Macedonian International Medical Publications Indexed in PubMed in 2013


Faculty of Medicine, Ss. Cyril and Methodius University of Skopje, Skopje, Republic of Macedonia

Abstract

We present abstracts of published papers in international journals deposited in PubMed. Search details were: ((Macedonia[Affiliation] NOT Greece[Affiliation]) NOT "Priloz/[Journal]") AND ("2013/01/01"[PDAT] : "2013/12/31"[PDAT]), dated March 01, 2014. A total number of 138 papers were selected in PubMed during 2013 year, 23 of which were not from Republic of Macedonia and were excluded.

A total number of 105 papers are included in 2013 year in PubMed from Republic of Macedonia. Four papers are deposited in the PubMed without abstracts.

Editorial Board does not take any responsibility either for the content, nor the quality of the abstracts.


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BACKGROUND: Since its formation after the breakup of Yugoslavia, Macedonia has made major strides in formulating a framework for protecting patient rights through extensive legal reform. The impact of this reform had not been assessed before the work of this project. METHODS/OBJECTIVES: Within the context of a larger project on improving human rights in patient care, this paper provides an overview of patients' rights legislation in Macedonia and uses research, case reports, and other empirical information to highlight the gaps in the implementation of patients' rights legislation on the ground. RESULTS: The Law on the Protection of Patients’ Rights (2008) and attendant legislation governing health care provision and other aspects of the social contract in Macedonia provide extensive protections for the rights of patients in such domains as the right to access health care, the right to information, and the right to remedy. This legislation also outlines several new procedural channels to enable patients to vindicate their rights within institutional and governmental structures on the local and national levels. Data from a number of studies and case file reviews suggest, however, that the implementation of many key provisions is lacking, both in terms of quality and presence of services or mechanisms contemplated by Macedonian law. Gaps in implementation disproportionately affect vulnerable and marginalized groups, including women, rural residents, and Roma. DISCUSSION: Although the letter of Macedonian law generally complies with international best practices in patients' rights, these rights are not fully implemented and the mechanisms implied are not fully functional. Additional investment must be made in monitoring systems, education, and incentive mechanisms to ensure effective implementation, including the formation of a mandated commission for the protection of patients' rights. PMID: 24421164


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To evaluate applicability of Demirjian and Willems methods for calculating dental age of children in the Former Yugoslav Republic of Macedonia we analyzed panoramic radiographs of 966 children (485 female and 481 male, aged 6-13 years) treated at the University and Community Dental Clinics in Skopje using four Demirjian methods and a Willems method for determining dental ages. Intra-rater and inter-rater agreement of mineralization stages were 0.86 and 0.82, respectively. All methods significantly overestimated dental age when compared to the chronological age (p<0.001). In males, the lowest overestimation was shown using Willems method (0.52±0.87 years), followed by Demirjian methods from 1976 using PM1, PM2, M1, M2 teeth (0.89±0.92 years) and using I2, PM1, PM2, M2 teeth (0.80±0.98 years). The greatest overestimation was shown using Demirjian methods using 7 teeth from 1976 (0.92±0.99 years) and method from 1973 (1.06±1.07 years). In females, the lowest overestimation was shown using Willems method (0.33±0.83 years) than the Demirjian method using PM1, PM2, M1, M2 teeth (1.00±1.01 years), following methods from 1976 using 7 teeth (1.03±1.01 years) and I2, PM1, PM2, M2 teeth (1.12±0.96 years). The greatest overestimation was for method from 1973 using 7 teeth (1.17±0.98 years). Willems method was the most accurate while Demirjian’s methods for dental age calculation are not suitable on children from the Former Yugoslav Republic of Macedonia. PMID: 24262808


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One aim of the research was to challenge a previously selected repeatability model with 2 other repeatability models. The main aim, however, was to evaluate random regression models based on the repeatability model with lowest mean-squared error of prediction, using Legendre polynomials up to third order for both animal additive genetic and permanent environmental effects. The random regression and repeatability models were compared for model fit (using likelihood-ratio testing, Akaike information criterion, and the Bayesian information criterion) and the models’ mean-squared errors of prediction, and by cross-validation. Cross-validation was carried out by correlating excluded observations in one data set with the animals’ breeding values as predicted from the pedigree only in the remaining data, and vice versa (splitting proportion: 0.492). The data was from primiparous goats in 2 closely tied buck circles (17 flocks) in Norway, with 11,438 records for daily milk yield and 6,886 records for content traits (fat, protein and lactose percentages). A simple pattern was revealed; for daily milk yield with about 5 records per animal in first lactation, a second-order random regression model should be chosen, whereas for content traits that had only about 3 observations per goat, a first-order polynomial was preferred. The likelihood-ratio test, Akaike information criterion, and mean-squared error of prediction favored more complex models, although the results from the latter and the Bayesian information criterion were in the direction of those obtained with cross-validation. As the correlation from cross-validation was largest with genetic regression, genetic merit was predicted more accurate with random regression models than with the repeatability model. PMID: 23357012


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Differential scanning calorimetry and Fourier transform infrared spectroscopy were applied as screening analytical methods to assess the solid-state compatibility of indapamide (4-chloro-N-(2-methyl-2,3-dihydroindol-1-yl)-3-sulfamoyl-benzamide) with several polymers aimed for development of 24 h sustained release solid-dosage formulation. After the initial research phase which was directed towards selection of suitable polymer matrices, based on their solid-state compatibility with the studied pharmaceutical active ingredient, the second phase of evaluation was intended for compatibility selection of other excipients required to complete a sustained release formulation. The presented results have shown that polyvinylpyrrolidone/polyvinyl acetate might be considered incompatible with indapamide, and the implementation of this polymer career should be avoided in the case of the entitled development. The experimental data additionally have revealed that sorbitol is incompatible with indapamide. The obtained results afforded deeper insight in to the solid-state stability of the studied binary systems and pointed out directions for further development of indapamide sustained release solid-dosage formulation. PMID: 22998073


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INTRODUCTION: Burch colposuspension is a standard treatment for stress urinary incontinence. However, it is associated with recurrence and urinary retention. We describe a modification of this technique to overcome these problems and evaluate the results in comparison with the standard procedure. MATERIALS AND METHODS: A total of 145 patients with isolated stress urinary incontinence (SUI), underwent either our modified pleated colposuspension (PC); n = 97) or standard Burch colposuspension (BC) (n = 48). Description of PC. Three No. 0 non-absorbable sutures were placed in the side-to-side manner at the mid-urethral level with 0.5-1.0 cm distance between them using double bites and were passed through the Cooper’s ligament. The patients were followed-up every 6 months for SUI and genital prolapse evaluation. Successful surgery was defined as (1) No self-reported SUI symptoms, (2) Negative Marshall’s coughing test (MT), (3) No retreatment for SUI, (4) Absence of urodynamic SUI. In addition, failure was defined as the occurrence of urinary retention, use of catheter on 6-week visit, maximum flow rate <15 ml/s, flow time <60 s, or residual urine <100 ml. Data was compared using Student’s paired test and Mantel-Haenzel’s (x2) test. P >0.05 was considered significant. RESULTS: The mean follow-up after surgery for PC was 102.4 months and for BC was 103.6 months. At last follow-up, data suggesting failure (Stress score ≥7, urge score ≥7, Pad test with weight < 15 g/day and positive MT during lithotom/uppright position) were more frequent in BC group (P > 0.05; P > 0.0; P > 0.01; P > 0.05; P > 0.05, respectively). The incidence of recurrent SU1 was 5.2% after PC and almost triple (14.6%) after BC. Residual urine <100 ml and weak stream were more frequent in the BC group (P > 0.05; P > 0.01, respectively). Detrusor over-activity on urodynamic studies, Flow time <60 s, urethral pressure profilometry positive for obstruction had a higher incidence in BC group (P

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Advanced glycation end-products (AGEs) are uremic toxins that accumulate progressively in hemodialysis (HD) patients. The aim of this study was to assess the 1-year increase in skin autofluorescence (ΔAF), a measure of AGEs accumulation and plasma markers, as predictors of mortality in HD patients. One hundred sixty-nine HD patients were enrolled in this study. Skin autofluorescence was measured twice, 1 year apart using an AGE Reader (DiagnOptics Technologies BV, Groningen, The Netherlands). Besides routine blood chemistry, additional plasma markers including superoxide dismutase, myeloperoxidase, intercellular adhesion molecule 1 (ICAM-1), C-reactive protein (hs-CRP), heart-type fatty acid binding protein (H-FABP), and von Willebrand factor were measured at baseline. The mortality of HD patients followed for 36 months. Skin autofluorescence values of the HD patients at the two time points were significantly higher (P < 0.001) than those of healthy subjects of the same age. Mean 1-year ΔAF of HD patients was 0.16 ± 0.06, which was around seven to nine fold higher than 1-year ΔAF in healthy subjects. Multivariate Cox regression showed that, age, hypertension, 1-year ΔAF, hs-CRP, ICAM-1, and H-FABP were independent predictors of overall mortality. Hypertension, 1-year ΔAF, hs-CRP, and H-FABP were also independent predictors of cardiovascular mortality. One-year ΔAF and plasma H-FABP, used separately and in combination, are strong predictors of overall and cardiovascular mortality in HD patients. PMID: 23635017


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Several studies have investigated the genetic polymorphisms for cytokines as potential genetic markers for periodontitis. The aim of this study was to determine the prevalence of IL1 cluster genes polymorphisms and their association with chronic periodontitis in the Macedonian population. The group of 114 unrelated Macedonian subjects with chronic periodontitis and 301 periodontitis-free Macedonian subjects were studied. DNA was isolated from peripheral blood leukocytes by phenol-chloroform extraction method. Cytokine genotyping was performed by PCR-SSP. The population genetics analysis package (PyPop) was used for analysis of the cytokine data for this report. Crude odds ratio (OR) was calculated as estimates of the relative risk with 95% confidence interval (CI). Genotype frequency of IL1B -511C:T was significantly higher in patients with periodontitis than in controls (OR=2.11, 95% CI=1.35-3.32, p=0.001). IL1 cluster gene haplotype frequencies of TTCTT and CCTTTT were associated with higher risk for periodontitis (OR=5.06, 95% CI=1.18-22.6, p=0.004 and OR=8.35, 95% CI=1.67-41.69, p=0.002, respectively). No significant association of IL1 composite genotype (IL1 -898A:IL1B -9362) with periodontitis in Macedonians was found. The latter association was found to be significant in genotype IL1B -511C:T, haplotype TTCTT, and haplotype CCTTTT, but without significant association in IL1 composite genotype (Tab. 5, Ref. 43). PMID: 23822621


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BACKGROUND/AIMS: The aim of this study was to compare the progression of aortic stiffness in chronic hemodialysis patients (CHP) with that of general population patients (GPP) over a 36-month period and to evaluate the determinants of this progression. METHODS: The study group included 80 patients undergoing hemodialysis (aged 59.3 ± 11.8 years; duration of dialysis 5.47 ± 5.16 years). The control group consisted of 60 patients (aged 57.5 ± 10.9 years) with a glomerular filtration rate of > 60 mL/min/1.73 m2. Pulse wave velocity (PWV) was determined from time diversity propagation of the common carotid artery and femoral artery by Doppler ultrasound. Clinical and biochemical parameters were determined in serum using standard laboratory procedures. RESULTS: The mean PWV values at baseline and 36 months were 11.18 ± 2.23 for a 1022 ± 2.34 m/sec in the CHP group, and 9.02 ± 1.89 and 9.29 ± 1.93 m/sec in the GPP group, respectively. The average PWV progressions were 63.95 ± 18.373 cm/sec in CHP and 27.28 ± 28.519 cm/sec in GPP. By multiple regression analysis, hemoglobin (standardized coefficient β [βst] = -0.405, p = 0.004; βst = -0.364, p = 0.011), albumin (βst = -0.349, p = 0.042; βst = -0.303, p = 0.034), CRP (βst = 0.458, p = 0.002; βst = 0.187, p = 0.008), and total cholesterol (βst = 0.236, p = 0.038; βst = 0.171, p = 0.078) were independently associated with PWV in the CHP and GPP groups, respectively. CONCLUSIONS: Accelerated arterial stiffness was more pronounced in the CHP group than in the GPP group. The independent determinants of this progression in both groups include traditional risk factors and blood levels of hemoglobin, albumin and CRP. Cholesterol and uremia-related factors are determinants only in CHP. PMID: 23885405


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A systematic study was carried out to investigate air deposition and to explore the natural distribution and enrichment (containment) with trace elements in the small area (cca. 13 km²) of an antimony-arsenic-thallium mineralization outcrop at an abandoned mine "Allchar." The mine is located on the northwestern part of Kožuf Mount, Republic of Macedonia. The locality of Allchar is unique in its mineral composition; besides a very intriguing mineral, lorandite, there are 45 other minerals, some of which are rare. The distribution of 53 elements (with special attention to As, Sb, and Tl) were detected in 69 moss samples from eight various species collected from this area. Moss samples were analyzed following microwave digestion by inductively coupled plasma-mass spectrometry and inductively coupled plasma-atomic emission spectrometry. It was found that the atmospheric deposition for As in the moss samples on or around the Allchar mine is >6.5 times higher and for Tl is 19 times higher compared to values for the samples from the rest of the Allchar area. By the application of multivariate cluster and R-mode factor analyses (FA), five geochemical associations were determined. Cluster and R-mode FA were used to identify and characterize element associations, and five associations of elements were determined by the method of multivariate statistics. F1 (Co, Cr, Fe, Sc, Li, V, Ga, Y, Ni, Mn, Al, La-Lu, Cu, Ge, Be, Bi, and Hf); F2 (As, Ti, Sb, and Mg); F3 (Rb, Cs, and Mo); F4 (Sr, Ba, Hf, Zr, La-Lu, and Bi); and F5 (Cd, Zn, Ag, and Cu). PMID: 23726028


