywords:

oil cake, food, nutrients

DECOMPOSITION OF PCV UNDER THE INFLUENCE OF UV RADIATION IN THE WATER ENVIRONMENT

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A few words about the author(s):

I am chemistry student in University of Warmia and Mazury in Olsztyn. I am interesting environment chemistry, in particular degradation of plastic and formation of microplastic.

Abstract:

The increase in the production of plastic products leads to an increase in plastic waste, which causes more waste to end up at landfill sites. Plastic waste is in areas in landfill a lot of time. Plastic waste resides in areas outside the landfill, which causes environmental pollution. This fact causes the plastic waste to be accumulated and exposed to chemical and physical agents like UV radiation. A considerable amount of plastic waste is degraded, and one effective method is photodegradation - a chemical reaction that takes place under the UV radiation, but the sight shows the media casts doubt on the effectiveness of photodegradation. That makes the question: What modification we can introduce to make photodegradation faster and more effective? This poster shows that the degradation of PVC in the aquatic environment occurs slowly, which does not allow effective and fast removal of plastic waste from the environment.

Keywords:

chemistry, environment, PVC, polyvinyl chloride

WORK RELATED TO THE DEVELOPMENT OF A NEXT-GENERATION POWER BANK

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A few words about the author(s):

An employee of the Krakow R&D Green Cell branch.

Abstract:

The demand for power banks has significantly increased in the past decade with the proliferation of mobile devices such as smartphones, tablets, and laptops. Depending on the customer's requirements and the intended applications for which the devices are intended, power banks vary in terms of capacity, charging standard support, output power, and connectors. This paper presents experimental development work related to designing a portable power bank with high capacity and high power while maintaining small size.

The design process involved identifying user requirements and necessary technical parameters such as capacity, charging current, and build quality. The designed power bank features a capacity of 98Wh and four USB ports with a combined power of 128W. The device underwent a series of experiments to test its performance and efficiency.

The results of the research and development work showed that the proposed solution meets the technical requirements and is capable of providing long-lasting power to electronic devices. The power bank is portable and can be carried on board an airplane, allowing for charging of all USB-compatible devices, including laptops.

Keywords:

power bank, development, quality, battery, Li-ion

INDUCTION OF CALLOGENESIS IN SALIX CINEREA X SALIX VIMINALIS HYBRID USING FLORAL AXIS

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A few words about the author(s):

Student of biotechnology, passionate about botany, molecular biology and plant tissue cultures.

Abstract:

Willows are fast-growing plants, used in biomass production for energy purposes, what influences on reduction of non-renewable energy sources exploatation. In addition, many features related to low requirements and fast growth rate make willows often used in phytoremediation. Moreover, a number of therapeutic compounds have been identified in the tissues of plants of the genus Salix, which determines their use in medicine.

One of the methods for intensive multiplication of plants is tissue culture. Using the increased rate of plant growth in such cultures and the ability to influence specific physiological responses to them, it is possible to quickly clone individuals with desired characteristics. One of the ways of developing progeny plants is intermediate morphogenesis, in which the intermediate stage is callus tissue.

In the presented studies, the effect of the composition of the MS medium, enriched with growth regulators from the group of auxins and cytokinins, and light conditions (darkness and photoperiod) on the induction of callogenesis in a hybrid of two willow species - S. cinerea x S. viminalis, in which inflorescence axes were used as primary explants, was tested. The obtained results may constitute a valuable set of information, constituting a starting point in the process related to intermediate morphogenesis, which has not yet been recorded in species of the Salix genus.

Keywords:

Salix, Willow, tissue culture, micropropagation

ENERGY TECHNOLOGY AS AN IMPORTANT PILLAR OF POLISH DEVELOPMENT: POWER GENERATING AND ENERGY MANAGEMENT

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A few words about the author(s):

I am keen on energetics, electrical engineering and electronics. I constantly deepen my knowledge in these areas.

Abstract:

The point of my occurring is to show the structure and the way energy sector functions in Poland. Generating electricity is based on thermal, wind, solar and water power plants. Nowadays the main source of electricity is the coal. Hard coal-fired power plants generate twice as much energy as those powered by the lignite. Bełchatów Power Plant is the biggest one in Poland. There are a lot of hydro-electric power stations in the country and most of them are characterized by low generation capacity. A lot of this kind of power stations are located by Vistula river, whereas wind power plans are mostly concentrated in the northern part of the country. Solar power engineering is also a big part of polish energetics. National Grid System is responsible for energy transmission, which is based on power lines and electrical stations. The most important matter is to keep the balance between the amount of generated and spent energy. Energetics, with all the variety of its sources, is a very complexed and elaborated system, which plays a crucial role in the functioning of the country.

