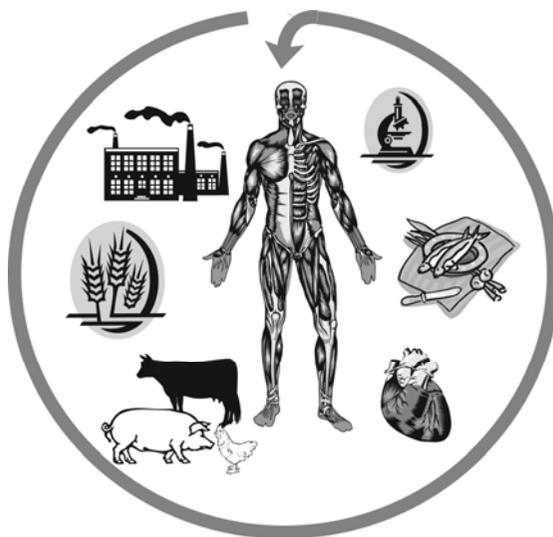


**Slovak Agricultural University in Nitra**

**Krakov Pedagogical University**

**Slovak Society for Agricultural, Forestry, Food and Veterinary Sciences  
at the Slovak Academy of Sciences**

## **RISK FACTORS OF FOOD CHAIN**



**OCTOBER 11-TH, 2007**

**NITRA**

Risk Factors of Food Chain VII, 2007, Nitra

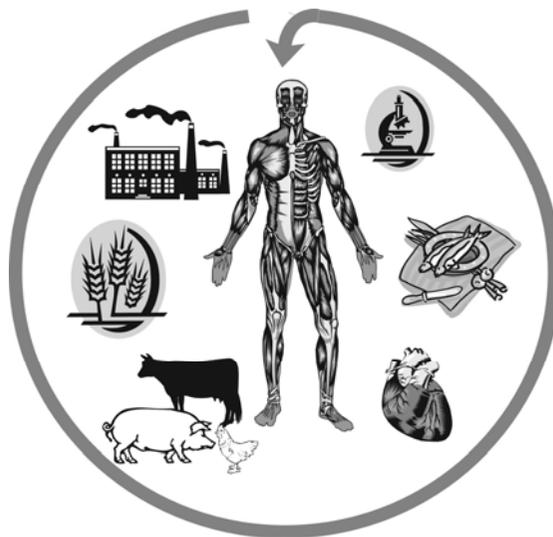
**Slovak Agricultural University in Nitra**  
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## **RISK FACTORS OF FOOD CHAIN**



**OCTOBER 11-TH, 2007**

**NITRA**

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## HISTOLOGICAL PICTURE OF JAPANESE QUAIL TESTES SUBJECTED TO LONG-TERM HYPODYNAMY

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The aim of present study was to observe the influence of simulated weightlessness on the structure, ultrastructure and morphometric analysis of testes of Japanese quails reared under the conditions of experimental long-term hypodynamy. Hypodynamy is a method to simulate weightlessness in the earth laboratory conditions. Two days after hatching the quails were suspended in special shirts below the ceiling of a cage so their feet did not touch the floor. They could consume food and water *ad libitum*. Experimental animals were sacrificed after 14, 21, 28, 35, 42, 49 and 56 days of hypodynamy. Birds of the same age, hatched at the same time, and fed the same diet were used as a control. Samples of testes were processed for light (LM) and transmission electron microscopy (TEM). Short-term hypodynamy (14–28 days) caused no marked damage on structure and ultrastructure of testes. However, after long-term hypodynamy (35–59 days), morphological changes were observed in some cells of seminiferous epithelium and Leydig cells. Hypodynamy had an adverse effect on body weight of Japanese quail which was reflected in its average decrease by 29.38% in comparison with the control. This was in correlation with lower mass of testes, decreased diameter of seminiferous tubules and lower seminiferous epithelium. The morphometric data obtained agree with our morphological findings and indicated delayed development of testes and a delay in onset of spermatogenesis by approximately seven days. Apoptosis of Leydig cells was observed in testicular interstitium from day 35 to 56 of hypodynamy. On the basis of our findings and the data from literature we assume that stress is the principal factor affecting negatively the organism during hypodynamy. The stress causes disturbances in the hypophysis–hypothalamus–gonad axis which affects negatively the development and structure of testes. In conclusion we can state that Japanese quail are able to grow, develop and reach productive age even under unfavourable conditions of long-term hypodynamy.

## **CONTENT OF SOME INORGANIC POLLUTANTS AND SELECTED MICROBIOLOGICAL INDICATORS OF MEAT QUALITY OF RAINBOW TROUT (*ONCORHYNCHUS MYKISS*) FROM THE FISH FARM**

**Andreji, J., Stráňai, I., Kačániová, M., Nad', P.<sup>1</sup>, Skalická, M.<sup>1</sup>**

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<sup>1</sup>*University of Veterinary Medicine, Košice, Slovak Republic*

The aim of this study was to assess concentration and correlation of selected heavy metals and level of some microbiological indicators (total bacteria count–TBC, mesophilic anaerobic sporulating microorganisms–MASM, coliforms bacteria–CB and *Vibrio parahaemolyticus*–VP) in the muscle of rainbow trout (*Oncorhynchus mykiss*). The fish were collected from trout fish farm in July, 2005. Concentrations of selected metals were measured using an atomic absorption spectrophotometer Pye Unicam SP9. The concentrations of metals (mg.kg<sup>-1</sup> wet weight basis) ranged as follows: Zn 22.21–138.00; Cu 20.66–37.08; Ni 0.00–0.16; Pb 0.01–0.55; and Cd 0.01–0.28. The count of CB, MASB and TBC (in CFU.g<sup>-1</sup>) varied as follow: 0.00–2.11 x 10<sup>3</sup>, 2.54–5.65 x 10<sup>4</sup> and 4.01–5.74 x 10<sup>5</sup>, respectively. Significant positive correlations (P<0.001) between accumulation of Pb–Cd and TBC–MASM were recorded. Relationship between microbiological indicators and heavy metals accumulation showed in majority a negative correlations without statistically significant differences. Copper, lead and cadmium concentrations exceeded the maximum values allowed concentration in Slovakia by Codex Alimentarius (20.0; 0.2 and 0.05 mg.kg<sup>-1</sup>) by 100%, 27% and 60%, respectively. The level of MASM count exceeded the maximum allowed concentration (10<sup>2</sup> CFU.g<sup>-1</sup>) in 100%.

