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NATURAL SCIENCES

AVIAN INFLUENZA VIRUS - A POTENTIAL THREAT TO HUMANS?

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PhD candidate at the Department of Genetics and Animal Breeding. My scientific interests include broadly understood animal genetics and molecular mechanisms underlying the processes taking place in the organism.

Abstract:

According to the classification adopted by the OIE-World Organisation for Animal Health, avian influenza (AI) is one of the most infectious diseases of poultry, which can cause mortality up to 100%. The disease is caused by certain strains of H5 and H7 subtypes of the influenza A virus, and its main reservoir are wild birds which transmitting the virus together with faeces, ocular secretions, respiratory tract secretions and exhaled air. Almost all species of birds, both domestic and wild, are susceptible to avian influenza virus infection, but the susceptibility is a species characteristic. In addition, the transmission of the virus can take place via humans, the equipment they use and the environment in which animals live, including feed, water, fertiliser, bedding, equipment and means of transport. So far, no case of H5N8 infection in humans has been reported worldwide and there are no reasons for additional prevention measures in humans. In addition, genetic testing has shown that the H5N8 virus detected in Poland has a characteristic profile for avian viruses and does not have the main adaptive characteristics for human infection. However, in view of the existing knowledge on the origin of the H5N8 virus from H5N1 virus and the high genetic variability of influenza viruses, it is necessary to exercise extreme care in contact with the avian influenza virus, in particular in persons professionally exposed to domestic and wild birds.

Keywords:

avian influenza, virus

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PHARMACOGENETICS AND PHARMACOGENOMICS AS A CHANCE FOR MORE EFFECTIVE ACTION OF DRUGS?

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Abstract:

The term pharmacogenetics was first used in 1959 as a "study of the role of genetics in drug response". Thanks to pharmacogenetics, many mysterious and hitherto incomprehensible individual differences in the body's response to certain drugs have been explained. These differences result from mutations occurring in protein-coding genes involved in the mechanism of action of these drugs. In addition, pharmacogenetics has also revealed the relationship between genetic polymorphism and the adverse effects of drugs. Due to the continuous development of molecular biology and bioinformatics methods used in the study of the relationship between mutations and the effects of drugs, the research projects may cover much broader issues and present the opposite approach to pharmacogenetics to the problem. The more and more commonly used term pharmacogenomics is a study using transcriptomics and proteomics, such as numerous SNPs and proteins, which affect the individual reaction of the organism to the administration of various drugs. The scientific progress that has been made in recent years has allowed us to move away from the search for the causes of drug disturbances or adverse effects towards research aimed at determining the effects of polymorphisms identified in the genome. Thanks to the current discoveries, it is possible to create a pharmacogenetic profile of an individual, which allows for appropriate selection of drugs and their doses, which may result in more effective therapy.

Keywords:

pharmacogenetics, pharmacogenomics, drug response, molecular biology

CHARACTERISTICS OF BIOGEOGRAPHICAL REGIONS OF POLAND

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Abstract:

Biogeographical region in natural sciences is understood as an area with a characteristic climate, geography, topography, fauna and flora. In a similar way it is also understood when we talk about the areas covered by the Natura 2000 and EMERALD network. At present, there is a map of biogeographical regions in the world, approved on 20 April 2005 by the Habitats Committe, which supports the European Commission. Poland is divided into three biogeographical regions, such as the continental region, which is the largest biogeographical region in the European Union, and also Poland, the alpine region, which includes areas in the Alps, the Carpathians, the Scandinavian Mountains, the Apennines, the Pyrenees, the Balkans and the Rhodopes, and in the case of Poland, the areas covered by this region are the Carpathians located in the Żywiec Beskids, the Tatras, the Beskid Sądecki, the Beskid Niski and the Bieszczady Mountains, which are the largest areas of this region in Poland, and third type of these regions is the Baltic Sea maritime area, which in Poland includes internal sea waters, territorial sea and an exclusive economic zone. Due to the species and environmental diversity of these regions, it is necessary to conduct differentiated nature protection in these areas, as well as to use various methods for carrying out nature monitoring in these regions.

Keywords:

biogeographical regions, Natura 2000 network, EMERALD network

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DIFFERENT TYPES OF UNMANNED AERIAL VEHICLES - ADVANTAGES AND DISADVANTAGES

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Abstract:

The development of technology and applications for unmanned aerial vehicles (UAVs) has resulted in a number of structures with significant differences. The most important ones result from their construction, according to which UAVs can be divided into fixed-wings, multi-rotors, helicopters and hybrids. In addition, multi-rotors ships also referred to as multi-copters are characterized by significant differences resulting from both the number of engines used and the structure of the frame. These differences have a significant impact on the range, lifting capacity, method of take-off and landing, as well as the manoeuvrability of these devices. Analysis of the solutions available on the market allows to determine the advantages and disadvantages of individual structures, which at the same time allows to choose the optimal solution for specific needs. Fixed-wings give the possibility to perform flights over long distances, they also allow to reach high speeds, however they require a landing field. Easy to pilot and giving the possibility of vertical take-off and landing multi-rotors aircraft show high energy demand, which significantly limits the maximum flight time. Helicopters have a lower energy demand but are more difficult to pilot than multi-copters. Hybrids combine vertical take-off and landing with long-haul flights. However, these are structures difficult to pilot, with a complicated structure, which at the same time causes a higher cost of their construction.

Keywords:

unmanned aerial vehicles, fixed-wings, multi-rotors, helicopters, hybrids

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EFFECT OF CHEMICAL AND PHYSICOCHEMICAL MUTAGENIZATION ON THE PRODUCTION OF BACTERIAL CELLULOSE FROM WASTE GLYCEROL BY KOMAGATAEIBACTER XYLINUS

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I am a fifth-year biotechnology student at the Warsaw University of Life Science. My interests are microbiology and biotechnology in the food industry. In this work, I would like to present a part of my research for my master's thesis.

Abstract:

The aim of this study was the evaluation of the effectiveness of chemical and physicochemical mutagenization on the production of bacterial cellulose from waste glycerol (obtained from biodiesel production) by Komagataeibacter xylinus.
Liquid culture of K. xylinus was treated by 0.3% or 0.6% v/v methyl methanesulfonate (MMS) for.minutes. Physicochemical mutagenization have been provided analogycal and after this 1 cm3 of each culture have beed treated UV radiation (254 nm) for 2 minutes. Next, suspension was seed into Petri dish. Obtained mutants were selected for the production of bacterial cellulose. Three different sources of carbon were used to evaluate cellulose-production preferences (glucose, technical glycerol, waste glycerol). After screening procedures we obtained a mutant which produced 44% more BC in comparison with the wild strain using waste glycerol.
It was showed that physicochemical mutagenization could be an effective method for increasing production of bacterial cellulose with use waste glycerol as a carbon source.

Keywords:

bacterial cellulose, chemical mutagenization,, physicochemical mutagenization, Komagataeibacter xylinus, waste glycerol

ANALYSIS OF BIOLOGICAL MECHANISM OF ACTION OF EEP TOWARDS MICROORGANISM CELLS

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Abstract:

Propolis is a resinous substance of variable colour (green, red, golden or brown) made by honey bees (Apis mellifera) from material collected from leaves, flower buds, stems and crevices in the bark of many tree species, including poplar. Propolis is recognized worldwide as a natural product that in recent decades has gained the wide acceptance of people from many countries as a food supplement improving health and preventing diseases. The richness of its bioactive compounds determines the use of propolis in medicine and dentistry, as well as in the pharmaceuticals, cosmetics and food industries.
The objective of the research is to investigate the antimicrobial properties of ethanol extract of propolis, and the mechanisms of action of propolis on foodborne microorganisms. The following parameters will be determined in the analysis of antimicrobial properties: minimum inhibitory concentration (MIC), minimum biocidal concentration (MBC), growth inhibition zones of test microorganisms in the disc-diffusion method, and time-kill curves. The mechanisms of action of EEP on microbial cells will be analysed by investigating the effect of EEP on the cell wall and cell membrane (leakage of compounds absorbing at 260 nm and the effect of EEP on the integrity of the cell wall and cell membrane in substrates with sodium chloride and bile salts), and the effect of EEP on bacterial motility.