The Balkans are known to have a high level of biodiversity and endemism. No less than 15 taxa have been recorded in salmonids of the Salmo genus. Among them, the Prespa trout is found in only four river systems flowing into Lake Macro Prespa, three in the Former Yugoslav Republic of Macedonia and one in Greece. This is the first comprehensive survey of all streams located within the Macro Prespa Basin, encompassing the whole taxon range. A large genetic sample of 536 Prespa trout was collected mainly between 2005 and 2007. The sampling included 59 individuals from the Golema river system, 93 from the Kranška, 260 from the Brajičinska, 119 from the Agios Georgios, and five individuals from the lake itself. These specimens were analyzed with six microsatellite markers and by sequencing the mitochondrial control region. Nuclear data were examined through multidimensional analysis and assignment tests. Five clusters were detected by assignment: Golema, Kranška, Brajičinska upstream, Ržanska Brajičinska tributary and Brajičinska downstream. Most of these river systems thus hosted differentiated Prespa trout populations (with past gene flows likely dating before the construction of dams), except Agios Georgios, which was found to be composed of 5% to 32% of each cluster. Among the five trout individuals from the lake, four originated from Kranča River and one was admixed. Supported parsimonious hypotheses are proposed to explain these specificities. Conservation of this endemic taxon should take these results into account. No translocation should be performed between different tributaries of the lake and preservation of the Brajičinska populations should address the upstream-downstream differentiation described. PMID: PMC3876056. PMID: 24287917


The communicable disease threats and changes that began emerging in south-eastern Europe in the early 1990s - after a decade of war and while political and health systems region-wide were undergoing dramatic changes - demanded a novel approach to infectious disease surveillance. Specifically, they called for an approach that was focused on cross-border collaboration and aligned with European Union standards and requirements. Thus, the Southeastern European Health network (SEEHN) was established in 2001 as a cooperative effort among the governments of Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Moldova, Montenegro, Romania, Serbia, and the former Yugoslav Republic of Macedonia. In 2002, SEEHN initiated a communicable diseases project aimed at strengthening both national and regional surveillance systems with a focus on cross-border collaboration. Over time, SEEHN has nurtured growth of a regional fabric of SEE experts in communicable diseases surveillance and response who are able to discuss emerging issues and best practices at any time and without being constrained by the rigidity of traditional or existing systems. Main achievements to date include joint preparation of influenza pandemic preparedness plans at both national and regional levels and the introduction of molecular techniques into influenza surveillance laboratories region-wide. Here, we describe the history of the SEEHN communicable disease project; major activities and accomplishments; and future sustainability of the regional infectious disease surveillance network that has emerged and grown over the past decade. PMCID: PMC3557907. PMID: 23382410


Mineral phases and their content were determined in attic dust samples collected from 27 houses in the Tîkves Valley, Republic of Macedonia. By using quantitative X-ray diffraction, the principal mineral phases were determined to be the serpentinite group (chrysotile, lizardite) and amphibole group of minerals (ribecite, tremolite, actinolite) present in the attic dust samples from this region which are not common constituents of urban dust. Strong correlations existed between these mineral phases in the dust and those in ores processed at a ferromineral smelter plant situated in this region. Spatial distributions of specific mineral phases were made and were consistent with wind directions and predicted deposition (60-70 %) of dust emitted from the metallurgical plant. PMID: 23179222


We evaluated the clinical usefulness of assessing the ankle-brachial index (ABI) and carotid stenosis (CS) in a type 2 diabetic population. Patients with type 2 diabetes and coronary artery disease (n = 265) were enrolled in a prospective 3-year cohort study. The cardiovascular mortality rate was 8.7% (23 of 265) during the 36-month study and the all-cause mortality rate was 9.5% (25 of 265). Multivariate logistic regression analysis revealed that age (odds ratio [OR] 2.09), hypertension (OR 7.99), obesity (OR 4.86), internal CS (OR 262.17), and Gensini score (OR 1.15) were independent predictors of cardiovascular mortality. Mean ABI value (OR 0.15) was the only predictor of all-cause mortality in this population. The ABI and carotid artery ultrasound have independent prognostic value in a type 2 diabetic population. PMID: 22323833


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BACKGROUND: Limited studies have suggested that inflammatory biomarkers play a role in the initiation and progression of atherosclerosis in diabetic patients. This study assesses the effect of inflammatory biomarkers: fibrinogen and C-reactive protein (C-RP) in type 2 diabetic patients. METHODS: Sixty two patients with T2D and PAD (mean age 60.28±27 years and diabetes duration of 8.58±6.17 years) enrolled in a cohort prospective study of 36 months. Ankle-brachial index (ABI) was measured in all patients at baseline and after 36 months. Multiple linear regression analysis was used to predict the predictivity of variables for fibrinogen, C-RP, plasma lipid fractions, fasting plasma glucose, Body Mass Index (BMI), duration of diabetes status and the age on changes in ABI value. RESULTS: Linear regression analysis defined F as a predictor for endpoint value of ABI (β = 0.409, p = 0.007). Value of C-RP determines change of minimal value of ABI (β = 0.449, p = 0.003) and change of mean ABI per year (β = 0.442, p = 0.005). CONCLUSION: Our data indicate that plasma determination of fibrinogen and C-RP might have a clinical implication in defining the process of progression of PAD in T2D population. PMID: 23375154


AIM: To determine the concentration of total plasma homocysteine (tHcy) as well as Cytosine (C677T) gene polymorphism of MTHFR (C677T) in both, the control group and the examined patients. METHODS: The level of tHcy in the examined patients was significantly higher in comparison with the control group. Multiple regression analysis has shown that tHcy level in CT and TT genotypes of MTHFR (C677T) was statistically higher in comparison with CC genotype of MTHFR (C677T) in both, the control group and the DVT patients. PMID: 23804432


Acetic acid is a widely used organic acid with corrosive properties that depend on its concentration. If acetic acid is ingested in concentrations above 30 % it may severely damage the upper gastrointestinal tract and cause intravascular haemolysis, which can result in severe kidney and liver disorders and disseminated intravascular coagulation. In this retrospective study, we analysed acetic acid ingestion data collected at the University Clinic for Toxicology of Skopje, Macedonia from January 2002 to 31 December 2011. The analysis included systemic complications, kidney damage, and the outcomes in particular. Over the ten years, 84 patients were reported at the Clinic to have ingested highly concentrated acetic acid. Twenty-eight developed kidney disorders, while the remaining 56 had no complications. Fatal outcome was reported for 11 patients, seven of whom had systemic complications and four severe gastrointestinal complications. PMID: 23858201


Although the knowledge and use of several Salvia species (Salvia officinalis, Salvia fruticosa, and Salvia pomifera) can be dated back to Greek Era and have a long history of culinary and effective medicinal use, still there is a remarkable interest concerning their chemistry and especially the polyphenolic composition. Despite the demand in the food and pharmaceutical industry for methods for fast quality assessment of the herbs and spices, even now there are no official requirements for the minimum content of polyphenols in sage covered by current regulations neither the European Pharmacopoeia nor the ISO 11165 regulations. Therefore, the authors work a rapid analytical method for extraction, characterization and quantification of the major polyphenolic constituents in Sage was developed. Various extractions (infusion - IE; ultrasound-assisted extraction - USE and microwave-assisted extraction - MWE) were performed and evaluated for their effectiveness. Along with the optimization of the mass-detector and chromatographic parameters, the applicability of three different reverse C18 stationary phases (extra-density bonded, core-shell technology and monolith column) for polyphenols characterization was evaluated. A comprehensive overview of the very various polyphenolic compounds in different plant samples of 68 populations of wild growing culinary Salvia species (S. officinalis: 101; S. fruticosa: 15; S. pomifera: 2) collected from South East Europe (SEE) was performed using HPLC-DAD-ESI-MS(n) and more than 50 different compounds were identified and quantified. With this work the knowledge about deep vein thrombosis. Concentration of tHcy was determined by spectrophotometric cyclic enzymatic method and mutation of MTHFR (C677T) gene was examined by polymerase chain reaction according to Schneider. PMID: 24167429


AIM: To determine the concentration of total plasma homocysteine (tHcy) as well as different genotypes of methylenetetrahydrofolate reductase MTHFR (C677T) in healthy subjects and patients with deep vein thrombosis (DVT). MATERIAL AND METHODS: The investigation comprised a total of 160 subjects divided in two main groups: 80 healthy subjects (control group) and 80 patients with...
polyphenols of culinary Sage was expanded thus the possibility for gaining an insight into the chemodiversity of culinary Salvia species in South East Europe was unlocked. PMID: 23415138


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No abstract available. PMID: 24165668


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BACKGROUND AND OBJECTIVES: Previous studies have shown a higher prevalence of metabolic syndrome in patients with psoriasis compared to controls. However, little attention has been paid to the effect of systemic anti-psoriatic drugs on the metabolic syndrome. The aim of this study was to investigate the association between psoriasis and the metabolic syndrome, by comparing untreated patients with psoriasis and population based control.

PATIENTS AND METHODS: We conducted a hospital-based case-control study that included 122 untreated patients with plaque psoriasis and 122 age- and gender-matched controls. RESULTS: There was no significant difference in the prevalence of the metabolic syndrome between the patients with psoriasis (24.6 %) and the controls (22.9 %) (OR 1.095, 95 % CI 0.607-1.974). Among the components of the metabolic syndrome only hypertriglyceridemia and abdominal obesity were associated with psoriasis. The psoriatic patients with metabolic syndrome had a higher mean age (p = 0.001), and higher mean BMI (p = 0.001) compared with the psoriatic patients without metabolic syndrome. The metabolic syndrome was not associated with the severity of psoriasis. CONCLUSIONS: Untreated patients with psoriasis have no significantly higher prevalence of the metabolic syndrome than healthy controls. Our data suggest that systemic anti-psoriatic drugs may play an important role in the pathogenesis of the metabolic syndrome. PMID: 24267013


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No abstract available. PMID: 24094527


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Early detection and genotyping of HCV infection is important for disease management. It is important to develop fast and cost-effective semi-automated techniques allowing an accurate and reproducible detection, quantification and genotyping of HCV. The proposed protocol includes a real-time RT-PCR assay for HCV detection/quantification and a type-specific one-tube RT-PCR assay for genotyping. Both assays detect genotypes 1-4 as intended. The limit of detection was 116IU/mL for the real-time assay and 600±278IU/mL (mean±SD) for the genotyping assay. Concordance between the real-time assay and AMPLICOR HCV v2.0 test was 100%. The real-time assay has wide linear dynamic range of detection and quantification and excellent reproducibility with 2% and 0.75% coefficients of variations, for inter- and intra-assays respectively. The observed correlation with AMPLICOR HCV Monitor v2.0 kit was linear with the correlation coefficient of 0.988. The diagnostic specificity and sensitivity of the genotyping assay, tested on 102 samples, was 100% and 95%, respectively. The overall procedure of HCV diagnosis is completed within 6h in a closed system with minor contamination risk. In addition to being fast and cost-effective, this approach is reproducible and avoids post-PCR enzymatic and hybridization steps while detecting and genotyping HCV with high clinical sensitivity. PMID: 24269794


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INTRODUCTION: The aim of this study was to determine whether HPV DNA test after cold knife conization is a predictive factor for CIN persistence or recurrence. The study also investigated whether HPV DNA test results should influence post cold knife excision surveillance. MATERIALS AND METHODS: A retrospective observational study on 739 cases of women who underwent cold knife conization for CIN or microinvasive cervical cancer at the University Clinic of Obstetrics & Gynecology, Medical Faculty, Ss. Cyril and Methodius University, Skopje from 1st June 2007 to 1st June 2009. A total of 217 patients met the inclusion criteria and were with complete data. The follow-up HPV DNA testing was performed at 8 months after cold knife conization, after which the patients were followed-up every 4 months till 24 months postoperatively. RESULTS: HPV DNA testing after 8 months after conization showed that 44 patients were HPV DNA positive and 199 were HPV DNA negative. Recurrent cytological abnormalities were found in 26 of the 44 HPV DNA positive patients, and in 12 of the 199 HPV DNA negative patients. Analysis showed that a positive HPV DNA result was a risk factor for recurrent/persistent cervical intraepithelial neoplasia. CONCLUSION: HPV DNA testing 8 months after conization is important for predicting the risk of disease persistence or recurrence. In addition, such testing can assist in designing patient management, since HPV DNA negative patients should undergo routine surveillance, while HPV DNA positive patients should undergo frequent and meticulous surveillance. PMID: 23807985


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INTRODUCTION AND AIM: To present the basic principles and standards of scientific communication and writing a paper, to indicate the importance of honesty and ethical approach to research and publication of results in scientific journals, as well as the need for continuing education in the principles and ethics in science and publication in biomedicine. METHODS: An analysis of relevant materials and documents, sources from the internet and published literature and personal experience and observations of the author. RESULTS: In the past more than 20 years there is an increasingly emphasized importance of respecting fundamental principles and standards of scientific communication and ethical approach to research and publication of results in peer review journals. An advance in the scientific community is based on honesty and equity of researchers in conducting and publishing the results of research and to develop guidelines and policies for prevention and punishment of publishing misconduct. Today scientific communication standards and definitions of fraud in science and publishing are generally consistent, but vary considerably policies and approach to ethics education in science, prevention and penal policies for misconduct in research and publication of results in scientific journals. CONCLUSION: It is necessary to further strengthen the capacity for education and research, and raising
Ultrasound examination was performed in 80 hemodialysis (HD) patients with chronic hepatitis C in order to determine the ultrasound predictors of compensated liver cirrhosis. The ultrasound score (US) was calculated from the morphological parameters (liver size, morphology, surface, echogenicity and spleen volume) and the hemodynamic parameters (portal vein diameter and portal vein mean flow velocity). The US ranged from 0 to 200, with a cut-off value of 66, for discrimination between absence and presence of liver cirrhosis. A logistic regression model with stepwise variable selection was used to determine predictors of the progression of liver cirrhosis. According to the calculated US, patients were divided into two groups. The first group consisted of 37 (46.3%) patients without liver cirrhosis, with US greater than 66, indicating the presence of compensated liver cirrhosis. The second group included 43 (53.7%) patients with liver cirrhosis, with US equal to or less than 66. The value of liver morphology was significantly higher, but the portal vein flow velocity was significantly lower in patients with compensated liver cirrhosis compared with those without cirrhosis. Furthermore, rounded liver surfaces and increased liver echogenicity were significantly more frequent in patients with compensated liver cirrhosis compared with the non-compensated group. Logistic regression model with stepwise discriminant analysis identified liver morphology, liver echogenicity and portal vein mean flow velocity as independent ultrasound predictors of compensated liver cirrhosis in HD patients with chronic hepatitis C. Ultrasound examination could be used for non-invasive diagnosis of compensated liver cirrhosis, with accurate estimation of the disease severity in HD patients with chronic hepatitis C. PMID: 23354188

Erdem H(1), Inan A(2), Altindis S(3), Carevic B(4), Askarian M(5), Cottie L(6), Beovic B(7), Csomos A(8), Metodiev K(9), Abasian M(10), Harxhi A(11), Raka L(12), Grozdanovski K(13), Nechifor M(14), Alp E(15), Bozkurt F(16), Hosoglu S(16), Balik I(17), Yilmaz G(17), Moravec V(18), Aslan T(19), Elalii N(22), Moravej V(23), Eskinazi S(24), Nasab A(25), Moravej S(26), Tavakoli S(27), Gergic S(28), Cosic G(29), Stefanov C(30), Farrokhi M(31), Muller M(32), Luca C(14), Koluder N(33), Korten V(34), Platikanov V(35), Ivano K(36), Tsalitoupour S(36), Vakili M(37), Farahangiz S(38), Afkhamzadeh A(39), Beeching N(6), Ahmed SS(15), Cimi A(40), Shiraly R(41), Jayez A(42), Mirkovic T(43), Leblebicioglu H(44), Naber K(45). Ultrasound predictors of progressive liver cirrhosis in hemodialysis patients with hepatitis C. Saudi J Kidney Dis Transpl. 2013 Jan;24(1):30-5.