## **EFFECT OF EXPERIMENTAL ADMINISTRATION OF NICKEL ON EGG WEIGHT AND EGG YOLK QUALITY OF MARKET EGGS**

**Arpášová, H., Massányi, P., Capcarová, M., Kolesárová, A., Kalafová, A., Schneidgenová, M., Lukáč, N.**

*Slovak Agriculture University, Nitra, Slovak Republic*

The experiment was implemented on the Isa brown laying hens producing brown shell eggs. We used 20 selected 53 weeks old hens. Three level cages were used for the stabling of experimental hens. Laying hens were divided into four groups, 5 fowls in each. Laying hens in each group had approximately the same body weight. Hens were fed by the standard feed mixture HYD–10. Laying hens received fodder *ad libitum*. In control group C hens received drinking water without addition, in experimental groups

drinking water was supplement with  $\text{NiCl}_2$  in different concentrations. In experimental group E1—concentration  $0.02 \text{ g.l}^{-1}$ ; in experimental group E2— $0.2 \text{ g.l}^{-1}$  and in experimental group E3 in concentration  $2 \text{ g.l}^{-1}$ . In all groups laying hens received drinking water *ad libitum*. The experiment lasted 30 days. The egg weight was in order groups: 62.26; 59.11; 64.90; 50.97g. The greatest differences during the experiment were achieved between control group C and experimental group E3 with the highest nickel concentration. Evaluation of egg weight detected very high significant differences ( $P \leq 0.001$ ) among experimental group E3 and all other groups, high significant difference ( $P \leq 0.01$ ) between experimental groups E3:E2. The egg yolk weight was in the order groups: 17.54; 16.24; 16.86; 14.40 g. The lowest value of egg yolk weight was in the experimental group E3. Evaluation of egg yolk weight found very high significant difference ( $P \leq 0.001$ ) between control group C and experimental group E3, high significant difference ( $P \leq 0.01$ ) between experimental groups E3:E2 and significant difference ( $P \leq 0.05$ ) between experimental groups E1:E3. Evaluation of percentage and egg yolk index report any significant differences ( $P > 0.05$ ) between control and experimental groups.

## THE SOIL CONTAMINATION WITH Cd, Pb, Zn AND Co IN THE HONTIANSKE NEMCE VILLAGE

Árvay, J., Bajčan, D., Čéry, J., Musilová, J.

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The aim of this work is to show the importance of monitoring and of soil hygienic quality evaluation in Slovak Republic area. In the past, when on ecology was not such an emphasis, as it is nowadays, there was an uncontrolled emission of pollutants from different fields of anthropic activities. The consequences are manifested also nowadays, but immediate and expensive solutions are needed.

In this work are presented the results of soil contamination research range of monitored locality Štiavnica Hills by heavy metals and their availability for plants in dependance at soil reaction. The chose of this locality relates with specificity of mentioned area, which is characteristic by antropic, but also natural (geochemical) contamination.

In all soil samples the analyses of water and changeable reaction were realized. Also the analyses on the heavy metals content in the leach of aqua regia (pseudototal leach). The results were prepared into content maps with software ArcView 3.2. As the result colourful maps showing content variability of elements on monitored area are presented.

From the results flows that on monitored parcel no. 3603/1  $\text{pH}_{\text{KCl}}$  is in the range of weak and extremely acid and by all elements the valid hygienic limit determined by legislative norm 220/2004.

## **CHANGES OF TESTICULAR STRUCTURE RATE AFTER AN INTRAPERITONEAL ADMINISTRATION OF NICKEL IN RATS**

**Bábiková, L., Toman, R., Massányi, P., Hluchý, S., Golian, J., Lukáč, N.**

*Slovak Agriculture University, Nitra, Slovak Republic*

The purpose of this study was to assess an effect of nickel chloride on structures rate in the rat testis. Males received a single intraperitoneal dose of 15 mg NiCl<sub>2</sub>.kg<sup>-1</sup> body weight. Ten animals served as an untreated control group. Forty–eight hours after nickel administration, animals of each group were killed and samples of testis were taken for morphometric analysis. Morphometry evaluation showed significant (P<0.01) decrease in germinal epithelium volume from 72.50±1.91% to 68.50±3.30%. This decrease in germinal epithelium volume caused the significant (P<0.05) increase in tubule lumen volume to 13.46±1.91% in comparison with the control group 11.49±1.21%. The interstitial tissue in nickel–treated group increased to 17.92±3.32% from 16.03±1.00% in control group. Results from this study report a negative impact of nickel on the structure of testis.

## **SUBCHRONIC EFFECT OF NICKEL ON THE MORPHOMERIC PARAMETERS OF THE RAT TESTIS**

**Bábiková, L., Toman, R., Massányi, P., Lukáč, N., Hluchý, S., Golian, J.**

*Slovak Agriculture University, Nitra, Slovak Republic*

The aim of this study was to evaluate an effect of long–term intake of nickel chloride on the rat reproductive system using the morphometry methods. Nickel was administered in a daily dose of 100 mg.l<sup>-1</sup> NiCl<sub>2</sub> in a drinking water to male rats during 3 months. The nickel–treated group consisted of 10 rats and the same number of males served as an untreated control group. At the end of the experimental period, animals were killed and the samples of the testis were taken for the morphometry evaluation. Three months after nickel treatment, a significant increase (P<0.01) in interstitial tissue volume from 16.03±1.00% to 20.69±4.94% in the testis of Ni–treated rats was observed. In the relative volume of germinal epithelium, an insignificant increase was found between control and experimental groups (72.50±1.91% and 73.18±4.66%, respectively). Morphometry analysis of the lumen of seminiferous tubules showed statistically significant decrease (P<0.001) from 11.49±1.21% to 5.91±1.06% in comparison with control group. These findings show the negative effect of peroral nickel administration on the testis structures.

## **METALLIC LOAD OF ALLUVIAL SOILS IN REGION IPEĽ**

**Bajčan, D., Árvay, J., Harangozo, E., Čéry, J., Timoracká, M.**

*Slovak Agriculture University, Nitra, Slovak Republic*

Nowdays, a degree of contamination by heavy metals can be observed in the environment. Heavy metals have serious effects on all living organisms because they can accumulate in lethal or sublethal concentrations in the various parts of food chain and so they can cause different health problems like cardiovascular and cancer diseases.

This work is focused to the rate of some heavy metals contamination in agricultural alluvial soils from specific area of the region Ipeľ—alluvium of the river Štiavnica. Soils in alluvium of Štiavnica are strongly contaminated by heavy metals due to hundreds of years mine activities in region of Banská Štiavnica. The mobile forms of risky elements easily pass trough to the agricultural plants growing on contaminated soils.