Keywords:

propolis, mechanisms of action, antibacterial

THE EFFECT OF PROPOLIS EXTRACTS ON THE FORMATION OF BACTERIAL BIOFILMS

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Abstract:

Propolis is produced by bees; it is a viscous, resinous substance mainly derived from trees, shrubs, and flower buds, enriched in wax, essential oils, pollen, and bee saliva. The health benefits of propolis result from its chemical composition, which determines its comprehensive pharmacological activity, including antimicrobial, antiviral, antioxidant, hepatoprotective, anticancer, anti-inflammatory, cytostatic, immunostimulating and antiallergic properties. Compounds contained in propolis, mainly flavonoids, act on virulence factors of Gram-positive bacteria, inhibiting coagulase activity, reducing lipase activity and preventing the formation of biofilms.

The influence of ethanol extracts from propolis on the inhibition of biofilms by bacteria (Staphylococcus aureus, Listeria monocytogenes, Salmonella Enteritidis, Escherichia coli) was investigated. The tested extracts limited the formation of biofilms by all bacteria.

Keywords:

propolis, biofilm, antibacterial

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HOW FARM ANIMALS REACT AND PERCEIVE STRESSFUL SITUATIONS SUCH AS HANDLING, RESTRAINT, AND TRANSPORT

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Abstract:

Over the past ten years, there has been an increase in public interest in the welfare of farmed animals, e.g. transport conditions for animals. The increase in concern for the existence of animals is caused by the development of international trade in animals and animal products, and also by the responses of western citizens to the application of breeding practices considered inhumane in the world. In the case of animals, as well as in humans, there is a division between physical and mental well-being. Respecting the principles of animal welfare provides them with humane treatment that takes into account physical, behavioral and health needs. The low welfare rate leads to reducing the level of adaptability to stressful situations, limitations in the manifestation of natural behavioral responses, behavioral pathologies, reduction of the ability to grow and reproduce, body injuries and diseases. During transport and slaughter of animals, it is important to watering the animals before transport and turn the floor in transport vehicles, appropriately inclined footbridges allowing animals to enter to the vehicle and descend from it, effective slaughter without mutilation and animal consciousness, education of people working on transport and slaughter.

Keywords:

transport, farm animals, stress

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MAINTENANCE OF GOOD ANIMAL WELFARE STANDARDS IN BEEF SLAUGHTER PLANTS BY USE OF AUDITING PROGRAMS

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Abstract:

Consumer awareness regarding issues related to quality, hygiene and safety of consumed products is growing. When choosing a product, they return attention to the nutritional value, the traits of product safety and the humane treatment of animals during transport and slaughter. Meat industry enterprises are responsible for the safety of produced food. The compliance of all producers with the quality of manufactured food is the basic guarantee that the offered on the market will be safe for consumers. In the production of food, obligatory systems are obligatory in meat industry enterprises, such as: Good Hygienic Practice (GHP), Good Manufacturing Practice (GMP) and Hazard Analysis and Critical Control Point System (HACCP). When the first audits started in 1999, they resulted in plant management personnel making cattle welfare a priority. Many plant managers have now implemented their own internal self audits. Beef slaughter-plant audit data from McDonald's Corp, Burger King Corp, Wendy's International, and authors were compiled. The purpose of this report was to review 4 years of animal welfare audit data to determine whether improvements in cattle welfare have been maintained since 1999.

Keywords:

beef, cattle, slaughter

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MILK FATTY ACIDS AS BIOMARKERS FOR EARLY DIAGNOSIS OF METABOLIC DISEASES

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Abstract:

Improving the productivity of cows for many years was the primary objective in dairy farms. Unfortunately, such actions led to a decrease in the value of functional features, among which healthiness should be mentioned. These problems are noticeable especially in the perinatal period. Then the amount of energy in the feed is insufficient to cover the living and production needs, therefore the animals compensate for this deficiency by activating the reserves of fat, which in turn leads to a negative energy balance (NEB), which is the cause of diseases with a metabolic basis. The aim of the experiment was to improve the welfare of dairy cows by introducing the analysis of the OA level in milk as a marker for early diagnosis of high levels of NEFA and BHBA in the early lactation of PHF cows.
Milk and blood samples were collected from 120 cows (multiparas) for laboratory analyzes at weekly intervals (7 samplings). The material collected was analyzed and the results were statistically evaluated.
There were positive, statistically significant correlations between OA and NEFA (0.539, $p \leq 0.01$) and BHBA (0.184, $p \leq 0.05$). High levels of NEFA and BHBA, 1.573 and 1.116 mmol/L, respectively, were associated with the highest concentration of OA in milk fat over 24g/100g fat. OA can be used as a marker for early diagnosis of excessive NEFA and BHBA in the initial lactation period in PHF cows.

Keywords:

negative energy balance, metabolic basis, OA

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THE INFLUENCE OF POLYMORPHIC FORMS OF B - LACTOGLOBULIN ON THE LEVEL OF WHEY PROTEIN FRACTIONS IN HIGH-YIELDING PHF COWS

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Abstract:

Milk production is the main direction of cattle use in Poland, as evidenced by the high 5th place in terms of production of white raw material in the European Union. The high production results obtained by breeders are the result of consistently conducted breeding work as well as improvement of environmental conditions. In addition to traditional factors taken into account in the selection of cattle, molecular techniques are increasingly being used. One of them is the polymorphism of β - lactoglobulin (β-LG), which belongs to the markers of technological quality of milk. The aim of the study was to evaluate the influence of polymorphic forms of β-LG on the level of whey protein fraction in high-yielding PHF cows.
60 high-performance PHF cows in a similar stage of lactation were selected for the experiment, which were divided into three groups of 20 individuals, and the basic factor determining the selection of cows was decided by the genetic variant of β - lactoglobulin (AA, AB, BB).
The β-LGAB variant was associated with the highest Lz concentration: a higher level of 17.9% compared to the β-LGAA genotype and of 48.06% with β-LGBB. The highest level of Lf was demonstrated in the milk of cows with the β-LGBB genotype variant (higher by 44.8% compared to the β-LGAA variant and by 76.4% with β-LGAB). The phenotypic effect of β-LG interaction on the productivity and level of bioactive components of the protein fraction is variable and depends on the β-LG x diet interaction.

Keywords:

β - lactoglobulin, polymorphism, protein fraction

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EFFECT OF SELECTED FACTORS ON THE MILK PERFORMANCE OF POLISH HOLSTEIN-FRIESIAN COWS

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Abstract:

The aim of the study was to evaluate influence of the age at first calving, number of lactation and stage of lactation on the milk yield of Polish Holstein-Friesian cows. The data was taken from the Breeder Online project. The results of experimental milkings conducted in the period from June 2013 to November 2017 was included. The analysis confirmed the highly signify cant influence of the factors considered. Milk yield decreased with the next stage of lactation. The percentage of protein and fat and somatic cells count in milk increased. A proper energy balance in the first months of lactation would allow for a better use of protein from feed and a more effective depiction of the cow's production potential. The cows produced the most milk in the fourth lactation. The increase in LKS together with a successive lactation did not contribute to the reduction in fat content in milk. High content of somatic cells in milk induce to look for the cause of the situation and its elimination. First calving is recommended at 24.4-26.3 months of age.

Keywords:

dairy cows, stage of lactation, number of lactation, age at first calving, milk performance

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THE INFLUENCE OF BODY CONDITION SCORE OF POLISH HOLSTEIN-FRISIAN COWS ON MILK YIELD IN PERINATAL PERIOD IN A HIGH-INPUT FARM – CASE STUDY OF INFECTION CLOSTRIDIUM BOTULINUM

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Abstract:

The safe-keeping of energy in adipose tissue by cows is a key element of milk production, hence the assessment of the body condition of cows becomes an important tool in managing a herd of dairy cattle. Maintaining the perfect body condition of animals during particular lactation phases allows to optimize milk production, minimizing reproduction and health costs, and maximizing economic revenues. The aim of the study was to determine the relationship between the condition of dairy cows in the perinatal period and its changes in the first 100 days of lactation and milk yield and health status of cows. The results of the study indicate that during the first weeks of lactation the best performance was characterized by cows of optimal condition in drying, which was in the range of 3.1-3.5 points. BCS. The highest yield (> 20 kg of milk from one milking) was characteristic for cows, whose average condition was 3.2 points. BCS point. Unfortunately, during the experiment, the cows in the farm were infected with the anaerobic bacterium Clostridium botulinum. Over 150 cattle were slaughtered as a result of infection with botulism. The author as an observer referred to this random event, describing it thoroughly, stressing the diagnostic and preventive actions in such a case.