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Pneumonia was the most frequent ICU infection seen in half of the patients. Distribution of frequent pathogens was as follows: Enteric Gram-negatives (n = 62, 28.8%), Acinetobacter spp. (n = 47, 21.9%), Pseudomonas aeruginosa (n = 29, 13.5%). Multidrug resistance profiles of the infecting microorganisms seem to have a uniform pattern throughout Southern Europe and Turkey. On the other hand, active and device-associated infection surveillance was performed in Turkey more than Iran and Southeastern Europe (p < 0.05). In designing antibiotic treatment according to culture results was highest in Southeastern Europe (p < 0.05). The most frequently used antibiotics were carbapenems (n = 92, 30.2%), followed by anti-gran positive agents (vancomycin, teicoplanin, linezolid, daptomycin, and tigecycline; n = 79, 25.9%), beta-lactam/beta-lactamase inhibitors (n = 78, 25.6%), and extended-spectrum cephalosporins (n = 73, 23.9%). CONCLUSION: ICU features appear to have similar characteristics from the infectious diseases perspective, although variability seems to exist in this large geographical area. PMID: 24269951


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INTRODUCTION: As the expected survival improves in individuals with the cystic fibrosis (CF), so they may be faced with a number of medical complications. OBJECTIVE: The aim of this study was to analyze the prevalence of liver cirrhosis in our CF population as well as the clinical and genetic characteristics of these patients. METHODS: All patients older than 2 years (n = 96) were screened for liver disease. Liver cirrhosis was defined by ultrasonographic findings of distinct heterogeneity of liver parenchyma and nodular liver surface and/or by liver biopsy findings. Enlarged spleen, distended portal vein and abnormal portal venous flow indicated portal hypertension. Clinical and genotype data were analyzed. RESULTS: Sixteen patients were found to have liver cirrhosis, three of them with portal hypertension. All patients had pancreatic insufficiency. Nutritional status expressed as standard deviation score (Z score) for weight, height, and body mass index was as follows: ZW = -0.40 +/- 1.24, ZH = -0.83 +/- 1.02, and BMI = 20.1 +/- 2.3. PF patients with liver cirrhosis generally had mild to moderate lung disease, with average FVC and FEV1 values of 97.1 +/- 16.5% of predicted and 87.9 +/- 23.5% of predicted, respectively. Genetic analysis showed high frequency of F508del mutation in the group with cirrhosis (90.6%). CONCLUSION: The prevalence of liver cirrhosis in our CF population older than 2 years was 16.6%. Patients with pancreatic insufficiency and severe CFTR mutations, especially F508del, were exposed to higher risk of developing liver cirrhosis. Liver cirrhosis has no significant impact on the pulmonary function and the nutritional status, until the end-stage liver disease. PMID: 24502094


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Considering the confusing biodistribution data obtained from the literature and few reported alerts as well as our preliminary biodistribution results, we decided to evaluate the interaction and interference of the commonly present (99m) Tc (technetium-99m)-stannic oxide colloids during the direct stannous chloride (99m) Tc-labeling procedure and to assess its influence on the biodistribution pattern of amphiphilic nanoparticles. In order to confirm our thesis, beside stannous chloride, we employed two different reducing agents that don't form colloidal particles. The use of sodium borohydride was previously reported in the literature, whereas sodium dithionite was adapted for the first time in the (99m) Tc direct labeling procedure for nanoparticles. The results in our paper clearly differentiate among samples with and without colloidal impurities originating from the labeling procedure with a logical follow up of the radiochemical, physicochemical evaluation, and biodistribution studies clarifying previously reported data on stannic oxide colloidal interference. (99m) Tc-nanoparticle complex labeled with sodium dithionite as reducing agent illustrated appropriate labeling efficacy, stability, and potential for further use in biodistribution studies thus providing solution for the problem of low-complex stability when sodium borohydride is used and colloidal stannic oxide interference for stannous chloride procedure. PMID: 24339006


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BACKGROUND: Western Balkan countries (WBCs) have a long-standing culinary tradition. The promotion of traditional foods may be a tool for coping with modernisation trends in such transition economies. This paper explores consumer preferences toward food in this region, focusing on a traditional fresh cow cheese locally called ‘Mlad Sir’. This product was quoted in all the preliminary focus groups as a common traditional product present in the six WBCs studied: Bosnia-Herzegovina, Croatia, Macedonia, Montenegro, Serbia and Slovenia. RESULTS: After a literature review investigating the concept of traditional food in WBCs and the implementation of focus groups, a survey including a conjoint analysis on preferences for fresh cow cheese was carried out in 2011 to collect data from 1200 respondents. Four clusters of consumers were identified: one focused more on the local origin; one oriented more toward the scale of production (on-farm and small dairy); the third favouring low prices and the fourth preferring high prices and industrial products. CONCLUSION: Policy makers and the supply chain could take these consumer differences into account in order to develop specific strategies. PMID: 23963819


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Self renewal, extensive proliferation and multilineage differentiation ability in vitro and in vivo make mesenchymal stem cells (MSCs) powerful tools for tissue engineering. Beyond their potential uses in regenerative medicine, an emerging field of research aims to utilize MSCs for anti-cancer treatment. These strategies are based on the remarkable ability of MSCs to localize and integrate into tumor stroma and deliver anti-cancer agents (US20100055167, US20120207725, US20120010499). Genetically engineered MSCs can specifically target different tumor types and locally secrete therapeutic proteins such as interferons α and β, interleukins 2 and 12 or chemoxin CXOLT (US20110207239, US20120087901, WO20120171527). In addition, MSCs have also been engineered to deliver oncolytic viruses, for targeted chemotherapy using enzyme prodrug conversion or for inducing tumor cell apoptosis by delivering tumor necrosis factor-related apoptosis inducing ligand (TRAIL) (WO2012106281). The patent databases FPO and Delphion were used to locate patents that were published between 2005 and 2013. Here, we present the current progress and the most recent patents on MSC anti-cancer drug delivery systems and discuss future directions in the field. PMID: 23688246

The present study aimed to analyze the biological effects induced by bioaccumulation of metals in common bean (Phaseolus vulgaris L.). Effects of mineral nutrient imbalance, total antioxidants level and DNA damage induced by accumulation of heavy metals, were investigated in bean seedlings treated with two selected metal concentrations for 7 days. Metal content is analyzed by inductively coupled plasma - atomic emission spectrometer (ICP-AES), for total antioxidants level assessment the Ferric-Reducing Antioxidant Power (FRAP) assay is used and Random Amplified Polymorphic DNA (RAPD) method was applied for investigation of DNA damages. The increasing metal concentration in the treatment medium changed synchronously metal content in samples, and decreased total antioxidant activity in all samples with exception only for samples treated with Ni and Cd. The obtained “DNA fingerprints” demonstrated that the increasing metal concentrations induced changes in RAPD profiles (disappearance and/or appearance of bands in comparison with untreated control samples). The highest number of missing bands was observed in samples treated with zinc (total 4 bands) and nickel (total 4 bands) at both concentrations. These results suggested that mineral nutrient imbalance is involved in changes of antioxidant levels and DNA damages of the seedlings, which may help to understand the mechanism of metal toxicity in plants. PMID: 24431518


Remineralization of hard dental tissues is thought to be a tool that could close the gap between prevention and surgical procedures in clinical dentistry. The purpose of this study was to examine the remineralizing potential of different toothpaste formulations: toothpastes containing bioactive glass, hydroxyapatite, or strontium acetate with fluoride, when applied to demineralized enamel. Results obtained by scanning electron microscopy (SEM) and SEM/energy dispersive X-ray analyses proved that the hydroxyapatite and bioactive glass-containing toothpastes were highly efficient in promoting enamel remineralization by formation of deposits and a protective layer on the surface of the demineralized enamel, whereas the toothpaste containing 8% strontium acetate and 1040 ppm fluoride as NaF had little, if any, remineralization potential. In conclusion, the treatment of demineralized teeth with toothpastes containing hydroxyapatite or bioactive glass resulted in repair of the damaged tissue. PMID: 23659606

calcium-silicate cements performed well as dentine substitutes. The glass-ionomer showed ion exchange properties, whereas the calcium silicate gave an excellent seal resulting from its micromechanical attachment. PMID: 24148964


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We analyze the stabilization of unstable steady states by delayed feedback control with a periodic time-varying delay in the regime of a high-frequency modulation of the delay. The average effect of the delayed feedback term in the control force is equivalent to a distributed delay in the interval of the modulation, and the obtained distribution depends on the type of the modulation. In our analysis we use a simple generic normal form of an unstable focus, and investigate the effects of phase-dependent coupling and the influence of the control loop latency on the controllability. In addition, we have explored the influence of the modulation of the delays in multiple delay feedback schemes consisting of two independent delay lines of Pyragas type. A main advantage of the variable delay is the considerably larger domain of stabilization in parameter space. PMID: 24125330


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We have previously reported the development and characterisation of wheat germ agglutinin (WGA)-functionalised chitosan-Ca-alginate (CTS-Ca-ALG) microparticles (MPs) loaded with acid-resistant particles of 5-fluorouracil (5-FU). In the present work, our goal was to evaluate the potential of these carriers for efficient treatment of colon cancer by studying in vitro permeability and cell association of 5-FU and [methyl-³H]thymidine uptake in Caco-2 cells, as well as in vivo gastrointestinal distribution. The amount of 5-FU permeated through Caco-2 cells was 15.1, 7.7 and 6.5% for 5-FU solution, CTS-Ca-ALG MPs and WGA conjugates. The concentration of 5-FU associated with Caco-2 cells was significantly greater when delivered from MPs. By incorporation of 5-FU into MPs and further decoration with WGA, an increased [methyl-³H]thymidine uptake was observed after continuous drug treatment followed by significantly reduced uptake after 6 h. Gastrointestinal distribution was in favour of increased localisation and concentration of the particles in colon region. PMID: 23544879


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OBJECTIVES: To report the incidence and predictors of moderate/severe radial artery spasm (RAS) in patients undergoing cardiovascular percutaneous procedures through a transradial approach (TRA) in centers with TRA expertise. BACKGROUND: Data regarding the actual rate of clinically meaningful RAS are limited due to difference in study designs and operator expertise. METHODS: The RAS registry, an international (14 centers from Argentina, Chile, India, Indonesia, Macedonia, The Netherlands and United States of America) registry that included 1,868 patients undergoing TRA cardiovascular procedures (63.5% diagnostic and 56.5% therapeutic). All selected centers used TRA as default strategy in the cardiac catheterization laboratory. Throughout 2012, each center included all consecutive RAS cases (during a 2-month period) into a dedicated database covering clinical characteristics as well as procedural topics related to TRA patterns and RAS occurrence. RESULTS: The incidence of moderate/severe RAS was 2.7%. Only 0.7% of patients required crossover (8 to transmemoral and 5 to contralateral TRA). Patients with moderate/severe spasm were more frequently females (36 vs 22%) and smokers (26 vs 14%). Development of moderate/severe RAS was low in centers with a default TRA. Its development appears to be strongly related to the numbers of puncture attempts and the use of large sheaths. PMID: 23785005


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Acid sphingomyelinase deficiency leads to the accumulation of sphingomyelin in cells, causing Niemann-Pick disease (NPD) types A/B. RF (13.66 y) and HF (3 y) are brother and sister. RF growth was markedly delayed at the age of 12.66 y (123 cm; -3.25 SD), while at the age 3 y his sister was 86 cm (-2.76 SD). The brother had a huge liver (13 cm) and spleen (12 cm). His sister also had an enlarged liver, but presented no other symptoms. The fibroblast cultivation had a reduced sphingomyelinase activity in the fibroblasts (0.68 mkat/kg protein), β-galaktosidase (937 mkat/kg) and glucosidase (125.4 mkat/kg) were elevated. Mutation analysis demonstrated the siblings are compound heterozygotes (V112M and H554Y). The mother is carrier of V112M and the father carries H554Y. This is the first report of NPD type B in Macedonia. The novel mutation results in a moderately severe phenotype of NPD type B. PMID: 22367733


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In this work we report on a new, rapid and simple voltammetric method to determine total antioxidative capacity (TAC) of the edible oils. The method explores the ABTS radical (+) by Trolox (6-hydroxy-2,5,7,8-tetramethylochroman-2-carboxylic acid) or by antioxidants present in studied oils. The detection limit of the method is determined to be 0.1 µmol/L of Trolox. In the TAC analysis, the need for more than one attempt and the use of a 7 F sheath were independent predictors of the development of moderate/severe RAS. CONCLUSIONS: The incidence of moderate/severe RAS is low in centers with a default TRA. Its development appears to be strongly related to the numbers of puncture attempts and the use of large sheaths. PMID: 23785005

Hiljadnikova Bajro M(1), Šukarova-Langelovska E, Adélaïde J, Chaffanet M, Dimovski AJ. A new case with 10q23 interstitial


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Calcium oxalate (CaOx) is the most prevalent type of kidney stone. The amount of oxalate excreted in the urine is a major risk factor for CaOx stone formation. The study by Siener et al. makes a substantial contribution to our understanding of how occurrence of oxalate stones is determined by genetic factors. The study provides evidence that different uric acid metabolism and excretion in humans and hence influences the risk of developing CaOx kidney stones.