The soil samples were collected in the years 2003–2006 and the content of Cd, Pb, Zn, Cu and Cr was analyzed by AAS. The result showed that alluvial soils are strongly contaminated by Pb, Zn and Cd, moderately contaminated by Cu and noncontaminated by Cr.

## **LIPID METABOLISM CHANGES RESULTED TO LIVER STEATOSIS: CORRELATION WITH HISTOLOGICAL SEVERITY OF DISEASE IN CHRONIC HEPATITIS B AND C.**

**Bartoš, V.<sup>1,3</sup>, Krkoška, D.<sup>2</sup>, Slávik, P.<sup>3</sup>, Lauko, E.<sup>3</sup>, Szépeová, R.<sup>4</sup>**

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Chronic hepatitis B (CHB) and C (CHC) are histologically often accompanied by steatosis of hepatic parenchyma, that can be a result of the influence of both, viral and environmental factors. In the former type, a treatment of choice is the antiviral therapy, while the later one can be decreased owing to administration of medicaments with antisteatotic effect. Although it is considered to be a negative histomorphological parameter, the data about a relationship between steatosis and other pathological features in these nosological entities are still controversé. Therefore, its effect to outcome and „overall“ prognosis of patients with these disorders is still unclear.

## **HEPATIC STEATOSIS AS A RISK FACTOR FOR REGENERATION LIVER POTENTIAL: ANALYSIS OF HISTOLOGICAL, BIOCHEMICAL AND MR SPECTROSCOPICAL FINDINGS.**

**Bartoš, V.<sup>1,4</sup>, Urdzik, J.<sup>2</sup>, Bittšanský, M.<sup>3</sup>, Slávik, P.<sup>4</sup>, Fani, M.<sup>2</sup>, Drgová, A.<sup>5</sup>**

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Liver steatosis is defined as a pathological accumulation of lipids in hepatocytes. It is often related to excessive alcohol intake, but recently is well-known a nosological entity—nonalcoholic fatty liver disease (NAFLD). Primary form of NAFLD is especially caused by overweight or obesity, and there have been also reported association of hepatic steatosis with BMI (body mass index) of patients in many studies. Thus, in most cases, this frequent phenomenon reflects the various forms of impairment of the alimentary processes. Approximately 20 to 25 percent of slovak population suffer from NAFLD. The „gold standard“ for diagnosis is considered a histological examination of hepatic tissue, but steatosis can be also detected noninvasively by imaging investigation methods (e.g. nuclear magnetic resonance, ultrasonography, computed tomography) or by biochemical evaluation of liver sample.

## **GENETIC DIVERSITY AMONG HORSE POPULATIONS USING MICROSATELLITE MARKERS**

**Buróciová, M.<sup>1</sup>, Říha, J.<sup>1</sup>, Židek, R.<sup>2</sup>, Trandžík, J.<sup>2</sup>, Jakabová, D.<sup>2</sup>**

<sup>1</sup> *Mendel University of Agriculture and Forestry, Brno, Czech Republic*

<sup>2</sup> *State Breeding Institute, Nitra, Slovak Republic*

In the present study was estimate the genetic diversity and relationships among nine horses breeds in Czech and Slovak Republic.

In conclusion, the main objective of study was to show the level of genetic distance among the horse breeds with different history of breeding of each country. Furthermore, it should be clarified whether these populations and subpopulations are distinct enough from each other to justify defining separate breeds. This research concerns the variability of microsatellite markers in genotypes of horse.

We compared the genetic diversity and distance among nine horse breeds Czech and Slovak Warmblood both of Czech origin, Slovak Warmblood of

Slovak origin, Hucul, Hafling, Furioso, Noriker, Silesian Noriker and Bohemian–Moravian Belgian Horse.

In total, 932 animals were genotyped for 17 microsatellites markers (AHT4, AHT5, ASB2, HMS3, HMS6, HMS7, HTG4, HTG10, VHL20, HTG6, HMS2, HTG7, ASB17, ASB23, CA425, HMS1, LEX3) recommended by the International Society of Animal Genetics.

In the different population size, the allele frequencies, observed and expected heterozygosity, test for deviations from Hardy–Weinberg equilibrium and Polymorphism information content have been calculated for each breed. We analyzed genetic distance and diversity among them on the base of the dataset of highly polymorphic set of microsatellites representing all autozomes using set of PowerMarker v3.25 analysis tools and Structure 2.2. programme for results comparison.

#### **THE ASSESSMENT OF TRACE ELEMENTS IN SOILS OF AREAS BREKOV AND DUNAJSKÁ STREDA USING SEQUENTIAL EXTRACTION BY ZIEHEN AND BRÜMMER**

**Čéry, J., Tóth, T., Melicháčová, S., Timoracká, M.**

*Slovak Agriculture University, Nitra, Slovak Republic*

Total content of heavy metals included whole forms, where risky element is occur in soil. Greater value has determined total content of risky element in most pollution soils, where are higher rate of correlation among content of elements in soil and plant. By the specific conditions (variety of soil reaction) could most slight changeable fraction of heavy metals get into the changeable fraction, what can negatively affected the food chain. For determination of specific bounds of risky elements in soil, we had utilized selective sequential extraction by Ziehen and Brumer. Specific bounds are composed by followed fractions: mobile fractions of heavy metals, potential mobile form of heavy metals, fraction which is bind at Mn–oxides, fraction which is bind at organic matter, fraction which is bind at Fe–oxides and residual fraction. Results confirmed generally valid rule, that potential availability of heavy metals to plants is in negatively correlation with value of soil reaction and it is negatively affected by changeable soil reactions.

## **EFFECT OF NICKEL AND ZINC ON RABBIT NUMERICAL CHROMOSOMAL ABBERATIONS**

**Čurlej, J.<sup>1,2</sup>, Massanyi, P.<sup>2</sup>, Chrenek, P.<sup>1</sup>**

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<sup>2</sup> *Slovak Agricultural University, Nitra, Slovak Republic*

The aim of the study was to determine any negative effects of nickel and zinc on rabbit numerical chromosomal aberrations. Nickel and zinc were added in specific concentrations: P1: 17,5 g NiCl<sub>2</sub>; P2: 35 g NiCl<sub>2</sub>; P3: 17,5 g NiCl<sub>2</sub> + 30 g ZnCl<sub>2</sub>; P4: 35 g NiCl<sub>2</sub> + 30 g ZnCl<sub>2</sub> to 100 kg of complete feed and feeding during three months in four groups. Chromosomes in metaphase stage were isolated from cultivated blood lymphocytes, synchronised by addition of colcemide. Experimental animals from P2 group exhibited statistical high difference ( $p < 0.001$ ) in aneuploid cells occurrence in comparison to control group. Rabbits from P4 group shown on statistical difference ( $p < 0.05$ ) in chromosomal aneuploidy in comparison to control one. Our results point on negative effect of NiCl<sub>2</sub> added in concentration 35g/100kg of complete feed which led to increase of chromosomal aberrations, on the other hand ZnCl<sub>2</sub> in concentration 30g/100 kg of complete feed stand a role as a particular inhibitor of negative NiCl<sub>2</sub> effect.