Keywords:

dairy cows, body condition score, perinatal period, milk productivity

THE EFFECT OF THE SOIL WASHING METHOD ON DISTRIBUTION OF HEAVY METALS AND SOIL PROPERTIES

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My name is Alicja Żochowska and I am a graduate student in the field of Biotechnology, Process Engineering and Environmental Protection at the University of Warmia and Mazury in Olsztyn. I am interested in biotechnology in environmental protection.

Abstract:

The effectiveness of the one of remediation techniques, soil washing on the distribution of heavy metals (Cu, Ni, Pb and Zn) in particular soil fractions (bioavailable, exchangeable, reducible, organic and residual) and the effect of the process on soil properties was examined. Soil polluted with heavy metals was collected from the old scrap yard. The soil was washed by water with the addition of biosurfactant saponin. The concentration of the washing solution was 3% and the pH was 4. The research have shown a decrease in the concentration of heavy metals in washed soil in bioavailable and exchangeable fractions and an increase in concentration in the reducible, organic and residual fractions in comparison to the unwashed soil. The process of soil washing caused a decrease in soil pH and water capacity.

Keywords:

soil, remediation, biosurfactant, saponin

TECHNICAL SCIENCES

E-PUBLICATIONS AND OPEN ACCESS. NEW TRENDS IN SCIENCE?

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Abstract:

Among the daily duties of researchers, publishing activity has a special place. From the historical perspective, the scholars in their lifetime prepared a number of articles, scientific monographs, books edited, which were subsequently submitted, printed and placed in libraries and academic bookstores. Then the scholars, in order to use their content, had to go to a specific city and academic institution or purchase their own copy. It has been so far. Currently, next to printed works, still available in the classic model, we still have electronic items that are available "on the spot" regardless of the time of day and place of ordering. Drastic reduction of waiting time for work promotes the development of science and its internationalization. As if that was not enough, there are further possibilities and facilities, such as self-publishing and open access, which further shorten the distance between the author and the reader. In the era of universal access to the Internet, e-publications and access to free sources are becoming a necessary and an expected method of publishing texts, including scientific ones. But are the academics conducive to such an approach? How safe is it? What does the license issue look like? What about financing? These and many other questions arise spontaneously during such a large paradigm shift. These questions, however, need to be answered, and it is beyond the initial delineation of the context that the author's overriding objective is.

Keywords:

e-publications, open access, digitalisation, university, science

BIODEGRADABLE POLYMERS BASED ON CITRATE

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Abstract:

In this work the possibility of obtaining biodegradable copolymers which contain in the copolymer chain microstructure typical lactide units as well as blocks of succinate and citrate of butylene is presented . These segments make obtained material very flexible and much more hydrophilic in comparison with homopolymer of lactide and most known lactid's copolymers. Poly(succinate of butylen – co - citrate of butylen) is a aliphatic polyester, fully biodegradable and biocompatible as well as common used in biomedicine poly(lactide) or lactide copolymers. Such chemically modified copolymers of lactide marked by its features may become very valuable material in forming systems for controlled release of drugs or in creating porous scaffold used in cells engineering. Currently quick progress in medicine requires the need of new biodegradable materials with new mechanical and physicochemical properties.

Keywords:

biodegradable polymers, citrate, succinate, block polymers

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USED INSTALLATIONS IN POWER PLANTS, PROTECTING THE NATURAL ENVIRONMENT

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Abstract:

A side effect of electricity generation from thermal power stations is dust–gas pollution. The exhaust fumes are purified, amongst others, from chemical compounds such as nitrogen oxides (NOx), sulphur oxides (SOx) and carbon oxides (COx). These chemical compounds are found in the flue gas in the form of solid and liquid aerosol components. Flue gas cleaning installations are built between the power boiler and the chimney to reduce dust emissions (the electrostatic precipitator), remove sulphur dioxide and denitrogenise combustion gases. The EU conditions that have already been satisfied by Polish Energy Sector are a long and extremely expensive process, which relate to reducing the pollutants' emission. The choice of exhaust purification methods should be made based on the multi-variant analysis of technical possibilities in order to meet these standards of physical quantity characterising the pollutants emission. The economic analysis by taking into account the specificity of construction solutions boiler will allow for the development of an accurate modernisation concept.

Keywords:

chemical composition of exhaust gas fumes, flue gas desulphurisation, denitrogenising combustion gases, purifying the exhaust fumes, environmental protection

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TYPES OF RESEARCH METHODS USED TO DETERMINE EMISSION FACTORS OF DUST AND GAS POLLUTION

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A few words about the author:

PhD Student on Mechanical Engineering Faculty at the University of Science and Technology in Bydgoszcz. Specialization in terms of the electricity generation, diagnosing and operation of the ESP. Currently she works in IT company, as Product Manager.

Abstract:

Laboratories, which deal with measurements, research of processes, energy systems and devices, have their own list of offered parameters that can be controlled during the inspection and diagnosis of a given object belonging to the group of energy devices, however the final choice of measured quantities belongs to the companies ordering this control. The issue of caring for the environment is very important and the fulfillment by the Polish energy sector of strict standards imposed by the European Union and the guidelines contained in the Regulations of the Minister of the Environment, they refer mainly to the reduction of NOx, SOx and dust emissions. Meeting the assumptions related to environmental protection requires the use of appropriate methods to improve control of the flue gas cleaning process from power plants. Taking into account the environmental aspect and maintaining the highest level of exhaust gas cleaning devices efficiency, it is important to carry out measurements that could determine the following parameters:
- measurement of concentrations of gaseous components of exhaust gas;
- volume flow rate and dust pollination concentration;
- chemical composition of fly ash samples;
- moisture content in the exhaust gas;
- mercury content in the exhaust gas;
- determination of the PM10 and PM2.5 fractions.

Keywords:

regulations of the Minister of the Environment, NOx, SOx and dust emissions, environmental protection, exhaust gas

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ANALYSIS OF CHANGES IN THE PROPERTIES OF INJECTION MOLDINGS AFTER THE AGING PROCESS

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A few words about the author:

I am a PhD student at the Czestochowa University of Technology. My interests are: polymer materials, UV aging, polymer degradation and stability, Design Thinking.

Abstract:

Aging of materials is a common phenomenon related to products in all sectors of industry. One example of the degradation of polymers is photodegradation, resulting from UV radiation, which can lead to numerous changes. Due to the increasingly common use of polymeric materials, it is necessary to understand the mechanisms and impact of degradation processes.
The aim of the conducted research was an analysis of the influence of UV radiation on properties of selected materials from the group of thermoplastics. A comparative analysis of the primary samples and the samples subjected to the UV aging process has been carried out. Samples were produced by a KraussMaffei KM65-160C4 injection molding machine with mold clamping force of 650 kN. The obtained samples underwent an accelerated UV aging process (600 hours) in the UVTest chamber with fluorescent lamps with a wavelength of 313 nm. The Keyence 900 F digital microscope was used to observe changes in the surface of the samples.
The study of accelerated aging of polymer materials in various physicochemical conditions allows to determine the probability of changes in their properties with the time of influence of degradation factors. The most susceptible to aging is polyethylene - numerous cracks are visible even without the use of a microscope. In turn polystyrene is the material most resistant to UV radiation.

Keywords:

UV aging, polymer materials, polymer degradation

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DETERMINING THE LOCATION OF OBJECTS WITH INCREASED ACCURACY USING HETEROGENEOUS DISTANCE MEASUREMENTS

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Software Developer, TUL PHD student.