PMID: 23728004

Ivanovski V(1), Mayerhöfer TG. Vibrational spectra and dispersion analysis of K2Ni(SeO4)2·6H2O Tutton salt single crystal doped with K2Ni(SO4)2·6H2O. Spectrochim Acta A Mol Biomol Spectrosc. 2013 Oct;114:553-62.

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Dispersion analysis of the polarized IR reflectance spectra of K2Ni(SeO4)2·6H2O doped with K2Ni(SO4)2·6H2O has been performed. Vibrational parameters like oscillator strength, attenuation constant and frequency of the transversal phonons for the modes of Au symmetry type plus the orientation of the transition dipole moments for the modes of Bu symmetry type in the ac crystal plane have been obtained. The spectra-structure correlation of the H2O stretching vibrations show that bands appearing in the spectra for polarization of the external radiation oriented along the b axis are mainly due to the H2O stretching vibrations of one of the three crystallographically distinct sets of water molecules. The orientation of the transition dipoles of stretching vibrations of the selenite ion differs from the characteristic spectra of the sulfate analog in that no mutually perpendicular transition dipoles are found in the ac crystal plane. Water librational bands masked with the bands of the v4(SO4(2-)) mode in the sulfate analog have now been unveiled and assigned. The ratio between the oscillator strength and the attenuation constant appears to be a helpful tool in the assignment of the sulfate stretching the orientation and water librations. The vibrational and orientational characteristics of the v4(SeO4(2-)) modes were obtained. The v3(SO4(2-)) frequency region of the isomorphously isolated SO4(2-) ion in the K2Ni(SeO4)2·6H2O matrix was investigated in some detail. Contrary to the expected three four bands can be identified. Three of these are assigned to v3(SO4(2-)) based on the orientation of the transition dipole moments. On the basis of the IR, but also Raman spectra of the pure and mixed crystals, a discussion of the influence of the potential field and the hydrogen bonds with the change in the volume of the unit cell is given. PMID: 23798434


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The aim of this study was to evaluate the most common CYP2C9 and CYP2C19 polymorphisms in the population of Macedonia and compare them with the global geographic data reported from different ethnic populations. In total, 184 healthy volunteers from the general population were included. Genotypes for the CYP2C9 (*2 [rs1799963] and *3[r1057926]) and CYP2C19 (*2 [rs4244265] and *17 [rs12248560]) polymorphisms were detected by Real-Time PCR using TaqMan SNP genotyping assay. The CYP2C9 wildtype allele (*1) was the most frequent (78.8%) and the non-functional alleles (*2 and *3) had a frequency of 3.9% and 7.3%, respectively. Seven subjects (2.7%) were poor metabolizers (PMs) for CYP2C9 because of the *2/*2 and *3/*3 genotype. For CYP2C19, the frequencies of the *1 (wild-type) and the non-functional alleles (*2 and *17) were 65.4%, 14.4% and 20.1%, respectively. The *2/*2 genotype, corresponded to the predicted frequency of 2.7% for the CYP2C19 PM phenotype. The total of 59 out of 184 subjects (32.0%) was determined as UMs because of the *1/*1 and *17/*17 genotypes. The compound heterozygote (*2/*17), which is associated with a difficult-to-predict phenotype, was detected in 8 subjects (43.4%). The CYP2C9 and CYP2C19 are polymorphic in the population of the Republic of Macedonia. The frequencies of the most common CYP2C9 and CYP2C19 alleles from our Macedonian study are similar to those reported for Caucasians of European descent, but differ from those of North America Caucasians. Our results suggest that the genetically determined capacity of CYP2C9 and CYP2C19 has to be taken into account in order to improve the individual risk / benefit ratio of the drug therapy in Macedonia. PMID: 24380239


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INTRODUCTION: Extramammary Paget's disease is an uncommon intraepithelial neoplasm that arises in areas rich in apocrine glands. Treatment includes wide surgical excision and nonsurgical modalities. We present the case of a patient with perianal Paget's disease with no recurrent disease after wide surgical resection. CASE PRESENTATION: Our patient was a 46-year-old man of Macedonian ethnicity who presented with a pruritic perianal lesion measuring up to 6cm without pain or bleeding. Two biopsies and a perianal wide surgical excision were performed. The specimens were formalin-fixed and the paraffin-embedded samples analyzed according to standard histochomical and immunohistochemical procedures. Surgical perianal skin excision revealed diffuse eccematoïd, whitish plaques. Pathohistology showed Paget cells infiltrating his epidermis and adnexal
epithelium, with ulceration. Immunohistochemical analysis revealed positive Paget cell expression for cytokeratin 7, epithelial membrane antigen, carcinoembryonic antigen, androgen receptor and human chorionic gonadotropin. A negative expression for cytokeratin 20 and melan-A. CONCLUSION: Paget's disease is a rare disorder that should be considered in the differential diagnosis of perianal lesions. Reporting cases of extramammary Paget's disease is crucial for diagnostic guidelines and different therapeutic options. PMCID: PMC3696793. PMID: 23766719


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The 11-year experience with open (OS) and laparoscopic (LS) splenectomy at a single center is reported. A total of 201 splenectomies were performed and clinical and demographic data were retrospectively analyzed. Patients were classified according to the type of operation as LS or OS. The mean age of patients was 45.1 +/- 17.1, and 141 patients were male. Out of 43 LS, 40 were done for hematologic causes, and a significantly shorter hospital stay compared to OS for hematologic causes (6.87 +/- 2.2 vs. 9.84 +/- 2.9 days; p = 0.000003) and significantly less requirement for blood transfusion (26.2 +/- 93.4 vs. 132.4 +/- 252.3 mL; p = 0.0152). In the OS group, comparison of patients with trauma and those with hematologic causes showed that significantly more males underwent surgery for trauma causes (35 of 43 vs. 16 of 21), hospital stay was longer (18.9 +/- 27.4 vs. 9.8 +/- 2.9 days) and blood requirement higher (708.1 +/- 603.7 mL vs. 132.4 +/- 252.3 mL; p = 0.0004, p = 0.047 and p = 0.000001, respectively). Laparoscopic splenectomy is a safe procedure for spleen removal. PMID: 24053084


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In title compound, C16H16N3(3)O(4), the dihedral angle between the chromone and isoaxazine rings [r.m.s. deviations = 0.042 and 0.007 Å, respectively] is 20.33°. The molecular geometry is stabilized by an intra-molecular N-H⋯O hydrogen bond. In the crystal, N-H⋯O hydrogen bonds generate chains along the c-axis direction. The crystal studied was a non-mohedral twin. PMCID: PMC3696789. PMID: 23424535


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The systems of public complaints on environmental noise were reviewed in seven countries of Central and Eastern Europe (CEE), South-East Europe (SEE), and Newly Independent States (NIS). Public complaints remain an important issue due to differences in public sensitivity to noise and due to several cases where a measurement of noise intensity does not give a satisfying solution to the problem. The unresolved problem remaining in the residential neighborhoods is the noise from pubs and restaurants that are open until late in the night. In our review, we compiled information on the institutions responsible for the implementation of environmental noise legislation and organizations that are responsible for dealing with public complaints. Information on activities for increasing public awareness on hazards rising from environmental noise and the role of civil initiative was explored. In seven countries, and among them, Slovenia, Lithuania, Latvia, Slovakia, The Former Yugoslav Republic of Macedonia, Serbia, and Poland, the responsibilities and duties are shared among different institutions at national and regional levels, depending on the noise source. The problem of gathering information on complaints and using it for improving the wellbeing and health of citizens remains often difficult and unsolved. PMID: 23412576


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OBJECTIVES: During last two decades, within the process of transition, the socio-economic reforms in Republic of Macedonia reflected on the national health care system. The objective of this article was to identify workplace stressors and factors that influence quality of care, from the perspective of health professionals (HPs), and to understand how they were linked in the context of such social circumstances. METHODS: A qualitative research based on focus group (FG) methodology was conducted in a general teaching hospital. Two main topics were the subjects of discussion in FGs: workplace stressors and factors that influence quality of care, from the HPs perspective. Six FGs were conducted with a total of 56 HPs (doctors, nurses, interns, and residents) divided into two sets of three FGs for each topic separately. Two sets of data were processed with thematic analysis, and the obtained results were compared with each other. RESULTS: By processing the data, we identified themes relating to factors that generate stress among HPs and factors that influence quality of care, from HPs perspective. By comparing the two sets of themes, we found that many of them were identical, which means factors that increase workplace stress at the same time reduce quality of care. CONCLUSIONS: Implementation of specific organizational interventions in the hospital setting can lead to the prevention of work-related stress and improvement in quality of care. Our research suggests that the prevention of work-related stress will impact positively on the quality of care, which may contribute to establishing criteria and recommendations for the development of organizational culture and climate in hospitals. STATEMENT OF CONTRIBUTION: What is already known on this subject? Psychosocial stress at work among health professionals is often present and well studied, but relations between job stress and quality of care were rarely examined. Job demand-resource model by Demerouti, Bakker, Nachreiner and Schaufeli (2001), for assessment of job stress includes job demands (working environment, work overload, time pressures, recipient contact, shift work) and job resources (feedback, rewards, job control, participation, job security, supervisor support) was applied in different studies. There is scientific evidence that burned-out physicians have shown depersonalization from their patients, they have withdrawn from patients, demonstrated sub-optimal care, and sometimes burnout has been related to serious mistakes and patient death. Different research has shown that some workplace factors contributed to the development of work-related stress and burnout among HPs whereas others contributed protectively. What does this study add? Similar and overlapping workplace factors in hospital setting produce stress in health professionals and influence quality of care. Impact of specific socioeconomic environment in Macedonia as a country in transition and EU candidate country on job stress among health professionals and quality of care. Development of criteria and recommendations for the job stress prevention and improvement of the organizational culture and climate in hospital settings.PMID: 23480487

Kedev S(1), Zafirovska B, Dharma S, Petkoska D. Safety and
feasibility of transcutaneous catheterization when ipsilateral radial access is not available. Catheter Cardiovasc Interv. 2014 Jan 1;83(1):E51-60.

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OBJECTIVES: We evaluated the safety and feasibility of transcutaneous approach when ipsilateral radial access was not available.

METHODS AND RESULTS: From March 2011 until February 2013, 476 consecutive patients who underwent transcutaneous catheterization were included in a single center prospective registry of effectiveness and safety. Diagnostic coronary angiography accounted for 42% of cases, percutaneous coronary intervention (PCI) for 38%, and 17% underwent carotid artery stenting. A subgroup analysis was done in 240 patients with documented ipsilateral radial artery occlusion (RAO). Procedural success was 97% with a crossover rate of 3% to transfemoral access. Hand ischemia was not observed in any patient on day 1 after procedure and on 1 month follow-up. None of the patients showed ulnar nerve injury. Two patients developed major forearm hematoma that resolved without clinical consequences. Minor access site hematoma occurred in 8%. Severe clinical spasm occurred in two patients. Asymptomatic ulnar artery occlusion at 1 month follow-up was detected in 3.1%. There was no difference between patients with or without RAO in terms of procedural success and any vascular complication. CONCLUSION: Transcutaneous approach is safe and feasible alternative wrist access when performed by experienced radial operators, providing high success rate and low incidence of vascular complications. PMID: 23832623


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The prevalence of hepatitis C virus (HCV) genotypes depends on geographical location. HCV genotyping is important for epidemiological investigations and treatment management. The aim of this study was to determine the HCV genotype prevalence in the most prominent risk groups of the Republic of Macedonia in the last 5 years and to evaluate its association with patient's age, gender, and mode of transmission. A total of 1,167 HCV positive patients, divided into three risk groups (intravenous drug use, chronic hemodialysis, and other risk factor), were genotyped using an in-house ASO hybridization method with genotype-specific oligonucleotide probes. The genotypes 1, 2, and 3 were present in 52.2%, 0.6%, and 47.0%, respectively. Genotype 1 was the most prevalent in hemodialysis (89.0%) and other risk factor group (53.8%). It was found associated independently with hemodialysis, age ≥40 years, and male gender. Genotype 1 predominated in intravenous drug users (64.0%) and was associated significantly also with age ≤40 and male gender. Multivariable logistic regression analysis pointed out hemodialysis (P < 0.0001, Exp (B) = 12.0) as a positive predictor factor for genotype 1 and age ≤40 (P = 0.021, Exp (B) = 1.8) and intravenous drug use (P < 0.0001, Exp (B) = 8.4) as a positive predictor factors for genotype 3. In conclusion, the main transmission route of HCV infection in the Republic of Macedonia is intravenous drug use, followed by hemodialysis. HCV genotypes 1 and 3 dominate in these two most prominent risk groups in the Republic of Macedonia. PMID: 23959998


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A hybrid, sequential statistical physics-quantum mechanical electronic-quantum mechanical nuclei approach has been applied to study the C-H stretching frequencies of bare fluoriform dissolved in liquid krypton under cryogenic conditions (at ~130 K), as well as upon blue shifting hydrogen bonding interactions with dimethylth er in the liquid at 130 K. The structure of the liquid at 130 K was generated by Monte Carlo simulations of cryogenic Kr solutions containing either fluorof orm or fluorof orm and dimethylth er molecules. Statistically uncorrelated configurations were appropriately chosen from the equilibrated MC runs and supermolecular clusters containing solute and solvent molecules (either standalone or embedded in the "bulk" part of the solvent treated as a polarizable continuum) were subjected to quantum mechanical electronic (QMEl) and subsequent quantum mechanical nuclei (QMnc) calculations. QMEl calculations were implemented to generate the in-liquid 1D intramolecular C-H stretching vibrational potential of the fluoriform moiety and subsequently in the QMnc phase the corresponding anharmonic C-H stretching frequency was computed by diagonalization techniques. Finally, the constructed vibrational density of states histograms were compared to the experimental Raman bands. The calculated anharmonic vibrational frequency shifts of the fluoriform C-H stretching mode upon interaction with dimethylth er in liquid Kr are in very good agreement with the experimental data (20.3 at MP2 level vs. 16.6 cm(-1) experimentally). Most of this relatively large frequency blue shift is governed by configurations characterized by a direct C-H-O contact between monomers. The second population detected during MC simulations, characterized by reversed orientation of the monomers, has a minor contribution to the spectral appearance. The experimentally observed trend in the corresponding bandwidths is also correctly reproduced by our theoretical approach. Solvation of the fluoriform monomer, according to experiment, results in small C-H stretching frequency red shift (~2 cm(-1)), while our approach predicts a blue shift of about 10 cm(-1). By a detailed analysis of the anharmonic C-H stretching frequency dependence on the position of the nearest solvent krypton atom and also by analyzing the vibrational Stark effect induced by the local fluctuating field component parallel to the C-H axis, we have derived several conclusions related to these observations. The frequency vs. C-Kr distance dependence shows appreciable fluctuations and even changes in sign at R values close to the maximum of the C-Kr radial distribution function, so that most of the first-shell Kr atoms are located at positions at which the CH frequency shifts acquire either small negative or small positive values. It so happens, therefore, that even the actual sign of the frequency shift is strongly dependent on the correct description of the first solvation shell around CF3H by the Monte Carlo method, much more than the other in-liquid properties calculated by similar approaches. PMID: 23927267


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OBJECTIVES: Despite a 92.9% national vaccination coverage since 2000, the former Yugoslav Republic of Macedonia experienced a large measles outbreak between 2010 and 2011. Here we investigate the characteristics of patients hospitalized during this outbreak at the Clinic of Infectious Diseases in Skopje.