## **OCCURRENCE OF POTENTIALLY TOXIGENIC SPECIES OF GENUS ASPERGILLUS AND ITS TELEOMORPHS IN FOOD WHEAT OF SLOVAK ORIGIN HARVESTED IN 2006**

**Dovičičová, M., Tančinová, D., Labuda, R.**

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From the total number of 147 identified isolates of genus *Aspergillus* and its teleomorphs isolated during mycological investigation of wheat of Slovak origin harvested in year 2006, 116 belonged to potentially toxigenic species. Totally 65 isolates of *Aspergillus clavatus*, *A. flavus*, *A. niger*, *A. ochraceus*, *A. versicolor*, *Emericella nidulans*, *Eurotium amstelodami* and *E. chevalieri* were tested *in vitro* for production of selected mycotoxins by means of thin layer chromatography. Production of cyclopiazonic acid was detected in 16 isolates, while patulin and sterigmatocystin each in two isolates. None of isolates tested showed production of aflatoxin B<sub>1</sub> and ochratoxin A in amounts detectable by the method used in this study.

## **QUANTITATIVE ANALYSIS OF KIDNEYS OF *CLETHRIONOMYS GLAREOLUS* FROM ECOSYSTEMS IN NOVAKY**

**Drábeková, J.<sup>1</sup>, Jančová A.<sup>2</sup>, Massányi P.<sup>1</sup>, Lukáč N.<sup>1</sup>**

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<sup>2</sup>*Constantin the Philosopher University, Nitra, Slovak Republic*

This work presents histological analysis of kidney tissue. We evaluated microscopical kidney structures of species *Clethrionomys glareolus* (Muridae, Rodentia). Samples for histological preparations were taken from adult individuals, which were in a very good physical condition and sexual active. They come from ecosystems that are situated close to thermal power station Novaky. For quantitative analysis morphometrical image analyzer softwer (Micro Image ver. 4.0) was used according to micromorphological criteria. The diameter of renal corpuscle, glomeruli, Bowman's capsule, tubules as well as height of tubular epithelium, surface of tubules and lumen, perimeter of tubules and lumen were evaluated. Quantitative analysis of experimental data accorded the differences between male and female. There were significant ( $P < 0.05$ ) distinctions in the diameter of Bowman's capsule, the diameter, surface and perimeter of tubules.

## **APPLICATION OF NEAR-INFRARED REFLECTANCE SPECTROSCOPY TO THE ANALYSIS OF HISTAMINE CONTENT IN CAKE OF CHEESE**

**Dračková, M., Standarová, E., Kordiovská, P., Borkovcová, I., Janštová, B., Navrátilová, P., Vorlová, L., Bartáková, K.**

*University of Veterinary and Pharmaceutical Sciences Brno, Czech Republic*

Near-Infrared reflectance (NIR) spectroscopy was used to analyze histamine content in cake of cheese. A set of 96 samples stored at 5°C during 7 weeks was used for instrument calibration by partial least squares (PLS) method. Spectra were measured in the reflectance mode with a compressive cell between 10000 and 4000  $\text{cm}^{-1}$ , averaging 100 scans. The following statistical values were obtained: correlation coefficient ( $R$ )=0.930 and standard error of calibration (SEC)=26.8. The calibration model developed was verified by cross validation. To validate the calibration, the same set of samples was used. Standard error of validation was 30.8 and  $R$  for the regression of measurements by reference method versus measurements by NIR spectroscopy was 0.907. There was no significant difference between calibration and cross validation.

## **OCCURRENCE OF TOXIGENIC PENICILLIUM SPECIES IN WHEAT**

**Felšöciová, S., Labuda, R., Tančinová, D.**

*Slovak Agricultural University, Nitra, Slovak Republic*

Wheat samples from the conventional (6) and ecological (12) agriculture harvested during the season 2006 were surveyed for fungal contamination. The species of genus *Penicillium* were isolated on Dichloran rose bengal agar and malt extract agar and incubated for 7 days at 25°C±1°C in the dark. A total of 3 potentially toxigenic species were identified from the conventional agriculture, namely *P. raistrickii* (56% positive samples), *P. griseofulvum* (33%) and *P. verrucosum* (11%). A total of 7 potentially toxigenic species were identified from the ecological agriculture, namely *P. carneum/paneum* (10% positive samples), *P. citrinum* (7%), *P. crustosum* (21%), *P. chrysogenum* (34%), *P. griseofulvum* (10%), *P. melanoconidium* (3%), *P. verrucosum* (14%). Their choosed mycotoxin production ability was tested on thin layer chromatography plates. Their production was confirmed for nearly all the mycotoxins tested.

## **DOES ULTRAVIOLET RADIATION INFLUENCE ON HEAVY METAL BIOAVAILABILITY IN AQUATIC ECOSYSTEMS?**

**Formicki, G., Stawarz, R., Zamachowski, W., Zakrzewski, M., Łaciak, T.**

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In different aquatic ecosystems toxicity of metals can vary widely. This is generally attributed to the influence of water chemistry. Heavy metals in aquatic ecosystems form complexes with inorganic, and organic ligands, which decrease their bioavailability. Uptake of heavy metals by aquatic animals depends also on genetic variability and physiological state of the organisms i.e. the way of oxygen uptake and maintaining of ionic balance, nourishing preferences, state of health etc. Little is known about the influence of physical factors on heavy metals uptake. This work is a survey of literature and our own research concerning the influence of UV radiation on bioavailability and uptake of heavy metals by aquatic animals. We conclude that ultraviolet radiation may influence the bioavailability of heavy metals by modification of structure and chemical activity of ligands such as DOC dissolved in water. Direct exposure to UV of animals, which maintain ionic balance thanks to skin functions, may influence structure and/or affinity of specific metal transport systems to cations. Moreover UV by its influence on general physiological condition of animals may also have indirect effect on metals uptake or removal.

## **NATURAL CONTAMINATION WITH MYCOTOXINS IN HIGH MOISTURE CORN**

**Gálik, B., Bíro, D., Juráček, M., Šimko, M., Golian, J., Michálková, J.**

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In this study, the mycotoxins contamination was examined in fresh and ensiled high moisture corn. The maize corn was harvested in dry matter content  $613.3 \text{ g.kg}^{-1}$  and mechanically processed with Murska crimper 1000 HD. After 6 months of storage, silage plastic bins with the capacity  $50 \text{ dm}^3$  were opened and average laboratory samples were tested for mycotoxins contamination: zearalenone, deoxynivalenol, T-2 toxin, fumonisins, aflatoxins and ochratoxins.