Abstract:

The articel proposed a method for determining the location of objects using heterogeneous distance measurements. The essence of this method is to determine the location of the object based on data from several different sensors due to the nature of the parameters. These sensors are inertial and static. As part of the scientific work, simulation studies of the proposed method were carried out and it was compared with other methods described in the literature. The method was verified experimentally using a dedicated measuring system. According to the conducted research and experiments, the proposed method allows determining the location of objects using heterogeneous distance measurements and can be used in location systems.

Keywords:

GPS, indoor navigation, kalman filter, K-NN,Wifi

PROBLEMS IN HYDROGEN STORAGE METHODS

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A few words about the author:

Magda Pęska - I am PhD Student of material engineering at Military University of Technology. My research are focused on hydrogen storage materials and previously my master and engineer work consist of 3D printing technology.

Abstract:

It is being argued that hydrogen will become one of the main energy carriers, however, in order for this to happen, it is necessary to develop and build a whole hydrogen infrastructure that consists of production, transport and storage. Hydrogen storage methods and the development of appropriate technology for this purpose, are playing the most important role in the entire so-called hydrogen economy. The aim of the article is to review the main ways of hydrogen storage. Basic disadvantages and advantages of each of the methods are presented.

This work was supported by National Science Centre (NCN) Poland, no. 2018/29/N/ST8/01417

Keywords:

hydrogen storage, hydrogen energy, hydrogen economy

ENERGY FROM HYDROGEN IN THE AUTOMOTIVE INDUSTRY

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

Abstract:

The automotive industry is one of the fastest growing branches of the global economy. What is directly related to the fact that on the market of natural energy resources there is a necessity to look for new, alternative energy sources. Currently, the greatest hope is associated with electricity and hydrogen, which in the future can replace natural gas and crude oil. In the automotive industry, hydrogen is used as an energy source in two ways: in internal combustion engines (hydrogen engines in which internal combustion of hydrogen takes place) and using fuel cells. However, solutions using fuel cells are much more often used, and these techniques are currently being constantly developed and refined. Therefore, it is very important to search for and develop the most effective ways of storing hydrogen and obtaining energy from it necessary to move cars. This problem is described in this work.

This work was supported by National Science Centre (NCN) Poland, No. 2018/29/N/ST8/01417.

Keywords:

hydrogen fuel cell car, hydrogen storage, alternative energy

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INFLUENCE OF HEAT TREATMENT ON FATIGUE STRENGHT OF AA6XXX SERIES

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Abstract:

Aluminum is characterized by low density (2.7g/cm^3), low melting point and good strength and ductility. These properties make aluminum and its alloys widely used in various modern industries. Moreover, by applying heat treatment e.g. in the form of precipitation hardening (supersaturation and aging) materials properties can be changed and adjusted to specific applications and purposes. The aim of this work was to determine how the precipitation hardening process affects the mechanical and fatigue properties of samples made of 6060 aluminum alloy. At first material was heated for 1 hour at 525 °C and then quenched in cold water. In order to determine the optimal temperature and time of artificial aging, the prepared samples were placed in furnaces and heated at 165 °C, 175 °C, 185°C for 1h, 2h, 4h, 8h, 16h and 32h. After heat treatment, Vickers hardness measurement was carried out in order to determine the material with the highest hardness value. In the last step tensile and fatigue tests were performed. Fatigue strength of three different samples (raw material, supersaturated sample and sample with highest hardness after aging) has been compared.

Keywords:

aluminium, heat treatment, fatigue strenght

MEDICAL SCIENCES

PSYCHONUTRITION IN ALZHEIMER'S DISEASE - EPIDEMIC OF XXI CENTURY

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I am a clinical dietitian and masters student of psycho-dietetics. I passionate about nutrition therapy of elderly people, especially in neurodegenerative diseases.

Abstract:

Among people after the age of 80, every third has cognitive disorders, bearing the hallmarks of dementia. In these patients a number of changes is observed in the clinical picture, as a consequence of pathophysiological changes, which overlap in the brain and putting off amyloid plaques, and tau protein. Together with the severity of the condition, the increase in demand for nutrients is recorded. An incidence of malnutrition is growing. Efficiency of nutritional intervention is uttermost when fibrillary degenerations are not substantial and the number of synapses also. It is the period of compensation, without prodromal symptoms. Obesity, hypertension or hypercholesterolemia are inductors of changes in cerebral vessels and have been appearing long before disclosure of neurodegenerative disease. Deficiency of choline in a diet, leads to insufficiency of acetylcholine for neurotransmitters, resulting in alteration of cell membranes and the composition of fatty acids, like omega-3 and omega-6. Synapses undergo devastation, inducing neurodegeneration. There are apoptosis, memory loss, impaired neurotransmission and an increase in homocysteine concentration also, which is identified with Alzheimer's disease.

Inadequate supply of food, due to difficulties in recipience of its and coexisting malnutrition, causes the progression of neurodegenerative changes, inducing worse and worse psychophysical condition of the patient.

Keywords:

Alzheimer's disease, psychodietary approach

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EVALUATION OF EXAMINATION OF SYNOVIAL FLUID CELLS IN RHEUMATOID ARTHRITIS PATIENTS TREATED WITH PREDNISONE

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

Abstract:

Rheumatoid arthritis (RA) is autoimmune joint disease, leading to their degeneration and dysfunction. Severity of the disease depends on the number and type of cells found in the synovial fluid. White blood cells subpopulations are markers of inflammatory processes occurring inside joints. Treatment of the RA is based on the DMARD and glucocorticoids. Determination of anti-inflammatory prednisone activity on synovial fluid immune cells.
Synovial fluid gathered from patients with RA was divided into groups. First group was the fluid taken from patients untreated with prednisone (n=19) and second treated with prednisone (n=11). Total number of cells was calculated. Flow cytometry combined with immune phenotyping was used to determine subpopulations of immune cells with specyfic antigens: CD4, CD8, TRAIL, FasL.
Higher total cell number was observed in untreated group in comparison to prednisone group. Statistically significant decrease in the percentage of NK cells was found in prednisone group compared to the untreated group. Significant decrease in the percentage of CD8+TRAIL+ cells in prednisone group was observed, compared to non-treated patients.
Prednisone treatment of patients with RA results in reduction of synovial fluid cell number. Prednisone indicates on reduced cytotoxic potential of white cells. Synovial fluid analysis provides information on the effectiveness of treatment at the cellular level.

Keywords:

rheumatoid arthritis, synovial fluid, prednisone

AN ATTEMPT TO EVALUATE THE MECHANISMS OF APOPTOSIS OF EFFECTOR T-LYMPHOCYTES

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Abstract:

T-cells, participate in inflammation of the lower respiratory tract in interstitial lung diseases (ILD). Alveolar lymphocytes (AL) number depends on recruitment, proliferation and apoptosis. The importance of the AL apoptosis receptor pathway is usually neglected. Studies do not provide much information about the apoptosis in the course of ILD.
To determine the role and frequency of the receptor pathway in AL apoptosis in different ILD. BAL fluid from 43 patients with sarcoidosis, 17 with allergic alveolitis, 19 with idiopathic pulmonary fibrosis (IPF) and 15 control subjects. AL were typed to find expression of DR4, PD1, FasL and TRAIL antigens on CD4+ and CD8+ cells. The frequency of AL apoptosis was determined based on changes of FSC/SSC parameters of cytometry,
AL apoptosis in sarcoidosis and allergic alveolitis was significantly lower than the control. FasL expression correlated with apoptosis of AL. TRAIL expression was significantly higher in IPF than in the control. The high percentage of AL was positive with PD1, with no differences between groups.
Apoptosis mechanisms are common to CD4+ and CD8+ cells. TRAIL is involved mainly in effector function of T cells. The Fas:Ligand combination showed that Fas can be involved in the self-limitation of inflammation by apoptosis of T cells. High percentage of AL PD1+ suggest the participation of the PD1 death receptor in apoptosis of AL in ILD.