METHODS: Epidemiological, clinical and laboratory data of 284 measles patients, including 251 from Skopje (43.80% of the 573 reported cases) and 33 from elsewhere in Macedonia were collected. RESULTS: The most affected age groups were children up to 4 years of age and adolescents/adults of 15 years and older. Most patients were unvaccinated (n=263, 92.61%) and many had non-Macedonian nationalities (n=156, 54.93%) or belonged to the Roma ethnicity (n=73, 25.70%). Bronchopneumonia and diarrhea were the most common complications. Eighty-two out of 86 tested patients (95.35%) had measles-specific IgM antibodies. The outbreak was caused by the measles variant D4-Harder.

CONCLUSIONS: The epidemic identified pockets of susceptibles in Skopje and indicated that additional vaccination opportunities in particular for people with non-Macedonian nationality and traveler
communities are warranted to ensure efficient mealess control in Macedonia. The high attack rate among children of less than 1 year suggests that vaccination before 12 months of age should be considered in high risk settings. PMCID: PMC3769294. PMID: 24040337.


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BACKGROUND: Late-life depression encompasses both patients with late-life onset of depression (>60 years) and older adults with a prior and current history. The aim of the study was to analyze the impact of the economic condition and family relations in childhood as risk factors for late-life depression. SUBJECTS AND METHODS: This was an analytical cross-sectional study comprising 120 subjects, 60 patients with unipolar depression and 60 subjects without depressive disorders, diagnosed in accordance with the 10th International Classification of Mental and Behavioural Disorders. All participants in the study were above the age of 60 and there was no significant statistical difference in the sex proportion in both groups (p=0.05). Data for the examination were taken from a self-reported questionnaire designed for our aim. The Geriatric Depression Scale was used to measure depressive symptoms. RESULTS: Our results have shown that severe financial difficulties are important events in childhood and are risk factors for depression in the elderly (Chi-square=12.68, df=2, p=0.0018). Our investigation has found the association of family relations with late-life depression. In fact, conflictual relations in the family were more common in the experimental group than in the control group (Chi-square=14.32, df=3, p=0.0025). Furthermore, father's addiction to alcohol in childhood was associated with depression in later life (p=0.013). The difference in childhood emotional neglect and unequal treatment between siblings in both groups was insufficient to be confirmed statistically, but the examiners with this trauma had a threefold higher chance of having depression later in life (Odds ratio=3.04, 95% CI: 0.92 < OR < 10.65; Yates chi-square=3.2, df=1, p=0.07). Subjects who have estimated their mother (p=0.019) or father (p=0.046) having personal character traits had a significantly greater risk for development of late-life depression. CONCLUSIONS: Negative socio-economic circumstances as well as family conflicts during childhood are associated with late-life depression. Father's addiction to alcohol and parents' negative personal character traits are associated with depression in the elderly. PMID: 24048391


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No abstract available. PMID: 23275476


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Background: Fanconi anemia (FA) is a rare autosomal recessive disorder clinically characterized by developmental abnormalities, progressive bone marrow failure (BMF) and profound cancer predisposition. Approximately 65% of all affected individuals have mutation in the FANCA (Fanconi anemia complementation group A) gene. The mutation spectrum of the FANCA gene is highly heterogeneous. FA-A is usually associated with private FANCA mutations in individual families. Methods: We describe 3 unrelated patients with FA with a similar clinical presentation: BMF, renal anomalies and cafè-au-lait pigmentation without major skeletal abnormality. The molecular analysis of the FANCA gene using the FA MLPA kit P031-A2/P032 FANCA, showed homozygous deletion of exon 3 in all 3 patients. Molecular analysis of the flanking regions of exon 3 precisely defined unique deletion of 2,040 bp and duplication of C (1788_3828dupC). Discussion/Conclusions: These are the first 3 patients homozygous for deletion of FANCA exon 3 described to date. Although not related, the patients originated from the same Gypsy-like ethnic population. We conclude that c.190-256_283 + 1680del2040 dupC mutation in the FANCA gene is a founder mutation in Macedonian FA patients of Gypsy-like ethnic origin. Our finding has very strong implications for these patients in formulating diagnostic and carrier-screening strategy for BMF and FA and to enable comprehensive genetic counseling.PMID: 24356203


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The purpose of this study was to apply factorial design in order to determine the influence of the formulation factors and their interactions on several responses such as particle size, dissolution behaviour at pH 1.2 and pH 7.4 as also production yield, during the development of budesonide loaded, chitosan coated Ca-alginates microparticles (MPs) intended for treatment of inflammatory diseases in the gastrointestinal tract. Produced drug-loaded MPs were spherical in shape, had smooth surfaces with low porosity and size range between 5 and 11 µm. Production yield for the formulations from the design varied from 19% to 50%. Optimisation was performed using central composite design setting the targets: particle size at 5.5 µm, maximum yield, suppressed dissolution at pH 1.2 and sustained release at pH 7.4. The optimised batches were identified with a combined desirability value of 0.967. PMID: 22746546


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The arsenate hydroxy-bear minerals sarkinite and adamate were studied with vibrational spectroscopic (IR and Raman) and quantum theoretical methods. The observed IR bands in the higher (1100-600 cm(-1)) and especially lower (600-450 cm(-1)) frequency region of AsO4 vibrations could clearly discriminate between the studied analogues. The differences between their crystal structures are much pronounced in both IR and Raman OH-stretching regions. Namely, a single strong band is found in the case of orthorhombic adamate compared to four weaker bands in the case of monoclinic sarkinite. Essentially all bands in the experimental spectra, collected at both room and liquid nitrogen temperature, were tentatively assigned. To support the tentative assignment of bands in the vibrational spectra of the monoclinic minerals, periodic pseudopotential plane wave density functional theory calculations were carried out. Geometry optimizations of the 2D periodic systems included both optimizations of the atomic positions within the unit cell and of the unit cell itself. In most cases, the assignments were either supported or implied by the obtained theoretical data. It is worth mentioning that this is the first experimental and theoretical study of the vibrational spectra of the very-rare sarkinite mineral. PMID: 23711395

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CONTEXT: Hereditary vitamin D resistant rickets (HVDRR), also known as vitamin D-dependent rickets type II, is an autosomal recessive disorder characterized by the early onset of rickets with hypocalcemia, secondary hyperparathyroidism and hypophosphatemia and is caused by mutations in the vitamin D receptor (VDR) gene. The human gene encoding the VDR is located on chromosome 12 and comprises eight coding exons and seven introns. OBJECTIVES, PATIENTS, AND METHODS: We analyzed the VDR gene of 5 previously unreported patients, two from Singapore and one each from Macedonia (former Yugoslav Republic), Saudi Arabia and Turkey. Each patient had clinical and radiographic features of rickets, hypocalcemia, and the 4 cases that had the measurement showed elevated serum concentrations of 1,25-dihydroxyvitamin D (1,25(OH)D). Mutations were recreated in the WT VDR cDNA and examined for 1,25(OH)D3-mediated transactivation in COS-7 monkey kidney cells. RESULTS: Direct sequencing identified four novel mutations and two previously described mutations in the VDR gene. The novel mutations included a missense mutation in exon 3 causing the amino acid change C60W; a missense mutation in exon 4 causing the amino acid change D144N; a missense mutation in exon 7 causing the amino acid change N276Y; and a 2bp deletion in exon 3 5’-GG-3’. CONCLUSIONS: The VDR mutations identified in our patients suggest that routine genetic analysis may be an attractive approach for a rapid diagnosis of vitamin D dependent rickets type II.


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BACKGROUND: Subclinical and acute rejections (SAR/AR) continue to have a negative impact on graft survival. The aim of our study was to analyze allograft rejection and nitric oxide (NO) levels in patients with protocol- and clinically-induced biopsies in relationship with other causes of allograft dysfunction, and to evaluate the clinical impact of NO measurement as non-invasive marker for early diagnosis of SAR/AR. METHODS: In 45 living-related kidney transplants, serum NO levels were measured at: 20 min after reperfusion (NO1); on days 1 (NO2), 5 (NO3), and 14 (NO4); and at the first (NO5) and sixth (NO6) months after transplantation (Tx). Protocol biopsies (Bx) were performed at the first and sixth months after Tx. RESULTS: 38 (42.2%) Bx showed histological features of SAR, 4 (4.5%) Bx showed mild tubulointerstitial rejection, while 48 (53.3%) Bx had no histological signs of SAR/AR. Significantly higher (NO3) levels were found in patients with SAR and (NO4) and (NO5) and (NO6) in SAR as compared to other causes of allograft dysfunction occurred within the first posttransplant month (delayed graft function, urinary tract infection, and cyclospermine toxicity). Sensitivity/specificity for cut-off NO level of 70 μmol/l were 69.2% and 88.4% in AR, and 78.9% and 75.4% for the level of 50 μmol/l in SAR patients, respectively. CONCLUSION: Our study reports significantly higher serum NO levels at day 5 and a gradual decrease at day 14 (prior to and at the time of clinically manifested AR), and at 1- and 6-month protocol biopsies in SAR patients as compared to all other causes of renal dysfunction. NO measurement may have a satisfactorily diagnostic performance as a useful non-invasive marker not only for AR, but also for SAR patients. PMID: 24362900.


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INTRODUCTION: A liver dysfunction induced by halogenated volatile anaesthetics is considered as a significant diagnostic problem. The aim of our report was to describe the first case of lethal hepatic failure in a female patient undergoing kidney transplantation (KTx) from a living donor after repeated sevoflurane anesthesia. CASE PRESENTATION: A 47-year-old hypertensive and diabetic female patient received kidney from her 70-year-old mother. There was an immediate graft function and around 800 ml of blood loss on the abdominal drains, which gradually decreased after the erythrocyte and fresh frozen plasma (FFP) substitution. On the first postoperative (p.o.) day she gradually became anuric and overweighted at the next day undergoing dialysis. Because of prolonged hypotension and somnolence she required reintubation. The second day transaminasies increased (AST&ALT>700, LDH=1200 U/L). On the third p.o. day she was urgently reoperated because of a sudden excessive bleeding. However, there was a rather slow flow of tears from the whole operative field that was even more excessive after the operation with signs of consumptive coagulopathy. She was adequately substituted until the bleeding stopped more than 24 hrs after its onset. The new laboratory results showed further increase in transaminazes (3300 U/L-ALT, 5100-AST, 8900-LDH) and ultrasound investigation confirmed an extensive toxic hepatic lesion. On the fourth p.o. night the patient was stable, diuresis rate was at 100 ml/hour, but in the morning she became hyposaturated because of an increased bronchial secretion. The dialysis could not improve the cardio-respiratory insufficiency and she died 30min later. CONCLUSIONS: This case report suggests that sevoflurane can lead to a severe hepatotoxicity in at-risk individuals with repeated sevoflurane anesthesia, having renal failure, in those with a preoperative known history of cardiovascular disorders, as well as in those with excessive extracellular volume. A particular precaution should be considered in cases of an elective surgery including organ transplantation. PMID: 23845191.


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The burden of cervical cancer in central and eastern Europe is generally higher compared to western or northern Europe due to a history of mostly opportunistic cervical cancer screening practices and due to the strong influence of political and economic changes in post-communist transition. This article describes national and regional cervical cancer screening practices, organizational plans for the future, and main obstacles that need to be overcome in 16 countries in central and eastern Europe: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Montenegro, Poland, Romania, Serbia, Slovakia, Slovenia and The former Yugoslav Republic of Macedonia. Unfortunately, only a few countries have managed to establish an organized and well-functioning cervical cancer screening program in recent years, whereas most countries in the region are still struggling with implementation-related issues of organized cervical cancer screening. Encouragingly, even in the countries where only opportunistic screening is performed, well-prepared plans and strategies have been established for switching to organized screening in the near future. PMID: 23674180.