We detected the highest concentrations of fumonisins ( $117.1 \text{ } \mu\text{g.kg}^{-1}$ ) and zearalenone ( $43.5 \text{ } \mu\text{g.kg}^{-1}$ ) in the fresh matter of high moisture crimped corn. We did not detect occurrence of deoxynivalenol in level of  $\text{mg.kg}^{-1}$ . We found the lowest concentration of ochratoxins and aflatoxins. After the fermentation process, we detected the highest concentrations of trichothecenes: T-2 toxin ( $232.17 \text{ } \mu\text{g.kg}^{-1}$ ) and deoxynivalenol ( $0.13 \text{ mg.kg}^{-1}$ ) in silage of high moisture crimped corn without additives. We found lower values in comparison to limited concentrations of mycotoxins valid in European Union and in the U.S.A..

## **MICROBIAL CONTROL OF HYGIENE AND SANITATION IN POULTRY PLANT**

**Golian, J., Čapla, R., Sokol, J., Zajác, P.**

*Slovak Agricultural University, Nitra, Slovak Republic*

In this paper, we are evaluating level of hygiene and sanitation in the poultry plant. We were used 3M Petrifilm® method. Total number of 100 samples were analysed for TBC and Enterobacteriaceae. We were not find overload of legislation limit for TBC in stainless steal surfaces. We were find higher counts of TBC in plastic surfaces. Enterobacteriaceae were found only sporadically and higher counts of Enterobacteriaceae were found in plastic and rubber surfaces.

## **THE INFLUENCE OF CADMIUM ON TOTAL POLYPHENOLIC SUBSTANCES CONTENT**

**Harangozo, E., Árvay, J.**

*Slovak Agricultural University, Nitra, Slovak Republic*

In the paper the results from vegetation pot experiment with using the soil from locality Výčapy–Opatovce are presented.

The experiment goal was the monitoring of risky metals enter into edible part of mustard seed and sunflower seed and to survey mutual relation between the heavy metals content and the content of total polyphenols.

The contents of selected heavy metals by AAS method in seeds mustard and sunflower were determined. Afterwards the total polyphenolic substances content was determined, calculated on the tannin content. .

The total polyphenolic substances content in mustard in control variant (A variant) by calculation on tannin was 30693 mg.kg<sup>-1</sup>. In other variants the decline of polyphenols content beside B variant (with addition of 4,6 mg Cd) was observed, where the content of polyphenols was enhanced at 5% .

The total polyphenolic substances content in sunflower in control variant (A variant) when calculated on tannin was 11500 mg.kg<sup>-1</sup>.

Although the results suggest that by enhanced cadmium contents, also the total polyphenols content in plants was enhanced, it is not possible to define their mutual definite relation.

## **MEAT OF WILD DUCK (*ANAS PLATYRHYNCHOS*) AS SUPPLEMENT IN THE PEOPLE NUTRITION**

**Haščík, P., Gašparík, J., Čuboň, J., Vladárová, D., Kulíšek, V., Kačániová, M., Bobko, M.**

*Slovak Agricultural University, Nitra, Slovak Republic*

In this experiment, the meat efficiency of wild ducks from hunting ground Bohelov in relation to sex was evaluated. Ten ducks and ten drakes were selected for control of meat efficiency. Slaughter weigh of drakes (1276.55 g) was statistically higher ( $P \leq 0.01$ ) in compare with ducks (1121.43 g). Carcass weight had similar tendency (drakes – 778.36 g and ducks 678.14 g) and statistical differences between drakes and ducks were confirmed ( $P \leq 0.01$ ).

Statistical differences between weight of offal from drakes (112.80 g) and from ducks (101.57 g) were not found ( $P \geq 0.05$ ). Also statistical differences between carcass yield of drakes (69.92 %) and ducks (69.95 %) were not found ( $P \geq 0.05$ )

From aspect of adequate utility and possible feeding of wild ducks, we recommend enhancement their numbers and their hunt in Slovakia, eventually spreading their production about possible farm rearing.

## **COLONIC HEALTH AND SHORT CHAIN FATTY ACIDS**

**Hijová, E., Chmelárová, A.**

*Pavol Jozef Šafárik University, Košice, Slovak Republic*

In recent years, colonic health has been increasingly linked to maintaining overall health and reducing the risk of various diseases by changes in diet and lifestyle. At the forefront has been the emergence of functional foods, such as "prebiotics" and "probiotics", dietary fibers, and other dietary components that target the colon and affect its environment enhancing short fatty acid (SCFA) production. The focus of this review will be on the key end products of colonic fermentation, the SCFA butyric, acetic, and propionic acids. Specific SCFA may reduce the risk of developing gastrointestinal disorders, cancer, and cardiovascular disease.

## **THE INFLUENCE OF LOW LEVELS OF PROTEIN AND SEX ON SOME CARCASS PARAMETERS AND NUTRIENT COMPOSITIONS IN BROILERS' MEAT**

**Horniaková, E., Abas Kamaran, A.**

*Slovak Agricultural University, Nitra, Slovak Republic*

The aim of this experiment was to study how a reduced content of protein and sex during raising influences breast and leg fattiness and, in consequence, the chemical composition in 6-week-old broilers. The birds' number comprised 1214 one-day-old of ROSS 308 broilers divided into three experimental groups. The birds of group 1 (control) received feeds with a nutritional value recommended by feeding standards for growing broilers, while the group 2 (T1) and 3 (T2) received rations with reduced levels of protein in all feeds for the period of raising supplement by APC addition. The breast and leg percentage was determined. Chemical analyses (dry matter, protein, fat and ash content) were carried out. The results of the study allowed us to conclude that sex affected significantly ( $P \leq 0.05$ ) the percentage of the legs, and a lower level of protein content in the diet reduced the breast percentage insignificantly. Most remaining tested meat quality characters were similar to those obtained in the control group. And differences between groups were insignificant ( $P \leq 0.01$ ).