Keywords:

alveolar lymphocytes, apoptosis, BAL, interstitial lung diseases

NON-VIRAL TRANSFER OF GENETIC MATERIAL IN GENE THERAPY – MINICIRCLES

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Abstract:

The basis for gene therapy is transport of genetic material to cells. Currently, viral vectors are the most commonly used for this purpose. Unfortunately, the viral transport of genetic material is associated with a number of threats and drawbacks such as: the risk of insertion mutation and the possibility of a strong immune response. For this reason, non-viral transfer is still being developed but it is less effective for viral transfer. A low level of transfection is associated with a large volume of plasmid vectors. Minicircles are the carriers in which the bacterial backbone is removed during the production process. The reduced size of the carrier enables efficient transfer of genetic material to the cells and arouses great hopes for the future of gene therapy. Low immunogenicity and high expression of the introduced transgene were obtained by removing the bacterial backbone by recombination or enzymatic reactions. The maximally reduced size plays a significant role in the transfection process, which is mainly based on transmembrane transport and is therefore highly dependent on the size of the introduced molecules. The safety of using minicircles is related to the lack of integration into the host genome. Due to their unique structure, minicircles can replace currently used vectors and increase the safety, transfection efficiency and expression of the introduced transgene. Therefore, minicircles appear to be an ideal tool for gene therapy.

Keywords:

gene therapy, gene transfer, minicircle, vector

TTF (TUMOR TREATING FIELDS) – A NEW CANCER TREATMENT STRATEGY

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Abstract:

The significant increase in the incidence of malignant tumors and the low efficiency of current therapeutic strategies leads to the search for new cancer treatment methods. One of the promising therapeutic methods seems to be TTF (Tumor Treating Field). This therapy involves the use of an alternating electric field of low intensity and intermediate frequency that affects all polar cell components, including the cytoskeleton and kariokinetic spindle. Alternating electric field causes vibrations of charged particles and rotation of dipoles. The cytoskeleton-building structures responsible for the separation of chromosomes during cell division are highly polar, and therefore the usage of an electric field with appropriately selected parameters results in their degradation. In the case of cancer cells characterized by infinite divisions and an unusually fast rate of proliferation, the use of this method allows the inhibition of their division and the induction of apoptosis. TTF therapy is a simple and non-invasive method, and most importantly, does not cause side effects characteristic of chemotherapy. This method has been successfully used, in the treatment of gliomas. A significant percentage of patients observed inhibition of cell proliferation and regression of the disease. Currently, research is being carried out to optimize this method, which would allow the use of this method in the treatment of other types of cancer.

Keywords:

TTF, cancer, microtubules, kariokinetic spindle

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IN VINO VERITAS - THE ANALYSIS OF THE ELEMENTAL COMPOSITION OF RED WINES WITH DIFFERENT RANGES OF SWEETNESS

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I'm a PhD student in the Department of Biochemistry in Pomeranian Medical University in Szczecin. I'm a laboratory diagnostician. My main research interests are: parasitology, molecular mechanisms involved in the parasite-host system and apoptosis.

Abstract:

Although the wine has been known for centuries, lately more and more attention has been given to its pro-health activity. The wine includes about one thousand identified organic and mineral compounds. It is estimated that about 350 of them have health-promoting effects. In addition, the wine includes: sugars, dyes, polyphenols, tannins, minerals, vitamins A, B1, B2 and C, nitrogen compounds, organic acids, aromatic substances and microelements.
The aim of the work was to assess the concentration of elements (Ca, Mn, K, Zn, Cu, Fe, Na, Pb, Cr, P, Mg, Cd, Ni and Al) in red wines available on Polish market.
The study used 14 wines available on the market, divided by sweetness range. The concentrations of elements Ca, Mn, K, Zn, Cu, Fe, Na, Pb, Cr, P, Mg, Cd, Ni and Al were analyzed using the ICP-OES technique.
The highest concentrations [mg/l] Cu(0.174), Fe(3.071), Na(55.322), Pb(0.0389), Cr(0.023), Ni(0.031) and Al(1.649) were found in semi-dry wines. Dry wines had the highest content of Ca(77.977), Mn(1,172), K(1106.884), P(282.655) and Mg(109.915), and sweet wines Zn(1.428) and Cd(0.005). Statistically significant differences ($p<0.05$) were noted in K concentration between sweet and dry wines and in Al conc. between semi-dry and dry wines.
All red wines are good phosphorus and potassium sources, of which dry wines have the highest concentration of those elements. The level of Cd and Pb is independent of the degree of sweetness of wines, as well as the concentration of microelements (except for Al).

Keywords:

wine, ICP, the concentration of elements

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EXPOSURE TO FLUORIDE AND THE DOPAMINE METABOLISM IN SELECTED BRAIN STRUCTURES OF MORPHINE-DEPENDENT RAT BRAINS

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Abstract:

Fluoride accumulates in the nervous tissue leading to the development of inflammatory processes and neurodegeneration. It affects the structures of the limbic system. An important role in this system is the dopaminergic pathway. Morphine, leads to a decrease in the activity of GABAergic receptors that inhibit dopaminergic neurons. Disorders of dopamine metabolism in various brain structures may be associated with the genesis of neurodegenerative diseases.
The aim of this study was to investigate the effect of exposure to fluoride on dopamine metabolism in selected brain structures of morphine-dependent rats
Four groups of rats were tested - drinking tap water (K); solution of NaF (F); receiving morphine (M); drinking NaF solution and receiving morphine injections (MF). Concentrations of DA, HVA, 3-MT and DOPAC in the hippocampus, striatum, and prefrontal cortex were determined using HPLC.
In the hippocampus, significant changes were observed between groups: M vs K (decreased DOPAC, increased 3-MT), M vs F (decreased DA), K vs F (decreased 3-MT) and MF vs K (increased DOPAC, DA, HVA, 3-MT). In the striatum: F vs K (decreased DA), MF vs K (decreased DA, increased HVA). In the prefrontal cortex: M vs K (decreased DOPAC, DA), K vs F (increased 3-MT) MF vs K (decreased DOPAC, DA, HVA increased 3-MT).
The administration of morphine with simultaneous exposure to fluoride privileges the COMT-mediated pathway of dopamine degradation in the hippocampus and prefrontal cortex.

Keywords:

dependence, fluoride, morphine

DYNAMICS OF CHANGES IN PHYSICAL FITNESS OF I-LEAGUA HANDBALL PLAYERS SPR OLKUSZ IN THE ANNUAL TRAINING CYCLE

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A few words about the authors:

mgr Irina Lozinska - mistrz Ukrainy w piłce ręcznej, studentka III stopnia AWF w Krakowie. mgr Agata Wcześniak - trener piłki ręcznej.

Abstract:

The aim of the study was to assess the level of targeted physical fitness of handball players of the first-leagua SPR Olkusz team in particular periods of the training cycle in the 2018/2019 season. The material structure of the training sessions of the studied team in the preparatory and starting periods was also analyzed. Physical fitness tests (Noszczak test and Cooper test) were conducted in three periods of the training cycle: at the beginning of the preparatory period (1.08.2018), at the end of the preparatory period (16.09.2018) and at the end of the start period (23.05.2019). The following parameters of the tested handball players were analyzed: age, playing position, body weight and height, as well as motor skills (speed, oxygen and speed endurance, explosive force and dynamic force), evaluated with the help of 6 tests (Cooper's test, 30m run, pentagon, medical ball throw, handball throw, swing gear at 300m). Arithmetic mean and standard deviations were used in the preparation of the results. In order to better illustrate the development rate between the individual studies, the evaluation was performed on the basis of WTRIII index.

Keywords:

handball, women, trainig cycle, physical fitness

MELATONIN AS AN ANTI-CANCER FACTOR

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A few words about the author:

We want to share knowledge.