The influence of the potential pulse height of square-wave voltammetry (SWV) (i.e., the SW amplitude) is studied for a variety of quasireversible electrode mechanisms, including a simple solution-phase electrode reaction at a planar or spherical electrode, a solution phase electrode reaction coupled with a reversible follow-up chemical reaction, and a diffusionless surface confined electrode reaction. The electrode kinetics of all the electrode mechanisms depends critically on the SW amplitude, and the quasireversible kinetic region is both frequency-and amplitude-dependent on several kinetic parameters and the SW amplitude. Thus, a novel methodology for electrode kinetics measurements is proposed by altering the SW amplitude only, at a fixed frequency of the SW potential modulation, that is, at a constant scan rate of the voltammetric experiment. Electrode kinetic measurements at a constant SW frequency are of exceptional importance especially when complex electrode mechanisms are studied, which depend on several frequency-related kinetic parameters. The electrode kinetic measurements are based on a novel feature termed the “amplitude-based quasireversible maximum”, manifested as a parabola dependence of the amplitude-normalized net SW peak current versus the SW amplitude. The position of the amplitude-based quasireversible maximum depends on the standard rate constant of the electrode reaction, enabling estimation of this important kinetic parameter in a simple and fast procedure. The novel quasireversible maximum is attributed to all studied electrode mechanisms, implying that it is a general feature of most electrode mechanisms under conditions of SWV. PMID: 23642036


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In order to assess prevalence and characteristics of exercise-related respiratory symptoms (EERS) and exercise-induced bronchoconstriction in industrial bakers, the authors performed a cross-sectional study including 57 bakers and an equal number of office workers studied as a control. Evaluation of symptoms included completion of a questionnaire, skin prick tests to common inhalant and occupational allergens, spirometry, and exercise and histamine challenge. The authors found a similar prevalence of EERS and EIB in both bakers and controls. EIB was significantly associated with atopy, asthma, family history of asthma, and positive histamine challenge in either group, whereas in bakers it was closely related to sensitization to occupational allergens (p = .032). Bronchial reaction to exercise was significantly higher in bakers with EIB (25.7% vs 19.2%; p = .021). These findings suggest that occupational exposure in industrial bakery may accentuate bronchoconstrictive response to exercise. PMID: 23876966


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In order to assess prevalence and characteristics of exercise-related respiratory symptoms (EERS) and exercise-induced bronchoconstriction in industrial bakers, the authors performed a cross-sectional study including 57 bakers and an equal number of office workers studied as a control. Evaluation of symptoms included completion of a questionnaire, skin prick tests to common inhalant and occupational allergens, spirometry, and exercise and histamine challenge. The authors found a similar prevalence of EERS and EIB in both bakers and controls. EIB was significantly associated with atopy, asthma, family history of asthma, and positive histamine challenge in either group, whereas in bakers it was closely related to sensitization to occupational allergens (p = .032). Bronchial reaction to exercise was significantly higher in bakers with EIB (25.7% vs 19.2%; p = .021). These findings suggest that occupational exposure in industrial bakery may accentuate bronchoconstrictive response to exercise. PMID: 23876966


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In order to assess prevalence and characteristics of exercise-related respiratory symptoms (EERS) and exercise-induced bronchoconstriction in industrial bakers, the authors performed a cross-sectional study including 57 bakers and an equal number of office workers studied as a control. Evaluation of symptoms included completion of a questionnaire, skin prick tests to common inhalant and occupational allergens, spirometry, and exercise and histamine challenge. The authors found a similar prevalence of EERS and EIB in both bakers and controls. EIB was significantly associated with atopy, asthma, family history of asthma, and positive histamine challenge in either group, whereas in bakers it was closely related to sensitization to occupational allergens (p = .032). Bronchial reaction to exercise was significantly higher in bakers with EIB (25.7% vs 19.2%; p = .021). These findings suggest that occupational exposure in industrial bakery may accentuate bronchoconstrictive response to exercise. PMID: 23876966


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A fast and simple liquid chromatography-electrospray ionization tandem mass spectrometry method for determination of indapamide in human whole blood was developed and validated. The sample extraction of indapamide from human whole blood was achieved using automated solid-phase extraction. Chromatographic separation was performed on Kinetex C18 column (100 x 2.1 mm, 1.7 μm particle size) using acetonitrile and 2 mM ammonium formate in ratio 90:10 (v/v) as a mobile phase. The mass spectrometer was operated in the multiple reaction monitoring mode using positive electrospray ionization for indapamide and the internal standard (zolpidem tartarate). The total run time was 2.5 min. The present method was found to be linear in the concentration range of 1-50 ng/mL with the coefficient of determination 0.9987. The absolute recoveries of indapamide were 90.51-93.90%. The method was validated according the recommendations for validation of bioanalytical methods of European Medicines Agency guideline and was successfully used to analyze human whole blood samples for application in a pharmacokinetic study. PMID: 23798332


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This paper gives an overview of the development of health insurance and some aspects of the oral health care in the Republic of Macedonia since it became independent in 1991. First, it describes the provision of oral health care and treatments funded by the public health care system. The dental educational system and available epidemiological data are then described. Generally, few data are available about the dental workforce in recent years, especially regarding dental epidemiology. There are various specialisations in dentistry recognised in Macedonia, as well as three subspecialisations: implantology, maxillofacial and reconstructive prosthodontics, and prosthodontics for children. One aspect of particular interest is that there are many dental faculties in Macedonia and many dentists, relative to the population and the country’s requirements. PMID: 23756420


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Globozoosperma is a rare but severe teratozoosperma, characterized by ejaculates consisting completely of round-headed spermatoza that lack an acrosome or, in partial globozoosperma, containing a variable proportion (20.0-90.0%) of acrosomeless spermatoza. Men that are affected with total globozoosperma are infertile, and even the application of intracytoplasmic sperm injection (ICSI) has met with disappointingly low success rates. In humans, several case reports of globozoosperma have demonstrated that two or more siblings were affected in each family, which suggested a genetic component to this disease. Currently, three genes are known to be associated with total globozoosperma in humans, SPATA16, PICK1 and DPY19L2 genes. Mutations in SPATA16 and PICK1 are rare causes of globozoosperma, found in only one patient each. Several studies have suggested that DPY19L2 mutations are the major cause of globozoosperma in patients from different ethnic origins and different geographic regions. The most common DPY19L2 mutation is the 200 kb deletion arising from a nonallelic homologous recombination (NAHR) between the flanking low copy repeats (LCRs). Here we describe the presence of a homozygous deletion of the DPY19L2 gene in two infertile Macedonian patients with 100.0% round headed spermatoza, thus suggesting that this deletion represents a major cause of globozoosperma among Macedonian men. PMID: PMC3835300. PMID: 24265589


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No abstract available. PMID: 23780635


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Flavonoids and phenolic acid metabolites excreted in human urine after ingestion of Sideritis scardica decocction with characterized polyphenolic composition were studied. A feeding study was carried out with 10 human volunteers, and urine samples were collected for 24 h after ingestion of the Sideritis decoction. Polyphenol metabolites were identified and quantified in urine samples by HPLC with tandem mass spectrometric detection. Thirty-one different metabolites of hypolaetin, methylhypolaetin, isoscuteletarin, methylysoisocutellarein, and apigenin and 32 phenolic acid metabolites were detected and quantified using a method validated for this purpose. The urinary excretion of polyphenol metabolites corresponded to 5% (n/n) of the intake of polyphenols from the Sideritis decoction. Flavonoid metabolites were dominant in urine samples with 87.94% of total polyphenolic metabolites content. The most abundant metabolites were methylhypolaetin and methylysoisocutellarein glucuronides. Urinary excretion of isoscuteletarin (35.61%) was 10 times higher than that of hypolaetin (3.67%). Apigenin also showed high urinary excretion (32.46%). PMID: 24102372


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Rabies, a worldwide zoonosis, remains a public-health concern despite oral wildlife vaccination in Europe. After a ten-year break, Macedonia reported eight rabies cases in 2011-2012. Two countries (Serbia and Bulgaria) bordering Macedonia are reporting rabies cases in domestic and wild animals. This report describes the genetic characterisation of eight isolates from Macedonia compared with representative samples from neighbouring countries. All of the isolates tested belong to the Eastern European group, with a high degree of nucleotide sequence identity in the nucleoprotein gene. The close genetic relationship between isolates from the three bordering countries suggests that wildlife is responsible for rabies movements in the region. PMID: 23001721
BACKGROUND: Ethnobotanical surveys of the Western Balkans are important for the cross-cultural study of local plant knowledge and also for obtaining baseline data, which is crucial for fostering future rural development and eco-tourism initiatives in the region. The current ethnobotanical field study was conducted among the last remaining Albanians inhabiting the upper Reka Valley at the base of Mount Krbab in the Mavrovo National Park of the Republic of Macedonia. The aims of the study were threefold: 1) to document local knowledge pertaining to plants; 2) to compare these findings with those of an ethnographic account written one century ago and focused on the same territory; and 3) to compare these findings with those of similar field studies previously conducted in other areas of the Balkans.

METHODS: Field research was conducted with all inhabitants of the last four inhabited villages of the upper Reka Valley (n=17). Semi-structured and open interviews were conducted regarding the perception and use of the local flora and cultivated plants. RESULTS AND CONCLUSION: The uses of nineteen two-plant taxa were recorded; among the most uncommon uses, the contemporary use of young cooked potato (Solanum tuberosum) leaves and Rumex patientia as a filling for savory pies was documented. Comparison of the data with an ethnographic study conducted one century ago in the same area showed a nearly complete reliance of local plant knowledge with the only exception of rye, which has today disappeared from the local foodscape. Medicinal plant use reports show important similarities with the ethnobotanical data collected in other Albanian areas, which are largely influenced by South-Slavic cultures.

PMCID: PMC3648429. PMID: 23578063


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AIM: To examine the existing situation, barriers and consequences of the intercultural communication in health institutions and to offer training models for strengthening and improving communication skills of health professionals in the Republic of Macedonia.

METHODS: A cross-sectional survey was conducted to assess the relationship between patients and health professionals. A total of 813 health professionals (302 physicians and 511 other medical staff) from different healthcare institutions, and 1016 patients participated in cross-sectional survey performed in autumn 2010.

RESULTS: The research has showed that third examined patient thought that his/her physician or the other medical personnel had no understanding for his/her emotions and gave no answer to all of his/her questions. From the other side, 60% of the physicians declare that they have a good communication with patients speaking other language than their mother tongue. Only 60% of physicians said that they know good the culture of their patient and 52% of the other medical staff said that they adjusted the treatment to the patient culture (religion, attitudes, language, life style).

CONCLUSION: There are some gaps in current provision of health care practice in an aspect of effective interactions and communication skills of health professionals to meet patient needs in a multicultural and multilingual setting. A training model is proposed for strengthening communication skills of health professionals. PMCID: PMC3814747. PMID: 24511268


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Studies related to psychological aspects of dialysis patients show that depression and anxiety are the most common characteristics. The aim of our study was to analyze the personality profile in patients on chronic maintenance dialysis and to evaluate more specifically the level of depression. The total number of patients was 68 (30 females and 38 males), with mean age 62.3 and 56.5 for females and males respectively. Mean duration of dialysis was 6.73 years for females and 6.68 years for men (the period varied from 0.5 to 18 years). For the evaluation of psychological characteristics, we used two psychometric instruments: Minnesota Multiphasic Personality Inventory (MMPI- 201) and Beck Depression Inventory. The obtained results confirmed the presence of depression in patients treated with hemodialysis. The level of depression is variable (minimal is present in 21.43%; mild in 35.71%; moderate in 17.85% and severe in 14.28% of patients). The depression is significantly positively correlated with age (p<0.05) as well as with educational level, and negatively with the duration of dialysis. Specific characteristics of personality obtained with MMPI are hypersensitivity, depressive mood, and withdrawal from friends and relatives. More specific emotional traits are the accentuated anxiety, low level of hostility, but very high passive aggression which destroys their social communications. Some response measures for depression such as relaxation training, psychological support, music therapy, or peripheral biofeedback are recommended. PMID: 23335381


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Cystinuria is an autosomal recessive disorder caused by defective transport of cystine and dibasic amino acids in the proximal renal tubules and small intestine. So far, more than 128 mutations in SLC3A1 gene, and 93 in SLC7A9 gene have been described as a cause of cystinuria. We present a molecular characterization of the cystinuria in 47 unrelated south-east European families. The molecular methodology included direct sequencing, analysis of DNA fingerprinting, circular permutation and restriction fragment length polymorphism. A total of 93 (94.9 %) out of 98 unrelated cystinuric chromosomes. Ten different mutations in SLC3A1 gene were found, and two of them were novel (C242R and L573X), while in SLC7A9 gene seven mutations were found, of which three were novel (G73R, V375I and c.1048_1051delACTC). The most common mutations in this study were T216M (24.5 %), M467T (16.3 %) and R365L (11.2 %) in SLC3A1 and G105R (21.4 %) in SLC7A9 gene. A population specificity of cystinuria mutations was observed; T216M mutation was the only mutation present among Gypsies, G105R was the most common mutation among Albanians and Macedonians, and R365L among Serbs. The results of this study allowed introduction of rapid, simple and cost-effective genetic diagnosis of cystinuria that enables an early preventive care of affected patients and a prenatal diagnosis in affected families. PMID: 23532419


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BACKGROUND: A growing body of evidence shows that brain-derived neurotrophic factor (BDNF) plays a role in depressive disorder. Serum BDNF levels are lower in depressed patients and they increase after a long course of antidepressant treatment. Our study aims to test the effect of antidepressant treatment on serum BDNF levels in patients with a depressive episode, after they have achieved remission in two studies in Macedonia and Bulgaria. SUBJECTS AND METHODS: In the Bulgarian study 26 patients were included (11 female, 12 male) diagnosed with a first depressive episode according to ICD-10, as well as 23 control subjects age- and sex-matched without a history of psychiatric disorder. In the Bulgarian study 10 female patients with depression and 10 control subjects were included. We have applied the Hamilton Depression Rating Scale (HDRS) to assess depression severity. Blood samples were collected before antidepressive treatment and after remission was achieved (decrease to 7 points or less on HDRS). RESULTS: In the Macedonian study, mean serum BDNF level at baseline was 13.15±6.75 ng/ml and the mean HDRS score was 28.52±4.02. Untreated depressed patients showed significantly lower serum BDNF levels compared to healthy controls, and that those levels increase after antidepressant treatment. These results may suggest that low serum levels of BDNF are a state abnormality that is evident during depression and normalizes during remission. PMID: 23793275

Rosenthal VD(1), Richtmann R, Singh S, Apisarnthanarak A, Küber A, Viet-Hung N, Ramirez-Wong FM, Portillo-Gallo JH, Tomás-Ruiz S, Elaia M. Environmental disturbance was assessed with the questionnaire based surveys and was assumed from dose-effect relationship between night-time noise indicator (Night-L) for traffic noise and sleep quality (for Lithuanian study). Although research evidence on noise and sleep disturbance show to be sufficient for establishing dose response curves for sleep disturbance in countries where studies were performed, further research is needed with particular attention to vulnerable groups, other noise sources, development of methodology and common methodology in assessment of burden of diseases from environmental noise. PMID: 23412575