## **APPLICATION OF HOMEOPATHICS AS PREVENTION AGAINST DIARRHOIC SYNDROME IN WEANED PIGLETS**

**Húska, M., Dudříková, E., Buleca, J.**

*University of Veterinary Medicine, Košice, Slovak Republic*

The benefit of homeopatics is that no residues persist in organism in comparison to classic therapeutics. This fact positively acts at health creation not only in animals but also in humans. We applied homeopatics in post weaning piglets as prevention to diarrheic syndrome occurrence. Preparation PVB Diarrhéés is veterinary homeopathic specialty from Boiron company that is used for diarrhea treatment and prevents complications like weight loosing, chronic enterocolitis and hepatitis. Experiment was realized in ŠPP in Zem. Teplica on 28 piglets. Each swine was applied 2 ml of solution per orally in period since 3 days before weaning to 70 days after weaning.

## **EMISSION INFLUENCE TO HEALTH OF SHEEP IN SPIŠ REGION**

**Húska, M., Bíreš, J., Dudříková, E., Buleca, J.**

*University of Veterinary Medicine, Košice, Slovak Republic*

Ľudské aktivity v posledných desaťročiach sa stali určujúcim faktorom zmenených pomerov biogénnych prvkov v prírodnom prostredí, vzniku a hromadenia látok, ktoré sa v prírode predtým nevyskytovali. Najvýznamnejším predmetom štúdia je ovzdušie, v ktorom sa nachádzajú minerálne častice, organické súčasti, ťažké kovy a ich vplyv na zdravie zvierat a ľudí. Práca bola zameraná na kvalitu životného prostredia, vplyv na homeostázu oviec a výskyt ťažkých kovov v ich krvnom sére. Monitorovali sme oblasti s rozvinutým priemyslom, kde bol už v 80. rokoch minulého storočia dokázaný zvýšený výskyt ťažkých kovov v prostredí. Vybrali sme obce v okolí Krompách, kde je najvýznamnejším zdrojom znečistenia a.s. Kovohuty Krompachy a Vikartovce nachádzajúce sa v oblasti Nízkych Tatier, považované za najmenej znečistenú obec vzhľadom na vzdialenosť od akýchkoľvek priemyselných podnikov.

## **THE COMPARISON OF INFLUENCE OF THE MAGNETIC FIELD WITH DIFFERENT LENGTH EFFECT WITH INFLUENCE OF THE MAGNETIC FIELD WITH DIFFERENT INDUCTION DURING INCUBATION OF HATCHED EGGS FOR HATCHING OF HYBRID ISA 715 VEDETTE**

**Jedlička J.**

*Slovak Agricultural University, Nitra, Slovak Republic*

We realized our experiments in hatchery the type BIOS MONO 06, which was adapted to work more correctly. We replaced thermostat with mechanical (bimetal) thermo-sensor by electronic (bead type) thermo-sensor, so we reached higher sensibility on set temperature. We also used digital thermometer STD 9, which is able to get results from hatchery with precision on 0.1<sup>o</sup>C. The relative humidity of the air was kept and measured by digital hydrostat PHI. Biological control of hatching was taken by candling of eggs on 7<sup>th</sup> and 18<sup>th</sup> day. We should also remove futile eggs and also with dead embryo.

## **THE LEVEL OF MINERAL SUBSTANCES IN THE MEAT OF RABBIT AFTER AN EXPERIMENTAL NICKEL AND ZINC ADMINISTRATION**

**Kalařová, A.<sup>1</sup>, Kolesářová, A.<sup>1</sup>, Zaujec, K.<sup>2</sup>, Mojto, J.<sup>2</sup>, Massányi, P.<sup>1</sup>, Lukáč, N.<sup>1</sup>, Kováčik, J.<sup>1</sup>, Schneidgenová, M.<sup>1</sup>, Čupka P.<sup>1</sup>**

<sup>1</sup> *Slovak Agricultural University, Nitra, Slovak Republic*

<sup>2</sup> *Slovak Agricultural Research Centre, Nitra, Slovak Republic*

The aim of this study was to recognize the effect of trace elements–nickel and zinc on meat mineral profile of rabbit. Adult females (Californian and New Zeland white breed, n=25) were fed ad libitum with different concentration of nickel and/or combination with zinc. In first group (P1; n=5) animals were fed with granular feed mixture with addition of 17.5 g NiCl<sub>2</sub> per 100 kg of mixture and second group (P2; n=5) with 35 g NiCl<sub>2</sub> per 100 kg of mixture. In group P3 (n=5) animals were fed with mixture containing 17.5 g NiCl<sub>2</sub> and 30 g ZnCl<sub>2</sub>, and in group P4 (n=5) 35 g NiCl<sub>2</sub> and 30 g ZnCl<sub>2</sub> per 100 kg of mixture. All results were compared with control group (n=5). After experimental period (90 days) concentration of mineral elements (sodium, potassium, calcium, phosphorus, magnesium, iron, copper, manganese, zinc) was detected. We demonstrate that during 90 days of the experiment did not significant differences between control group and experimental groups in the level of those mineral substances. Generally we can conclude that detected heavy metal concentrations do not have negative effects on the level of mineral elements in meat of rabbits.

## **A NOVEL FUNCTIONAL FOOD CANDIDATE, THE LYCOPENE CONTAINING EGG**

**Kerti, A., Szabó, Cs., Bárdos, L.**

*Szent István University, Gödöllő, Hungary*

Different sources of lycopene: condensed tomato paste (Golden pheasant canned tomato–Hatvan, Hungary) and manufactured gelatine coated microcapsules (Redivivo™ Lycopene 5% TG/P, DSM, Switzerland) were used as laying food additives in our experiment in Japanese quails and laying hens. The color of egg yolks were measured with suitable modification technique by a portable spectrophotometer (Micromatch™; Sheen Ltd). The carotenoid content of yolks was determined by HPLC. The color of egg yolks in the lycopene supplemented groups increased markedly in both species and sources of lycopene too. This phenomenon proves that the lycopene can be utilized for the coloration of yolk. The utilization of lycopene is not proportional with the amount of added material. Probably there exists a saturation phenomenon in the pathway of utilization. The HPLC analyses support this finding. Based on present investigations it was concluded that the tomato produces (e.g. paste) and/or commercial lycopene preparations (e.g. Redivivo) could be used in the poultry nutrition to produce a novel functional food, the lycopene containing egg.

## **EFFECT OF APPLE CIDER VINEGAR ON IMMUNE STATUS OF CHICKEN**

**Kiss, Zs., Szabó, C., Lakner, H., Gregosits, B., Bárdos, L.**

*Szent István University, Gödöllő, Hungary*

The botanical therapeutics that comprise functional foods, dietary supplements and botanical drugs hold several advantages over conventional drugs that way earn them a more prominent place in the medicine of the future. One of these natural substances known for hundred years and nowadays living its renaissance is the apple cider vinegar.

In our experiment we have divided Ross chickens into two groups (50–50), group A and B. We have pointed into group A's drinking water 1% concentrated apple cider and fed them ad libitum food. Group B (as the control) was given normal tap water.