Abstract:

Melatonin is a natural indoleamine secreted mainly by the pineal gland in response to lack of light. Its main role is based on the regulation of circadian and seasonal rhythms. The aim of the study was to review the current literature on the role of melatonin in cancerogenesis. Melatonin has been shown to have oncostatic properties in vitro and in vivo. Its molecular antitumor mechanisms has also been proposed, including the effects via melatonin membrane and nuclear receptors, its strong antioxidant properties and the ability to bind to the intracellular protein - calmodulin. Many previous studies allowed to state that disruption of circadian rhythms (including shift work), sleep deficiency and disturbed secretion of melatonin may underlie cancer processes. Literature data indicate that melatonin controls the transmission of survival signals and tumor metabolism and may affect the inhibition of carcinogenesis at the initiation, progression or metastasis stages. The results of the conducted experiments confirm its effectiveness in the prevention and treatment of breast, prostate, stomach and large intestine cancer. Thanks to its pleiotropic effect, melatonin can be used as an auxiliary substance in anticancer therapy in order to increase the therapeutic effects or to reduce the side effects of the therapy. However, the better understanding of melatonin oncostatic mechanisms requires further research.

Keywords:

carcinogenesis, melatonin, melatonin oncostatic mechanisms

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THE ROLE OF SELECTED ADIPOKINES AS BIOMARKERS OF THE METABOLIC SYNDROME

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A few words about the author:

We want to share knowledge.

Abstract:

Adipose tissue is a complex and highly metabolically active endocrine organ that produces bioactive polypeptides, called adipokines. Excessive amount of adipose tissue disturbs the production and secretion of adipokines that causes low-grade chronic inflammation and may contribute to the development of metabolic diseases related to obesity. The aim of the analysis was to review the literature regarding the relationship between released adipokines in obesity and the risk of metabolic complications.
Metabolic syndrome is a group of comorbidities that increase the risk of cardiovascular diseases with atherosclerotic etiology and type 2 diabetes. The main components of metabolic syndrome are, among others, abdominal obesity, insulin resistance, impaired glucose tolerance, dyslipidemia, hypertension, proinflammatory and prothrombotic reactions. Increased levels of proinflammatory adipokines (e.g. leptin, visfatin, resistin, chemerin) and a reduced amount of anti-inflammatory adiponectin, characteristic of obesity, play a significant role in the pathogenesis of metabolic syndrome. There is a lot of data indicating the adverse effect of increased expression of proinflammatory adipokines in obesity on metabolic functions, but further studies are needed to didcover the molecular mechanisms of their action.

Keywords:

adipokines, adipose tissue, metabolic syndrome

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THE INFLUENCE OF LEAD COMPOUNDS ON SELECTED NEURONAL PATHWAYS IN MORPHINE DEPENDENCE

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We are PhD students and students of biotechnology at the Pomeranian Medical University. We work together in Department of Biochemistry.

Abstract:

Lead (Pb) is an element with proven neurotoxic effects. Experiments suggest that Pb disturbs the functioning of neuronal pathways associated with the pharmacodynamics of opiates.
Behavioral studies on rats exposed to Pb during pre- and postnatal periods revealed differences between animals receiving morphine and those additionally exposed to lead. The withdrawal symptoms were elevated in the Pb group. Immunohistochemical studies showed the internalization of dopamine receptors in the morphine group but not in Pb.
Lead administration has been shown to increase the expression of dopamine D2 mRNA and protein (D2R) in the prefrontal cortex in the groups receiving injections of NaCl and morphine. Rats that developed tolerance to morphine showed increased expression of D2R in the hippocampus in the morphine+Pb group.
Lead increases the expression of purine receptors. In an experiment with lead acetate solution and morphine, it was shown that animals exposed to both factors showed increased expression of the P2X4 receptor (prefrontal cortex, striatum) and P2X7 (hippocampus, striatum) at the protein and mRNA level. A1 receptor expression was increased as a result of lead administration in the hippocampus, striatum and prefrontal cortex. The glial activation has been observed, which was manifested by the increased expression of Iba1 mRNA and GFAP. The resulting neuroinflamation increased the tolerance to morphine among the examined animals.

Keywords:

lead (Pb), morphine, dopamine, purine receptors

CIVILIZATION DISEASES CONTINUOUS EFFECTS OF A MODERN LIFESTYLE

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Abstract:

Civilization diseases include: cardiovascular diseases, diseases of the nervous system, obesity, diabetes, cancer, osteoporosis, diseases of the digestive system, psychological problems. These diseases are favored by highly developed civilization, lifestyle, importer nutrition, low physical activity, stress, environmental pollution, noise, radiaton. Type 2 diabetes affects adult people. According to data from the National Health Fund from 2014, there are 3,5 million people suffering from diabetes, which is on average every 11 Poles. AIDS is a very serious threat to society. The factor that causes the disease is HIV. The most common forms of infection are sexual contact and the use of non-sterile syringes and needles. Research conducted among medical staff on health promotion activites shows that 1/3 of respondents consider health education the most important issue in health promotion, 22% the main importance of health prevention and earlier disease prevention and earlier disease prevention, 64% think that by means of promotional campaigns (radio and television) realize the importance of their own health and the need to take care of them. There are many reasons for the occurrence of civilization diseases. We can prevent an appropriate lifestyle and a pisitive attitude to physical activity.

Keywords:

civilization diseases, lifestyle, psyhical activity, health education

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THE SOURCE OF TASTE - ELEMENTAL COMPOSITION OF VARIOUS SALT TYPES AVAILABLE ON THE POLISH MARKET

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My name is Donata Simińska, I have 24 years old and I am study Medical biotechnology in Pomeranian Medical University. I'm interested in glioma pathology and influence of chemical elements on the human body.

Abstract:

Just add a pinch of salt to make the dish tastier. Salt is widely used in the kitchen - in baking, cooking and as a preservative. It consists mainly of chlorine and sodium but it may also contain impurities such as different elements, which may affect its taste and color. Different types of salt are naturally extracted from seawater, by evaporation or from rock deposits. Recently, the number of salt varieties available on the market has exploded. However, choosing the right type of salt can be misleading. Individual salts differ not only in appearance, taste and texture, but also in the content of minerals and other elements.
The aim of the research was to determine the concentration of selected elements in the salt samples.
In the research, 15 salt samples were used - Himalayan, stone, sea, Kusserian and table salt. Concentrations of Ca, K, Mg Fe, Zn, Cu, Cr, Co, Mn, Al and Pb were determined using the ICP-OES technique.
The highest concentration of all elements contained Himalayan coarse salt. The highest Cu content was determined in the rock salt. The types of table salt available on the market differ not only in their appearance and taste, but also in the elemental composition. The highest content of macro- and microelements (with the exception of Cu) among all tested edible salts contains Himalayan salt, however it is also the most contaminated by lead. Regardless of the type of salt, remember to consume it in moderation.

Keywords:

salt, chemical element, ICP-OES

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A PRELIMINARY ASSESSMENT OF THE IMPACT OF METHOTREXATE ON CYTO-IMMUNOLOGICAL PATTERN OF SYNOVIAL FLUID IN PSORIATIC ARTHRITIS

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A few words about the authors:

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

Abstract:

Analysis of synovial fluid in psoriatic arthritis (PsA) allows insight into the local activity of inflammation. T cells are involved in the pathogenesis of PsA. The first-line treatment is methotrexate (MTX), but non-steroidal anti-inflammatory drugs (NSAIDs) are also included in the treatment. Little is known about the effect of therapy on the immune profile of synovial fluid in PsA. The aim of the study was to evaluate the effect of MTX treatment on the cyto-immunological pattern of synovial fluid. The research material was synovial fluid of PsA patients treated with MTX (n=17), the control group consisted of patients receiving NSAIDs only (n=19). The total cell number (TCN), the percentage of white blood cells and the phenotype of lymphocyte subpopulation were examined. The results showed a decrease in TCN of synovial fluid and a higher percentage of the percentage of CD4+ to CD8+ lymphocytes in patients taking MTX compared to those treated with NSAIDs only. Importantly, there was an increase in the percentage of lymphocytes T HLA-DR+ in the group with MTX. The use of MTX may favor the elimination of cytotoxic cells, as indicated by the high CD4/CD8 index. It seems that the expression of HLA-DR on T cells reflects the activity of the disease process in PsA and and should consider the utility of this marker in therapeutic decisions in the future. In conclusion, cyto-immunological analysis of synovial fluid may be useful to assess the effectiveness of local treatment.