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OBJECTIVE: To report the results of a surveillance study on surgical site infections (SSIs) conducted by the International Nosocomial Infection Control Consortium (INICC). DESIGN: Cohort prospective multinational multicenter surveillance study. SETTING: Two hospitals in 30 cities in 30 countries: Argentina, Brazil, Colombia, Cuba, Dominican Republic, Egypt, Greece, India, Kosovo, Lebanon, Lithuania, Malaysia, Mexico, Morocco, Pakistan, Panama, Peru, Philippines, Poland, Salvador, Saudi Arabia, Serbia, Singapore, Slovakia, Sudan, Thailand, Turkey, Ukraine, and Vietnam. DURING: Patients undergoing surgical procedures (SPs) from January 2005 to December 2010. METHODS: Data were gathered and recorded from patients hospitalized in INICC member hospitals by using the methods and definitions of the Centers for Disease Control and Prevention National Healthcare Safety Network (CDC-NHSN) for SSIs. SSIs were classified into 31 types according to International Classification of Diseases, Ninth Revision, criteria. RESULTS: We gathered data from 7,523 SSIs associated with 260,973 SPs.SSI rates were significantly higher for most SSIs in INICC hospitals compared with CDC-NHSN data, including the rates of SSI after hip prosthesis (2.6% vs. 1.3%; relative risk [RR], 2.06 [95% confidence interval [CI], 1.8-2.4]; P < .001), abdominal hysterectomy (2.7% vs. 1.6%; RR, 1.66 [95% CI, 1.4-2.0]; P < .001); and others. CONCLUSIONS: SSI rates were higher for most SPs in INICC hospitals compared with CDC-NHSN data. PMID: 23651890


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While historically considered simply as a depot for excess energy, white adipose tissue is a dynamically active endocrine organ capable of responding to a variety of effector stimuli resulting in the synthesis and secretion of peptides, proteins and metabolites that serve as signal transducers to the peripheral and central circulation. Such regulation controls a variety of physiological processes including energy expenditure, food intake, reproductive capacity and responsiveness to insulin. Indeed, the accumulation of inflammatory cells in white adipose tissue is considered to be causative in the development of insulin resistance and eventually type 2 diabetes mellitus. A large body of evidence suggests that oxidative stress in adipose tissue not only correlates with insulin resistance but is also causative in its development. Moreover, using the available plasma oxidative stress biomarkers, many clinical studies have shown the presence of systemic oxidative stress in obese insulin resistant subjects, and its decrease after the successful treatment of obesity. In this review we emphasize the role of protein carbonylation in dysfunctional obese white adipose tissue and its metabolic implications. We focus on glutathione S-transferase A4 as the key enzyme for trans-4-hydroxy-2-nonalen and trans-4-oxo-2-nonalen removal from the cell, thus preventing protein carbonylation. This article is part of a Special Issue entitled: Posttranslational Protein modifications in biology and Medicine. PMCID: PMC3769464. PMID: 23584148


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While historically considered simply as a depot for excess energy, white adipose tissue is a dynamically active endocrine organ capable of responding to a variety of effector stimuli resulting in the synthesis and secretion of peptides, proteins and metabolites that serve as signal transducers to the peripheral and central circulation. Such regulation controls a variety of physiological processes including energy expenditure, food intake, reproductive capacity and responsiveness to insulin. Indeed, the accumulation of inflammatory cells in white adipose tissue is considered to be causative in the development of insulin resistance and eventually type 2 diabetes mellitus. A large body of evidence suggests that oxidative stress in adipose tissue not only correlates with insulin resistance but is also causative in its development. Moreover, using the available plasma oxidative stress biomarkers, many clinical studies have shown the presence of systemic oxidative stress in obese insulin resistant subjects, and its decrease after the successful treatment of obesity. In this review we emphasize the role of protein carbonylation in dysfunctional obese white adipose tissue and its metabolic implications. We focus on glutathione S-transferase A4 as the key enzyme for trans-4-hydroxy-2-nonalen and trans-4-oxy-2-nonalen removal from the cell, thus preventing protein carbonylation. This article is part of a Special Issue entitled: Posttranslational Protein modifications in biology and Medicine. PMCID: PMC3769464. PMID: 23584148


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We present a review of the current implementation status of vaccination against human papillomaviruses (HPV) and available data concerning the burden of HPV infection and HPV type-specific distribution in central and eastern European countries: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, the Czech Republic, Estonia, Montenegro, Poland, Romania, Serbia, Slovakia, Slovenia, December 2011. The study was divided into 2 periods: a 3-month baseline period and a 7-year follow-up period. SETTING: Ninety-nine intensive care unit (ICU) members of the INICC in Argentina, Brazil, China, Colombia, Cuba, Finland, Greece, India, Lebanon, Lithuania, Macedonia, Mexico, Pakistan, Panama, Peru, Philippines, Poland, and Turkey. PARTICIPANTS: Healthcare workers at 99 ICU members of the INICC. METHODS: A multidimensional hand hygiene approach was used, including (1) administrative support, (2) supplies availability, (3) education and training, (4) reminders in the workplace, (5) process surveillance, and (6) performance feedback. Observations were made for hand hygiene compliance in each ICU, during randomly selected 30-minute periods. RESULTS: A total of 149,727 opportunities for hand hygiene were observed. Overall hand hygiene compliance increased from 48.3% to 71.4% [(Formula: see text)]. Univariate analysis indicated that several variables were significantly associated with poor hand hygiene compliance, including males vs females (63% vs 70%; [Formula: see text]), physicians versus nurses (62% vs 72%; [Formula: see text]), and adult versus neonatal ICUs (67% vs 81%; [Formula: see text]), among others. CONCLUSIONS: Adherence to hand hygiene increased by 48% with the INICC approach. Specific programs directed to improve hand hygiene for variables found to be predictors of poor hand hygiene compliance should be implemented. PMID: 23464916

and The Former Yugoslav Republic of Macedonia. At least one current HPV prophylactic vaccine is registered in all central and eastern European countries except Montenegro. Six countries-Bulgaria, the Czech Republic, Latvia, Romania, Slovenia, and Former Yugoslav Republic of Macedonia-have integrated the HPV vaccination into their national immunization program and currently provide routine vaccination free of charge to the primary target population. Ten countries have not integrated HPV vaccination into the national immunization program. The key reasons for lack of implementation of HPV vaccination into the national immunization program are the high vaccine cost and negative public perception. Vaccination of males is not recommended in any country in the region. PMID: 23674181


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Modified nanoprecipitation method was used for improved incorporation of hydrophilic drug (riototecan hydrochloride) into the PLGA/PEO-PPO-PEO blended and blended/adsorbed nanoparticles. One factor at a time (OFAT) variation experiments were conducted in order to determine key formulation factors (concentration of drug, volume of drug solution, amount of used PEO) influencing nanoparticle properties (particle size and size distribution, encapsulation efficiency, drug content, zeta potential, drug dissolution rate, as well as protein binding capacity). The insight into in vivo behavior of prepared nanoparticles and their potential for effective anticancer treatment was gained by performing biodistribution and cell culture studies as part of OFAT experiments. The mean particle size, mainly dependent upon PLGA/PEO-PPO-PEO ratio, was in the range of 112-115nm, with narrow unimodal distribution (PDI-0.1). Encapsulation efficiency (32-63%) was impacted by evaporation rate and PLGA/PEO-PPO-PEO ratio. Drug content (0.2-1.51%) and controlled release properties were related to the influence of all tested formulation factors. Structural information for the studied nanoparticles was obtained using DSC and FT-IR spectroscopy. Zeta potential values indicated that presence of PEO-PPO-PEO in the immununization program. The key reasons for lack of implementation of HPV vaccination into the national immunization program are the high vaccine cost and negative public perception. Vaccination of males is not recommended in any country in the region. PMID: 23674181


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BACKGROUND: The aim of this study was to determine the effect of initial therapy with some disease modifying antirheumatic drugs (DMARDs) (Methotrexate and Ketoprofen) on glomerular and tubular integrity in patients with Rheumatoid arthritis (RA).

OBJECTIVES: OBJECTIVES: To determine whether there is a change in clinical and laboratory indicators of renal function in course of the follow up of treatment and whether that change correlates with the dynamics of the quantity of enzymes excreted in urine and acute phase proteins. MATERIALS AND METHODS: Using colorimetric method for determination of NAG, samples of 70 patients were examined (35 RA patients treated with Ketoprofen only, 35 RA patients treated with combination of Methotrexate and Ketoprofen). The follow up was 5 time-intervals in the course of 24 weeks. RESULTS: There was moderate correlation between NAG and microalbuminuria (r=0.34) in the group of patients treated with Ketoprofen only, while statistically significant correlation (r=0.21) was seen in group of patients with combined use of Methotrexate and Ketoprofen. NAG enzymuria in size, number of patients registered, and time of appearance were greater and appears earlier in group with the combined use of Methotrexate and Ketoprofen compared with the mono-therapy with Ketoprofen. Mean urinary NAG induction was increasing with the concomitant use of Methotrexate and Ketoprofen. CONCLUSIONS: Methotrexate is more potent NAG inducer than Ketoprofen and provokes greater tubular enzymuria than Ketoprofen. PMCID: PMC3886170. PMID: 24475424


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Introduction. To compare the diagnostic values of laboratory variables, to present evaluations of the diagnostic test for asymmetric dimethyl arginine (ADMA), rheumatoid factor (RF), C-reactive protein (CRP), and DAS28 index, and to define the effect of untreated rheumatoid arthritis on endothelial function. In order to determine whether ADMA changes depending on the disease evolution, ADMA was used as an indicator for endothelial dysfunction. Methods. Using an ELISA technology of DLD-Diagnostika-GMBH for the detection of ADMA, the samples of serum and urine have been examined in 70 participants (35 RA who were not treated, 35 healthy controls). RF was defined with the
test for agglutination (Latex RF test) in the same participants. Results. Out of 35 examined patients with RA, RF appeared in 17 patients (sensitivity of the test, 51.42%). In 20 of the 35 examined patients with RA, we found the presence of ADMA (sensitivity of the test, 57.14%). Anti-CCP antibody was present in 24 examined patients with RA (sensitivity of the test, 68.57%). Conclusion. ADMA has equal or very similar sensitivity and specificity to RF in untreated RA (sensitivity of 57.14% versus 48.57%, specificity of 88.57% versus 91.42%) in the detection of asymptomatic endothelial dysfunction in untreated RA. PMCID: PMC3671235.


West Nile virus (WNV) is a neurotropic, arthropod-borne flavivirus that is maintained in an enzootic cycle between mosquitoes and birds, but can also infect and cause disease in horses and humans. The aim of this study was to examine KIR gene polymorphisms by determining the frequencies of 16 KIR genes and pseudogenes and KIR genotypes in Macedonian patients with West Nile virus infection, and to compare with healthy Macedonians. The studied sample consists Republic of Macedonia, hospitalized at the University Clinic of Infective Diseases between September 2011 and October 2011, and reported through WHO. For KIR genotyping, commercially available PEL-FREE2 KIR genotyping SSP kit (Dyna Biotech, Brown Deer, WI) was used. The population genetics analysis package, Arlequin, was used for analysis of the data. We found that all 16 KIR genes were observed in the studied individuals and framework genes (KIR3DL3, KIR2DL4, and KIR3DL2) were present in all individuals. Comparison of KIR frequencies between Macedonian patients with West Nile virus infection and healthy Macedonian population reveals several statistically significant differences in the inhibitory group (KIR2DL2), and in the single most frequent genotypes in the Bx group were genotypes ID71 and ID89 with statistically significant difference compared to healthy Macedonians. Our results suggest that specific KIR genotypes could be connected with West Nile virus infection.

PMID: 23220498


In Republic of Macedonia the use of air guns is quite widespread. They are used mainly for target practice. They are regulated by the Law of Arms, where they are defined as pneumatic weapons. There is no legal limit on type or quantity of ammunition that one may possess. Our Institute performs at least 90% of the forensic autopsies in Macedonia. In this report we describe the only fatality by pneumatic weapon to come to our attention over the past 10 years. A 6-year-old girl was accidentally wounded by her brother when he and his father were trying a new air gun, a 4.5mm single shot, break barrel, spring piston air rifle manufactured in China under the brand "Westlake". She died within minutes. Autopsy showed cardiac tamponade due to penetration of the aorta. A 0.5g metal projectile, 4.5mm in diameter, with a pointed, conical shape, was recovered from the pericardial sac. PMID: 23017978


ETHNOPHARMACOLOGICAL RELEVANCE: Centaurea erythrea L. fam. Gentianaceae (CE) has been traditionally used for centuries in folk medicine of Balkans as a bitter medicinal herb for digestive complications and for treating febrile conditions and diabetes. The aim of this study was to gain insight into the chemical composition and underlying biochemical mechanism of action of the antihyperglycemic and antilipidemic activities of the dry extract of Centaurea erythrea L., wildly growing and traditionally used medicinal plant in the Republic of Macedonia. MATERIALS AND METHODS: An ultrasonic methanol maceration of the aerial parts of the dried plant was performed and the extract was freeze-dried. HPLC-DAD-ESI-MS(n) was carried out on 150mm×4.6mm, 5μm RP18 Eclipse XDB column, at 40°C. Mobile phase: water with 1% formic acid (A) and methanol (B) with linear gradient starting with 10% B was used to reach 15% at 5min, 40% B at 25min, 55% of B at 50min and 100% at 60min, with flow rate of 0.4mLmin(-1). Normal and streptozotocin (STZ) hyperglycemic Wistar rats were used for assessment of the antihyperglycemic and antilipidemic activity by measurement of the key carbohydrate-related enzymes and substrates, as well as lipid state of the organism. RESULTS: HPLC-DAD-ESI-MS(n) analyses revealed presence of four different secoiridoids, seven flavonoid glycosides and seven xanthones in the freeze-dried extract of CE representing 73%, 25% and 22% of all compounds, respectively. The short-term (12 days) treatment of the STZ-diabetic rats with CE-extracts resulted in a 74% reduction of the produced hyperglycemia, which is only 6% less than the reduction caused by glibenclamide (GLB, positive control). The CE-extract had a significant impact on the hepatic carbohydrate metabolism enhancing the direct synthesis of glycogen, normalizing phosphorylase a activity and reducing the activity of glucose-6-phosphatase, which further causes reduction in production of blood glucose level. The long-term (45 days) treatment showed that the HbA1c in CE-treated group of animals was even lower than in the GLB-treated groups. The antidiabetic assessment of the CE-extract revealed decrease of total cholesterol, triglycerides, HDL and LDL level in the blood of the normal and STZ-hyperglycemic rats. CONCLUSION: The obtained results indicate that treatment with CE extract in STZ-diabetic rats regulates the elevated level of blood glucose and carbohydrate-related disturbances slightly better than the effect of glibenclamide. There was also regulation of the serum lipid status in diabetic rats. Identified groups of bitter compounds in the extract (flavonoides, iridoids and xanthones) probably have influence on the expressed antihyperglycaemic effect. PMID: 24321864