When the chickens were five days old, and than they got 20, 32, and 42 days old we have taken blood samples.

A vaccine against Newcastle Disease (NDV) had been given to the chickens during hatching already and on the third week also.

In the both groups we have determined the level of specified antibody against NDV with the help of HI and direct ELISA methods. On the third week we used the Rosetta Cell Forming test for measuring cellular immunity.

The antibody level in chickens against NDV vaccine has risen earlier and higher in group A measured by HI test. The IgY concentration in group was higher. Lymphocytes of chickens of group A had more rosettes (24%) compared the B groups (8%).

#### **ANALYSIS OF INFLUENCE CINNAMON ESSENTIAL OIL ON QUALITY CHICKEN MEAT.**

**Lagin, L., Bobko, M., Ducková, V.**

*Slovak Agricultural University, Nitra, Slovak Republic*

The aim of this report is to evaluate impact and substitution of feeding antibiotics for fed the feeding mixture with cinnamon essential oil as possible feeding supplements in nourishment of poultry and it's influence on sensorial quality and shear power for this meat. We have been observing different indicators this sensorial quality of poultry such as: smell, flavour, mellowness, tenderness and shear power. Results of this study indicate that substitution of avilamycin (antibiotic preparation) by cinnamon essential oil negative influenced senzory quality and shear power of evaluated chicken meat. We have not recorded statistic conclusive differences in the sensorial quality and shear power of poultry meat between our observing groups.

#### **PERFORMANCE OF WEANED PIGS AFTER ADMINISTRATION OF BIOPLUS 2B**

**Link, R., Kováč, G.**

*University of Veterinary Medicine, Košice, Slovak Republic*

The aim of the study was to observe the efficacy of probiotics, based on genus *Bacillus*, in weaned pigs. Control group was fed with standard diets for weaned pigs without additives and without antibiotics (including omission of zinc and copper at a growth promotion level) Experimental group was fed with control feed with 1000 g BioPlus 2B/t feed which equals  $3.2 \times 10^6$  CFU/g feed.

Pigs were individually weighted at weaning, at the age of 42 days, at the age of 56 days, at the end of the trial.

The differences in weight of the experimental group and control group were significant at the age of 42 days ( $p=0.038$ ). Average daily gains were significantly ( $p<0.001$ ) higher in experimental group compared with control group in the first two weeks of the trial.

## **SELECTED METABOLIC INDICES IN SOW'S BLOOD AFTER PROBIOTIC ADMINISTRATION**

**Link, R., Kováč, G.**

*University of Veterinary Medicine, Košice, Slovak Republic*

The aim of our trial was to observed effect of probiotic administration on blood parameters in sows. There were 2 x 16 hybrid sows included into the trial. The trial lasted from 2 weeks before farrowing until weaning at 4 weeks after farrowing. Control group was fed with standard feed for lactating sows, experimental group was fed with diet, in which 400 g BioPlus 2B/t was mixed, i.e.  $1.28 \times 10^6$  CFU/g feed.

Blood samples for determination of parameters of protein and lipid profile was taken on day 1 and 15 after parturition.

Level of cholesterol in blood of experimental group increased. As a result, significant higher cholesterol level was found in experimental group compared to control group on day 15 ( $P=0.038$ ). Similar to cholesterol, total lipids in blood of experimental group was significantly higher in comparison to control group on day 15 ( $P=0.007$ ).

Results of our experiment indicate that the probiotics based on representatives of the genus *Bacillus* are able to affect the blood parameters.

## **NECROTIC ENTERITIS AND OXIDATIVE STRESS PARAMETERS IN CHICKENS**

**Lovásová, E., Škardová, I.<sup>1</sup>, Sesztáková, E.<sup>1</sup>, Ništiar, F.**

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<sup>1</sup> *University of Veterinary Medicine, Košice, Slovak Republic*

Necrotic enteritis (NE) is an acute enterotoxaemia with severe mortality and the presence of the intestinal mucosa necrosis, caused by multiplication of *C. perfringens* and many other environmental factors involved. The work deals with the NE and possible association with oxidative stress parameters (intracellular and extracellular antioxidants and lipid peroxidation). Antioxidant parameters were investigated in twenty broiler chickens with necrotic enteritis. The activity of superoxide dismutase (SOD) significantly elevated ( $p<0.01$ ) in the NE group as well as plasma total antioxidant status (TAS,  $p<0.005$ ) and plasma thiobarbituric acid reactive substances (TBARS), the parameter of lipid peroxidation ( $p<0.05$ ), compared to the control group (C). The activity of erythrocyte glutathione peroxidase showed nonsignificant decrease in chickens with NE.

## **STRUCTURAR CHANGES OF HAMSTER TESTES AFTER EXPERIMENTAL COBALT ADMINISTRATION**

**Lukáč, N.<sup>1</sup>, Massányi, P.<sup>1</sup>, Zakrzewski, M.<sup>2</sup>, Toman, R.<sup>1</sup>, Cigánková, V.<sup>3</sup>, Stawarz, R.<sup>2</sup>, Formicki, G.<sup>2</sup>, Somosy Z.<sup>4</sup>, Forgacs Zs.<sup>4</sup>**

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*<sup>4</sup>National Institute of Chemical Safety, Budapest, Hungary*

The purpose of this study was to assess the effects of cobalt on the testicular structure of adult golden hamsters. Hamsters in group A received cobalt (CoCl<sub>2</sub>) in single intraperitoneal dose 20 mg/kg, in group B 10 mg/kg and in group C 5 mg CoCl<sub>2</sub>/kg body weight and were killed 48 h after cobalt administration. After a preparation of histological samples the results were compared with control. After a cobalt administration dilatation of blood capillaries in interstitium, undulation of basal membrane and occurrence of empty spaces in seminiferous epithelium was detected. Morphometric analysis showed that in all cobalt-threathed groups the relative volume of seminiferous epithelium was significantly decreased. In the relative volume of interstitium a significant increase was found between control group and experimental groups. After cobalt administration we have found linear non-significant decrease. Evaluation of diameter seminiferous tubules found increase of this parameter in the all experimental group in comparison with control. Height of seminiferous epitelium was relatively constant and in all groups but the difference between control and group A was significant ( $p < 0.05$ ). Analysis of the lumen diameter of seminiferous tubules detected significantly increase mainly group B. Evaluation of the number of cell nuclei per a constant area detected an increase of this parameter in experimental group. Results of this study report a negative effect of cobalt on structure and function of testes.