Keywords:

psoriatic arthritis, methotrexate, synovial fluid

EVALUATION OF FASL EXPRESSION IN BRONCHOALVEOLAR LAVAGE FLUID IN PATIENTS WITH SELECTED INTERSTITIAL LUNG DISEASES

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

Abstract:

Fas Ligand (FasL), expressed by inflammatory cells with cytotoxic activity and in a soluble form, is an important element of the pathogenesis of interstitial lung disease. It is believed that it participates in the development of chronic lung fibrosis by inducing apoptosis of the parenchyma cells. Bronchoalveolar lavage fluid (BALF) was collected from untreated patients with idiopathic pulmonary fibrosis (IPF/UIP, n=17), nonspecific interstitial pneumonia (NSIP, n=7) and desquamative interstitial pneumonia (DIP, n=5). Cytological analysis, phenotyping of alveolar macrophages (AM) and lymphocytes (AL) was performed. FasL and Fas expression was evaluated by ELISA. Apoptosis (sub-G1 phase) was studied together with the BALF cell cycle. The FasL level in the both UIP and NSIP group was significantly increased but in the DIP group (smokers) was undetectable. Fas concentration was significantly elevated only in UIP. There was a high percentage of AM FasL+ in UIP patients. There were no significant differences in the percentage of Th FasL+ and Tc FasL+ cells in the studied groups, however total cell number Tc FasL+ was higher in UIP compared to the control. The concentration of Fas correlated significantly with the apoptosis of AL. Expression of FasL is strongly increased in IPF/UIP and to a lesser extent in NSIP. In conclusion, FasL seems to participate in the development of pulmonary fibrosis in patients with idiopathic interstitial pneumonia.

Keywords:

idiopathic interstitial pneumonia, BALF, FasL, Fas, ILD

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MOLECULAR ASPECTS OF OXIDATIVE STRESS IN COURSE OF CHRONIC MILD STRESS AND ANTIDEPRESSANT THERAPY OF AGOMELATINE

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A few words about the author:

I am a PhD student at the Faculty of Biology and Environmental Protection of the University of Lodz. I am investigating the molecular bases of various development of neurodegenerative diseases, including depression.

Abstract:

Estimations show that 350 mln people worldwide suffer from depression and 1/3 of patients do not respond to used therapy. Although, the aetiology is not completely known, a previous evidence suggests that oxidative and nitrosative stress may lead to the development of depression. The present study was designed to determine the effect of chronic administration of agomelatine on the mRNA and protein level of expression and methylation status of CAT, NOS1 and NOS2 in the brain and blood in chronic mild stress (CMS) model of depression. For this, the mRNA and protein expression of the genes, and the methylation status of their promoters were measured in peripheral mononuclear blood cells and brain structures by TaqMan Gene Expression Assay, Western blot and methylation-sensitive high-resolution melting techniques. We observed that gene expression of CAT in hypothalamus and NOS2 in PBMCs was increased after the agomelatine therapy. Additionally, the methylation level of the third promoter of NOS1 in nucleus basal ganglia and amygdala, CAT promoter in the cerebral cortex, midbrain and nucleus basal ganglia was decreased after antidepressant administration. The received results confirm that CMS and agomelatine therapy may modulate expression and methylation level of genes involved in oxidative and nitrosative stress. Our results may be used to assessments of antidepressant therapy efficacy.

Source of support: grant from the National Science Centre of Poland no. UMO-2015/19/BNZ7/00410.

Keywords:

depression, CMS, expression, methylation, agomelatine

HUMANITIES SCIENCES

SNOB CLASS THORSTEIN VEBLEN

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A few words about the author:

PhD student, sociology of exclusion, disability.

Abstract:

The Veblen effect is one of a family of theoretical anomalies in the general law of demand in microeconomics. Other related effects include:
The snob effect: expressed preference for goods because they are different from those commonly preferred; in other words, for consumers who want to use exclusive products, price is quality.
The common law of business balance: low price of a good indicates that the producer may have compromised quality, that is, "you get what you pay for".
The hot-hand fallacy: stock buyers have fallen prey to the fallacy that previous price increases suggest future price increases. Other rationales for buying a high-priced stock are that previous buyers who bid up the price are proof of the issue's quality, or conversely, that an issue's low price may be evidence of viability problems.

Keywords:

sociologist, snob class, veblen goods

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THE MATERIAL SITUATION AND THE SENSE OF WELL-BEING AMONG MEMBERS OF MIGRANT FAMILIES

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A few words about the author:

MA in sociology and psychology, PhD student at the Institute of Sociology at The Adam Mickiewicz University in Poznań in Department of Social Problems and Social Work. Her research interests revolve around the functioning of transnational families.

Abstract:

After joining the European Union, you can see an intense increase in interest in the fate of migrant families and a heated debate over the consequences of separation from the family. During the speech, the results of biographical research conducted as part of the doctoral thesis will be presented. My goal was to recreate the daily life rhythms of migrant families, in which at least one of the parents works and lives abroad, and the children stay in Poland. The subject of my research were biographies of people who during adolescence experienced separation from parents working abroad after joining the European Union. Separation with parents involved the necessity of modifications and reorganization of the previous roles in the family and the youth's undertaking of duties previously belonging to the migrant parents. During the presentation, fragments of analyzes will be presented regarding the feeling of improvement in the material situation and the experienced well-being as a result of functioning in the migration family. The analysis will cover statements that on the one hand relate to the material situation of the family and, on the other hand, to the child's well-being that is perceived by children of migrants. I conducted over 70 autobiographical narrative interviews and questionnaire interviews with members of migration families.

Keywords:

separation, emigration, European Union, well-being

THE HISTORY OF THE UNIVERSITY IN THE CONTEXT OF TODAY'S CHANGES IN THE ACADEMIC ENVIRONMENT

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A few words about the author:

PhD student at the Faculty of Economics and International Relations at the Cracow University of Economics. Scientific interests: CSR, university responsibility, human resources management as well as globalization and sustainable development.

Abstract:

Understanding the mission of the university requires looking at the university's historical concepts. We distinguish among them the medieval, liberal and contemporary university. Along with the establishment of the university, its first mission was also formed, focusing on searching for the truth and transferring knowledge. The enlightenment currents brought about the emergence of new university concepts. Other types of universities are trying to cope with the changes taking place in the socio-economic environment, adding further components to two traditionally formed missions. An example of such considerations is the concept of an entrepreneurial university, liberal-entrepreneurial, subordinate knowledge, as well as socially responsible.

The medieval university was an innovation on a global scale that has impacted the entire world to this day. In spite of many historical events, the University has survived and will continue through its universal mission. In addition, the university stores and develops its own tradition and idea, despite the evolutionary changes. Universities to some extent adapt to external expectations, but the basic university assumptions remain unchanged and constitute a value in itself that has been cultivated for centuries. The purpose of this presentation is to show the way of the mission's evolution and possible directions of its future change.

Keywords:

university, management, socio-economic changes

UPBRINGING TO MARRIAGE IN THE LIGHT OF TEACHING SAINT JOHN PAUL II

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A few words about the author:

I'm PhD student at The Pontifical University of John Paul II in Krakow. I'm interested in theology and psychology.

Abstract:

Having a marriage is one of the most important events in a person's life. A woman and a man make the decision to marry each other until the end of their days. However, if people want build correct relations, they must be well prepared for it.
St. John Paul II in his teaching, put great emphasis on these issues. He exchanged three stages of preparation for marriage. The purpose of the analysisis is present the 1st stage. It is based primarily on upbringing and the example of parents, because it is the mother and father who show what mutual respect, love and care for the family are.

Keywords:

marriage, children, upbringing, John Paul II

THE ROLE OF THE FAMILY IN THE MODERN WORLD IN THE TEACHING OF SAINT JOHN PAUL II

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I'm PhD student at The Pontifical University of John Paul II in Krakow. I'm interested in theology and psychology.

Abstract:

The family is the basic social group. In sociological sciences, it has a special place, since it has always had many functions in society. St. John Paul II notices its special role in the world. The presentation will show what the family is in teaching the Pope. He will present the tasks that should be fulfilled in the environment and in the Church.