Keywords:

energetics, National Grid System, renewable energy sources

NATIONAL SCIENTIFIC CONFERENCE "UNDERSTAND THE SCIENCE" VII EDITION SEPTEMBER 16, 2023 What? What? What? What?

POWER OF MACROCYCLE COMPOUNDS: SYNTHESIS AND THEIR PHENOMENAL ROLE IN DRUG DISCOVERY

Maja Łazuchiewicz

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A few words about the author(s):

I completed B.Sc. at the Faculty of Chemistry, Jagiellonian University, focusing on macrocyclic motifs with extended delocalization pathway. My interests concentrate on organic chemistry, particularly aromatic and antiaromatic conjugated molecules.

Abstract:

Macrocycles are chemical compounds with a ring structure consisting of 12 or more atoms. Over the past decade, interest in these unique compounds has grown significantly in the field of medicinal chemistry. Today, there are more than 100 macrocyclic drug and clinical trial candidates on the pharmaceutical market and in drug discovery research programs.

Macrocycle excel among natural counterparts with numerous advantages, such as better control over synthesis, unique physicochemical properties and the ability to bind to molecular targets.

Unfortunately, methods for the rapid and efficient synthesis of macrocycles remain underdeveloped. Fortunately, multicomponent reaction chemistry provides an excellent tool for creating a variety of macrocycles, which enables the generation of complex molecular structures in a convergent and cost-effective manner. Thus, expanding the use of macrocycles could result in a revolution in drug discovery, providing hope for effective therapies for previously difficult-to-treat conditions.

In the discussion, several examples of the design of synthetic macrocycles based on their structure are presented to approach this exciting area of research.

Discovering the potential of macrocyclic drugs is still ahead of us, but new research directions are being set that could contribute to a revolution in the field of pharmacotherapy.

Keywords:

macrocycles, medicinal chemistry, drug discovery, synthesis methods

ROWANBERRY FRUIT NECTARS – RECIPE DEVELOPMENT AND ASSESSMENT OF PHYSICOCHEMICAL PARAMETERS

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A few words about the author(s):

Dr inż. Marta Wilk is an assistant professor at the Faculty of Production Engineering, Wrocław University of Economics. Patrycja Michalik is a student at the Wrocław University of Economics in the field of Management and Production Engineering.

Abstract:

The aim of the study was to select a sweetener for rowanberry nectar and to assess its physicochemical parameters.

The juice was extracted by a fruit juicer and then mixed with boiled water. From the basic nectar, unsweetened, 4 variants were prepared with the addition of: beet sugar, xylitol, erythritol and stevia powder. The prepared nectars were subjected to organoleptic assessment by an evaluation panel. In the finished products determined content of: vitamin C, phenolic compounds, total acidity, total extract, pH and turbidity.

According to the majority of respondents, an appropriate or sufficient level of sweetness was present only in the nectars sweetened with erythritol and stevia. As a result of the organoleptic tests carried out, it can be concluded that it may be acceptable to replace beet sugar with erythritol. The characteristics of the physicochemical properties of rowanberry nectar with the addition of erythritol is as follows: vitamin C 8.65 mg/100cm³, formol number 5.0 cm³/100cm³, total acidity 0.7 g/100cm³, turbidity 629 NTU, total extract 33.2 °Bx, total polyphenols 128.5 mg GAE/1003, pH 3.4.

The conducted studies show that rowan fruit nectar requires sweetening. The addition of sweetener eliminates or reduces the level of perceptible bitterness. The most acceptable carrier of sweet taste in nectars is erythritol. The resulting nectar is characterized by a vitamin C content of 11% RDA for an adult person.

Keywords:

nectars, rowanberry, sweetener

APPLYING ANTIBIOTIC THERAPY TO REDUCE LOSSES OF EUPHYLLIA GLABRESCENS CULTURE IN AQUARIUM TANKS

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A few words about the author(s):

Dorota Protasewicz molecular biologist, conducts research on the breeding of corals in artificial conditions and the effect of stress on the welfare of these animals in breeding or hobby aquariums.

Abstract:

A critical element for the culture of the coral Euphyllia galbrescence is the moment when the divided coral is introduced into a new tank. Taking cuttings causes stress and weakens the coral's body. As a result, it begins to be susceptible to bacterial infections called brown jelly disease (BJD) - caused by a bacterium from the Arcobacter family. In the experiment conducted, new strains of Euphyllia sp. were placed in Crazy Coral's 200 L research tanks, then the corals were subjected to a 3-day antibiotic treatment with ciprofloxacin at a concentration of 100 mg per 100 L of seawater. At the same time, Euphyllia sp. cuttings were cultured in a control tank without antibiotic therapy. After 2 weeks of breeding, it was confirmed that with antibiotic treatment, the mortality rate of offspring did not exceed 4.9% of the tested population. In contrast, in the control tank, coral mortality remained at 10.40%. In the village, the use of sustainable antibiotic therapy can effectively optimize the aquarium breeding of individuals of the genus Euphylia.