We describe several predictive control approaches for high consumption industrial furnace control. These furnaces are major consumers in production industries, and reducing their fuel consumption and optimizing the quality of the products is one of the most important engine tasks. In order to demonstrate the benefits from implementation of the advanced predictive control algorithms, we have compared several major criteria for furnace control. On the basis of the analysis, some important conclusions have been drawn. PMCID: PMC3844168. PMID: 24319354
To investigate the role of mitochondrial antioxidant capacity during increased susceptibility to heat accompanied by the aging, young and aged Wistar rats were exposed on heat for 60 min. After heat exposure, hepatic and brain mitochondria were isolated. Our results revealed changes in antioxidant enzyme activities in liver and brain mitochondria from young and to a greater extent in aged rats. Our measurements of MnSOD, GPx and GR activity indicate greater reactive oxygen species production from the mitochondria of aged heat exposed in comparison to young heat exposed rats. Also in the aged rats, the effect of alpha-tocopherol treatment in the prevention of oxidative stress occurred as a result of heat exposure, is less pronounced. Taken together, our data suggest that mitochondria in aged rats are more vulnerable and less able to prevent oxidative changes that occur in response to acute heat exposure. PMID: 24020814


Macedonia.

The objective of this study was to determine the gross composition, proteolysis, and volatile and texture profiles during ripening of industrial (IND) and traditional (TRD) Beaten (Bienie sirenje) cheeses made by using ewe milk. In the course of the analyses, statistical differences were determined in some physicochemical parameters, nitrogen fractions, and total free amino acid levels between TRD and IND types of cheese. Higher levels of proteolysis were observed in IND cheeses than in TRD cheeses during ripening. Levels of residual β- and α-caseins were 72.2 and 48.7%, respectively, in 180-d-old TRD cheeses. However, the residual levels were 52.8% for β-casein and 18% for α-casein in IND cheeses. Within differences were noted for the reversed-phase HPLC peptide profiles of 2 types of cheeses. Also, higher concentrations of peptides were eluted in IND cheeses than in TRD cheeses during ripening. A total of 73 volatile compounds, including alcohols (16), esters (17), acids (14), terpenes (7), ketones (5), and miscellaneous (10) were identified. The IND cheeses contained higher levels of carboxylic acids, esters, alcohols, and terpenes than the TRD cheeses; however, the same levels of methyl ketones were determined in the 2 types of cheeses at the end of ripening. These may be due to some differences (e.g., pasteurization and scalding temperature, aging and other factors) in the manufacture of the 2 types of Beaten cheeses. The textural profile of Beaten cheeses showed that TRD production method resulted in firmer, less fracturable, and stiffer cheeses than the IND production method. In conclusion, the results suggest that the use of industrial production method (pasteurization of cheese milk and curd scalding at 70°C) in the manufacture of Beaten ewe milk cheese enriched the volatile profile of the cheese. PMID: 24377800


Machine learning techniques that combine multiple classifiers are introduced for classifying adult attention deficit hyperactivity disorder (ADHD) subtypes based on power spectra of EEG measurements. The analyzed sample includes 117 adults (67 ADHD, 50 controls). The measurements are taken for four different conditions: two resting conditions (eyes open and eyes closed) and two neuropsychological tasks (visual continuous performance test and emotional continuous performance test). We divide the sample into four data sets, one for each condition. Each data set is used for training of four different support vector machine classifiers, while the output of classifiers is combined using logical expression http://www.idmms.msk/ http://www.id-presse.eu/mjms/
main findings of the assessment, recommendations, and proposals for action served as the basis for new policies and integrated into Macedonia’s official strategy for emergency medical services 2009-2017. PMID: 24384764


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Although endocrine abnormalities are recognized in opiate users, very little is known about the range of hormones affected, their pathophysiology and their clinical relevance. Various endocrine abnormalities have been reported in these patients including, increased prolactin levels and abnormalities in sexual hormone. Path physiological mechanism postulated does explain these findings including direct action of heroin or methadone at the hypothalamic pituitary level. The aim of this study was to explore the effects of heroin and methadone maintenance treatment on the plasma prolactin levels and sexual function. Material and methods: We evaluated 20 male narcotic addicts maintained of methadone more than 3 years on oral high dose methadone 60-120 mg/day. Patients taking neuroleptic therapy were excluded from the study because of the previously included hyperprolactinemia. We also evaluated group of twenty male heroin addicts on the street heroin. The prolactin plasma levels were assayed using the chemiluminescent immuno metric assay (CLIA).--high sensitive methods. The normal range of prolactin levels was 1.5-17 ng/ml (53-360 nmol/l) for men and 1.90-25.0 ng/ml for (HR) women. The sexual function was assessed using a Questionnaire: International Index of Erectile Function (IIEF) with 15 items in four levels of sexual function. The differences between two examination groups were determined by a students t test. The results show that street heroin addicts (55% of them have high level of prolactin) have significantly higher plasma prolactin levels (p = 0.006) then the group of methadone maintenance patients (only 15% of them have high prolactin level). In our study, when we compared sexual dysfunction in examination groups in some domains, we did not find statistical significant results (sexual desire p = 0.52 and overall satisfaction p = 0.087). But in domains of erectile function p = 0.011 and orgasm function p = 0.033 we got statistical significant results. PMID: 23678840


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Chitosan-based edible films were prepared and subjected to cross-linking reactions using sodium tripolyphosphate and/or to beeswax coating on both films interfaces. In addition, chitosan-beeswax emulsion-based films were produced. The goal of these modifications of the chitosan films was the improvement of their barrier to water vapor and to decrease their affinity to liquid water maintaining or improving the mechanical and optical properties of the original chitosan films. The cross-linking with tripolyphosphate decreased both the water vapor permeability and the water absorption capacity to about 55% and 50% of that of the original chitosan films, respectively. However, there was an increase in the films stiffness, revealed by the increased Young modulus from 42 kPa up to 336 kPa. The multilayered wax-chitosan-wax films exhibited a similar improvement of the barrier properties to water vapor, with the advantage of maintaining the mechanical properties of the original chitosan films. However, these wax-coated films showed a higher water absorption capacity, which is believed to be a consequence of water entry into small pores between the film and the wax layers. Regarding the film samples subjected to cross-linking and further coating with beeswax, a similar behavior as the uncoated cross-linked films was observed. The emulsion-based composite films were characterized by a substantial decrease of the water vapor permeability (40%), along with a decrease in their stiffness. Ranging the optical properties, all films presented a yellowish color with similar values of lightness, chroma, and hue. PMID: 24285830


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Organochlorine pesticides were determined in water and sediment samples collected from the littoral zone of Lake Prespa, as well as from its three main tributaries (the rivers Golema, Brazinska and Kranzka), during the period 2004 to 2006. In addition, muscle tissue samples of barbus fish (Barbus sp.) collected from the littoral zone of Lake Prespa were also analysed. The obtained results give an overview of the contamination levels of these problematic compounds at their potential sources in the river mouths, in the potentially affected, species-rich littoral section of the lake and in the muscle tissue of one selected fish species, collected near the rivers’ deltas. Special attention was paid to the presence of some DDT metabolites ((1,1-dichloro-2,2-bis(p-chlorophenyl)ethylene (p,p’-DDE); (1,1-dichloro-2,2-bis(p-chlorophenyl)ethyl) (p,p’-DDD) and 1,1,1-trichloro-2,2-bis(p-chlorophenyl)ethane (p,p’-DDT)). The extraction of pesticides from water samples was done by liquid-liquid partition in dichloromethane. For the sediment and fish tissue we used solid-liquid extraction. The extracted residues were analyzed on a gas chromatograph equipped with an electron capture detector (GC-ECD). The results of the respective studies indicated the presence of DDT metabolic forms in the samples of the three analysed matrices. The highest levels of presence for these pollutants were found in the muscle tissue of the fish samples. The total DDTs content in the analysed muscle tissue samples range from 11.67 to 13.58 μg kg⁻¹ of fresh tissue. The average total DDTs content for the sediment samples were within the range of 2.32 to 4.17 μg kg⁻¹ of dry sediment. Higher DDT metabolites content were found in the sediments collected from the rivers than in the samples from the littoral zone. The lowest average total concentrations of DDTs, on
the other hand, were recorded in the water samples and ranged between 0.036 and 0.057 μg L⁻¹. The obtained results indicated that the dominant metabolic form in the samples of the three investigated matrices (water, sediment and fish tissue) from Lake Prespa was p,p’-DDE. There was a very good linear correlation in this study between the content of DDT’s (total DDT metabolites) detected and the percentage of total organic material in the sediment. The detected concentrations are clearly below the toxicity thresholds; consequently, severe effects on the endemic species of Lake Prespa are not very likely. PMID: 23581867


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BACKGROUND: Conflicting results have been reported, mostly in developed countries, on the relationship between exposure to traffic and allergic diseases. This study aims to examine the impact of truck traffic on asthma, rhinitis and eczema in early adolescence in Skopje, the capital of the Republic of Macedonia, as a developing country with a lower middle rate of truck traffic exposure and low prevalence rates of allergic diseases. METHODS: Self-reported data was used, obtained through the International Study of Asthma and Allergies in Childhood Phase 3 written questionnaires, from 3026 adolescents aged 13-14 years from Skopje. Truck traffic density on the street of residence on weekdays was correlated to current and ever-diagnosed asthma, rhinitis and eczema by odds ratios (OR, 95% CI) in logistic regression, with and without adjustments for potential confounding factors separately and for their joint effect. RESULTS: A positive association of truck traffic density appeared to be limited to current dry night cough (aOR: 1.63; 1.07-2.47; aOR: 2.17; 1.40-3.35; and aOR: 2.33; 1.43-3.79 for truck traffic seldom, frequently through the day, and almost the whole day, respectively) with an exposure-response relationship and to current wheeze only for truck traffic almost the whole day (aOR: 1.57; 1.02-3.42). CONCLUSION: The findings suggest an aggravating effect of truck traffic on current asthma symptoms, but not on asthma, allergic rhinitis and eczema diagnoses. It seems that it probably has an impact as a direct respiratory irritant in early adolescence. PMID: 23352596


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The objectives of the research were: (1) to examine the concentrations of metals in Vimbia melanops and Rana temporaria and (2) to evaluate the potential risks of the contaminated organisms to human health in Makedoniska Kamenica region. Analysed identified high levels of Cr, Hg, Ni and Pb in studied animals, which also exceeded their permissible levels in food. In sediment and soil samples, levels of Cd, Cu, Cr, Pb, Zn and As were perceived, while Cd, Cu, Ni, Pb, Se and As were increased in water samples. Results of transfer factor revealed that the examined animals had higher bioaccumulation rate from surrounding waters than from sediments or soils. The accomplished Health Risk Index disclosed that studied animals can have considerably high health risks for inhabitants. Conclusively, they could be considered as highly contaminated with metals and can consequently harm human health, especially children in their early development stages. PMID: 23747817


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The purpose of this study was to determine the atmospheric deposition of chromium in Croatia by using moss biomonitoring technique and atomic emission spectrometry with inductively coupled plasma (ICP-AES). Moss samples (Hylomciun splendens, Hyphnum cupressiforme, Brachythecium rutabulum and Homalothecium Sericeum) were collected from 121 sampling sites evenly distributed over the country, during the summer and autumn of 2010. Collected samples were air dried, then cleaned and digested by using microwave digestion system. The median value obtained in this study (1.94 mg kg⁻¹) compared with the median value of previous investigation performed in 2006 (2.75 mg kg⁻¹) shows that the content of chromium decreased. Higher contents of chromium were found in moss samples collected in the regions of Central Croatia, in/near the cities of Zagreb, Sisak and Kutina, which, in the most of the cases, are result of anthropogenic activities. In Costal Croatia, higher values have a natural origin due to the significantly higher content of Cr in soil from this region. The results were compared with those from similar studies in neighboring and other Balkan countries. It was established that the content of chromium in Croatia is lower than in the most of these countries. PMID: 23445426


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PURPOSE: Macedonia is one of the top five countries globally in reported smoking rates. Over 10 % of the population consists of the underprivileged Roma minority. We aimed to determine whether Roma ethnicity is an independent risk factor for adverse pregnancy outcome or merely mediating maternal smoking. METHODS: Maternal data were retrieved from the perinatal computerized database for all deliveries during 2007-2011 at the only Clinical Hospital in Bitola, Macedonia. Multivariable regression models were constructed to control for confounders. RESULTS: Of nearly 7,000 deliveries, 8.65 % were of maternal Roma ethnicity and 40 % of the Romani women admitted to regularly smoke during pregnancy. Both Roma ethnicity and maternal smoking were significantly associated with the absence of maternal education, history of abortions and intra uterine growth restriction (IUGR) in the univariate analysis. Both maternal Roma ethnicity (OR 2.46, 95 %
CI 1.79-3.38) and smoking status (OR 1.37, 95% CI 1.02-1.85) were found to be independent predictors of IUGR using the multivariate analysis. Lower birthweight and smaller head circumference were both independently associated with Roma ethnicity and smoking. CONCLUSIONS: Underprivileged ethnic background is a significant risk factor for IUGR, independent of maternal smoking status. To the best of our knowledge, this is the first publication focusing on pregnancy outcome in Romani Macedonian parturients. PMID: 23361458