Keywords:

family, John Paul II, society

SEXUAL HARASSMENT AND THE PHENOMENON OF MOBBING

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A few words about the author:

Monika Mucha a law graduate and a student of canon law. He is currently in doctoral studies. Interests criminal law, mobbing, disability.

Abstract:

The phenomenon of mobbing and sexual harassment in the workplace since 2002, after thirteen years of functioning of the market economy in Poland.
On May 8-14, 2014, a new study on mobbing at work was conducted. Previously, such a study was carried out in 2002.
Taking into account the respondents who themselves declared the experience of persecution and those who indicated at least one type of irregularity from the list presented, can estimate that in the last five years more than two-fifths of employees were victims of some harassment. In the last five years, a total of 43% of employees have been victims of harassment.
A study of 1074 people represented by a random sample of adult residents of Poland.
Has the intensity and type of harassment used in the workplace since 2002 changed in the workplace?
The study was conducted using the face-to-face computer-assisted interviews (CAPI) on May 8-14, 2014 on a sample of 1074 people representing a random sample of adult residents of Poland.
The best form of combating mobbing is to terminate a contract of employment, compensation, therapy or mediation.

Keywords:

mobbing, discrimination, terror, harassment, humiliation

TRANSNATIONAL FAMILIES - QUALITY OF LIVE AND EVERYDAY FUNCTIONING

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A few words about the author:

I am the doctor of social sciences in the field at pedagogy. The main area of my interesting is everyday life and functioning of the transantional families. I am the author of over 40 publications in the field at pedagogy.

Abstract:

The migration of nations is a phenomenon that has been with us since time immemorial, always being a very important factor of societal development. Currently, only its motives and scope have changed. Nowadays, the migration of Polish citizens has a specific meaning and has become a natural state of affairs. There is nothing surprising in spontaneous migrations in search of better employment. What is more, living a foreign country for one or two years has become a widely approved norm. Motivations that are of importance at this day and age are the willingness to earn as much as possible, improve one's living condition, learn a foreign language, and push one's professional career further.

The migration of people is not a new issue, but in the age of globalization, it is becoming notably more common, as well as more interesting for scientists, especially due to its diverse nature and changes that it initiates in various walks of life of migrants. The representatives of many society sciences-related disciplines, as well as a number of followers of theoretical doctrines have been remarkably interested in the phenomenon of migration and aspects connected with it . It has to be noted that the determination of people to travel from their own country to a foreign one has always had a notable impact on the state of such countries and their societies.

Keywords:

transnational family, quality of live, migration

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DIFFERENT WAYS OF SPENDING FREE TIME AMONG CHILDREN IN EARLY SCHOOL AGE

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A few words about the author:

PhD student (University of Silesia, Katowice), teacher at primary school.

Abstract:

This article focuses on the problem of the idea of free time; after the school, duties and chores; among children in early school age. The free time children's life matters specially as the it can be spend in different ways, which are only sometimes related to children's interests. Many habits are created in the early school age. Because of that it is important to prepare children to use and spend free time rationally. The amount of free time, what influences the free time and where or how the free time is spent are the three factors which are important in upbringing. If children acquire right habits of spending free time during their childhood, it will be easier for them to arrange their free time when they are older.
The aim of this article is to present the results of the research on free time among third – formers. From this results one can learn if the structure of children's free time is correct and if social media and technology are the main factor which influences children's free time.

Keywords:

early-school age, free time, ways of spending free time

THE REPUBLIC OF FINLAND - SECURITY POLICY AND DEVELOPMENT PROSPECTS

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A few words about the author:

Master of Arts, PhD student at the National Security Department of the War Studies Academy in Warsaw. His scientific interests focus on threats to Poland's internal security and selected threats to international security.

Abstract:

Taking into account the dynamism and multi-faceted nature of contemporary threats, states create their own security concepts, adequate to the current situation. The security concept pursued by the Republic of Finland is based on a policy of non-alignment, i.e. remaining outside the structures of military alliances.
The accepted research problem is to answer the question: how does the Republic of Finland create its own security in the 21st century? Consequently, the research area will be concerned with the concept of national security of the Republic of Finland after 1991 in the Northern Europe region. Adequate to the accepted research problem and research area, the following hypothesis has been put forward: historical experience suggests that the maintenance of the policy of non-alignment by the Republic of Finland will be an effective solution against contemporary threats to the modern world.
Therefore, in order to meet the requirements of the assumptions of scientific, the characteristics of Finland were initially presented. In this text, reference is also made to the neighbourhood policy of the Republic of Finland. The next part is made up of challenges, opportunities and threats of the Republic of Finland.

Keywords:

Republic of Finland, security policy, policy of non-alignment

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UNCONVENTIONAL METHODS OF ADVERTISING AND INTERACTION WITH FANS ON THE EXAMPLE OF POLISH FOOTBALL CLUBS

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A few words about the author:

The author of this presentation is a student (MA) of a Journalism and Social Communication on the University of Warmia and Mazury in Olsztyn. He especially conducts research in sports marketing.

Abstract:

Nowadays posters, billboards or leaflets are advertising kind of media which do not arouse the interest of recipients, as it was in the 20th century. The multitude of traditional marketing tools is decreasing their attractiveness and effectiveness. Currently, unconventional ways of conducting advertising activities are becoming more and more popular. Unusual advertising methods are important factor in a process of building the media image of the most popular Polish 'Ekstraklasa' teams.

The presentation of unconventional forms of marketing was preceded by a detailed analysis of this issue. The research sample consists of marketing activities of such clubs as Legia Warsaw, Śląsk Wrocław, Lechia Gdańsk, Cracovia Kraków, Piast Gliwice and Jagiellonia Białystok. The sources of presented forms are from social media: Facebook, Twitter or YouTube. There are the most popular king of a new media among the society of Polish football clubs supporters. The time range of the analyzed issue is in the years 2015 – 2019.

The main purpose of the presentation is to present unconventional methods of marketing activities on the example of Polish football clubs. The other aim is an attempt to find the answer on the question: What more attracts fans to come to stadiums - marketing activities or other factors like good sport results, rank of the match, date of match or infrastructure?

Keywords:

sport, marketing, advertisement, football, social media

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LETTERS OF LOVE. JOANNA BOBROWA IN THE CORRESPONDENCE OF ZYGMUNT KRASIŃSKI

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A few words about the author:

I'm a student of literary science. The title of my master thesis was: Witness to the Epoch. Krasiński as an epistolographer. I want to eleborate on the topic, so I decided to present romantic love in his letters.

Abstract:

Love in the life of Zygmunt Krasiński occupied a special role. Two women deserve attention here: Joanna Bobrowa and Delfina Potocka. They radically changed Krasiński's way of thinking about love, especially Bobrowa. She was the first woman thanks to whom the poet could see what sensual and carnal love is.

The affair that lasted few years was perfectly in line with the romantic idea, subordinated to the poet's entire life. The relationship with Bobrowa was a perfect example of romantic love, governing its own rights, not subjected to any conventions. And though the love did not survive, as Krasiński - due to his father's order - ended his relationship with Bobrowa, there is no doubt to say how enormous role it played in his life, which we can see reading a large correspondence of the poet, whose value can not be overestimated, and which perfectly shows us the life of romantic heroes.

Keywords:

romanticism, love, letters

USE OF MOBILE APPLICATIONS IN SCHOOL

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A few words about the author:

I am a student of Early Education Pedagogy from the University of Warmia and Mazury in Olsztyn.

Abstract:

The main objective of this work was to check the knowledge of applications among students of Early Education Pedagogy. The work began with characterizing applications that were used during the research. The study, based on a questionnaire, was carried out among 50 students from different level of study of Early Education Pedagogy from the University of Warmia and Mazury in Olsztyn. The obtained results showed that the respondents consider QUIZZIZ as the best application. Students declared that they would use those applications, which support child's development. The key words which appeared most often in the respondents' answers were memory, source, knowledge and attractiveness.

Keywords:

mobile applications, students, school, university

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