Keywords:

corals, tank, breeding, Euphyllia glabrescens, antibiotic

SYNTHESIS OF COPPER(I) NITRIDE USING HEXAMETHYLENETETRAMINE AND OLEYLAMINE

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A few words about the author(s):

The author is a student of Nicolaus Copernicus University.

Abstract:

The aim of the research work was the synthesis of copper(I) nitride by chemical method in solution using amines (hexamethylenetetramine - HMT and oleylamine - OAm) and copper(II) nitrate(V) trihydrate as substrates. In order to confirm the composition in terms of quantity and quality and to determine the features of the product structure, the obtained powders were subjected to the following analyses: IR (infrared spectroscopy), SEM (scanning electron microscopy), XRD (X-ray powder diffraction), SEM-EDX (scanning electron microscopy with an X-ray analyzer) and STEM (scanning and transmission electron microscopy). As a result of the reaction with oleylamine, copper(I) nitride nanocubes with dimensions of approx. 20 nm were obtained.

Keywords:

copper(I) nitride, hexamethylenetetramine, oleylamine, synthesis, chemical method

DEVELOPMENT OF A RECIPE FOR READY-TO-EAT DISHES AS FUNCTIONAL FOOD, DEDICATED TO SELECTED CONSUMER GROUPS, PRESERVED USING AN INNOVATIVE PASCALIZATION METHOD

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A few words about the author(s):

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Abstract:

The subject of the project was to develop ready dishes based on groats, rice, vegetables and herbs dedicated to three consumer group: diabetics, people with Hashimoto's disease and people with reduced immunity.

In the first stage, a specialist in healthy nutrition suggested ingredients appropriate for each group, in correlation with the possibility of their use in the pressure process: groats, rice, vegetables and fruits, legumes, spices and herbs, oils and additives. The ingredients suspended in the water-oil phase, packed in pouch sachets, were subjected to pressure in various ranges at the Institute of High Pressure Physics of the Polish Academy of Sciences. The obtained results made it possible to narrow down the raw material base and determine in detail the suitability of raw materials for work in the project.

The next step was to develop initial recipes for dishes for specific groups of consumers. Prepared on a laboratory scale in variants with and without the use of spices, they were subjected to organoleptic evaluation and submitted for pressure in various ranges as well as storage and microbiological tests. The results allowed for a broader look at the dish and precise selection of taste, texture, shelf life and pressure-resistant packaging.

After unsuccessful attempts to transfer laboratory tests to the production line, a decision was made not to continue the tests and to end the project at the current stage.

Keywords:

ready dishes, high pressure, diabetics, Hashimoto's disease, reduced immunity

PERMANENT TATTOOS & MACROPHAGES – EXPLORING THE INTERCONNECTION

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A few words about the author(s):

Bioinformatics Student with a genuine love for exploring the science behind everyday phenomena.

Abstract:

Why are the permanent tattoos permanent? How is it possible that they remain visible, even though the cells in our skin are constantly replaced by the new ones? A lot of people surely ask themselves those questions at least once in their lifetime. Sadly, not so many of them take time to actually dive into the topic and do the research. While laziness might explain this in some cases, many individuals could also be afraid that comprehending an explanation for this phenomenon would require advanced biological or biochemical knowledge. The author aims to explain the general science behind permanent tattoos and to show that grasping the concept might not be as challenging as one would think, even with only basic biological knowledge.

The poster provides an essential overview of the skin's structure necessary for understanding the concept and offers a description of our body's immunological response to the tattooing process. It also emphasizes the vital role that macrophages play in sustaining the visibility of permanent tattoos, based on current discoveries.

Keywords:

tattoos, macrophages, immunology, skin

THE RED QUEEN HYPOTHESIS – (CO)EVOLUTIONARY ARMS RACE

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A few words about the author(s):

Bioinformatics Student with a genuine love for exploring the science behind everyday phenomena.

Abstract:

In the ever-changing world of evolution, species must constantly adapt to survive. The Red Queen Hypothesis sheds light on this dynamic by proposing that organisms must continuously evolve just to maintain their current fitness, much like characters in Lewis Carroll's "Through the Looking-Glass" who run to stay in the same place. The author's objective is to create an understanding of this fascinating concept and explore how it shapes the natural world.

Keywords:

Red Queen, coevolution, species





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