## **REPRODUCTION PARAMETERS DURING MULTIGENERATION INTOXICATION WITH HEAVY METALS IN RATS**

**Lukačínová, A., Beňačka, R., Lovásová, E., Hijová, E., Ništiar, F.**

*University of P.J. Šafárik, Košice, Slovak Republic*

The aim of the present investigation was to evaluate the effects of multigeneration (P, F1 and F2) intoxication with low doses of lead, mercury and cadmium dissolved in drinking water (200-times above maximal permissible dosage) on reproductive potency of 80 Wistar rats (40 males; 40 females in all generations) and the physical health of their progeny. The animals were divided into 4 groups - control (C) and 3 groups intoxicated by

metals (Pb, 100  $\mu\text{mol/l}$ ; Hg, 1  $\mu\text{mol/l}$ , Cd, 20  $\mu\text{mol/l}$ , respectively). Females gave births from 13<sup>th</sup> to 78<sup>th</sup> week of experiment. Parameters of reprotoxicity such as number of litters, total number of newborns (assigned in the birth day), number of newborns per litter and number of weanlings (raised youngs that reached 28th day of life) were measured in 13-week intervals. Our data show decrease in all reproduction parameters in intoxicated animals of F1 and F2 generations.

## **VISCOELASTIC PROPERTIES OF PROCESSED CHEESE AS A FUNCTION OF PECTIN CONCENTRATION**

**Macků, I., Buňka, F., Pavlínek, V., Kráčmar, S., Hrabě, J.**

*Tomas Bata University in Zlín, Zlín, Czech Republic*

In this paper the effect of pectin concentration (0.2, 0.4, 0.6 and 0.8% w/w) on viscoelastic properties of model processed cheeses with 40% w/w dry matter and 50% w/w fat in dry matter after 42 days of storage at temperature  $6\pm 2$  °C has been studied. The samples were analysed by dynamic oscillation rheometry with plate-plate geometry. Complex modulus ( $G^*$ ) and loss tangent ( $\tan \delta$ ) were calculated for reference frequency 1 Hz. The present work found that with the increasing concentration of pectin the complex modulus ( $G^*$ ) rose and loss tangent ( $\tan \delta$ ) decreased. In general, all samples with pectin were firmer than processed cheeses without it and, furthermore, created gels were more elastic.

## **STUDY OF FOOD ALLERGY OCCURENCE IN REGION HORNA NITRA**

**Marcinková, M.**

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Nemeth (2004), define food allergy like negative reactions of organism immunized system to specific nutritive or its element. When body immunized system identificate allergen in food, it starts to produce antibody to diversion the invasion. From the questionnaires, filled by respondents from region Horna Nitra (4–35 year), we followed food allergy epidemiologie, clinic manifestations, food allergen, possibility of allergy combination and heredity of allergy. In an questionnaire we detected 282 potencialy sensitive respondents, and 124 of them noticed specific food allergy. Just 30.65% of them was therated by allergy doctor. The highest occurence of food allergy was in class of age junior scholl class (12.8%) and adolescent (21.6%). The most fregment occurence of food allergens was: lemon, orange, milk and milk products, fruits and vegetables, flavouring and seafood. Notable

differences were determined on lemon fruits, in men (3.2%) and in women (34.4%).

Clinical manifestations after food consumption were: urticaria, atopic dermatitis (42%), colic abdominal throes (27.4%), GIT manifestations like: vomiting, diarrhoea (18.5%). Accession of clinical manifestations after consuming of food allergen and subsequently manual labour indicated 17.7% respondents.

## **HISTOLOGICAL ANALYSIS OF RABBIT BONE TISSUE AFTER ADMINISTRATION OF Ni AND Zn**

**Martiniaková, M.<sup>1</sup>, Omelka, R.<sup>1</sup>, Grosskopf, B.<sup>2</sup>, Chovancová, H.<sup>1</sup>, Chrenek P.<sup>1,3</sup>**

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<sup>3</sup>*Slovak Agricultural Research Centre, Nitra, Slovak Republic*

In this study histological analysis of rabbit's bone tissue after administration of Ni and Zn was investigated. Experimental animals were divided into three groups. In the first group rabbits were fed by 35 g NiCl<sub>2</sub> per kg of body mass (group P2, n=5). In the second group 35 g NiCl<sub>2</sub> per kg of body mass in combination with 30 g ZnCl<sub>2</sub> per kg of the mass (group P4, n=5) were included into feedstuff. The group without administration of Ni and Zn was the control (group K, n=4). We compared bone length, bone weight and histological structure of the bones between investigated groups of rabbits (P2, K, P4). Our results indicate there are no statistically significant differences in bone length and bone weight between experimental groups (P2, P4) and control group (K). Also, we did not identify changes in qualitative histological characteristics of the femora between rabbits from various groups except for lower number of secondary osteons found in rabbits from experimental groups. On the other hand, there were observed some changes in quantitative histological characteristics of compact bone tissue between experimental and control groups related to sizes of vascular canals of primary osteons and secondary osteons as well. Anyway, our results suggest that administration of Ni and Zn caused changes in rabbit's bone tissue.

## **THE CONTENT OF MERCURY IN SELECTED SAMPLES OF FRESHWATER ALGAE AND SEAWEEDS**

**Mišurcová, L.<sup>1</sup>, Stratilová, I.<sup>2</sup>, Škrovánková, S.<sup>1</sup>, Kráčmar, S.<sup>1</sup>**

<sup>1</sup>*Tomas Bata University in Zlín, Czech Republic*

<sup>2</sup>*Agrotest fyto s.r.o., Kroměříž, Czech Republic*

In this study mercury levels were examined in freshwater algae and seaweeds products. The samples of these products were chosen as a representative of

green – Chlorophyta: *Chlorella tabs* (*Chlorella pyrenoidosa*); green–blue – Cyanobacteria: *Spirulina pacifica* (*Spirulina pacifica*) freshwater algae; red seaweed – Rhodophyta: Nori (*Porphyra tenera*) and brown seaweeds Fucophyceae (Phaeophyceae) with commercial names: Wakame instant and Wakame (*Undaria pinnatifida*), Kombu-Kelp and Kombu (*Laminaria japonica*), Iziki (*Hizikia fusiformes*) and Arame (*Eisenia bicyclis*). The concentrations for mercury were 0.011, 0.018, 0.025, 0.037, 0.011, 0.031, 0.031, 0.029 and 0.030 mg.kg<sup>-1</sup> dry wt, respectively. The Czech Republic and the European Union has not a limit for mercury in seaweeds with the exception France. None of the samples exceeded French limit: ≤0.1 mg.kg<sup>-1</sup> dry wt in this study.

### **OCCURRENCE OF TETRACYCLINE ANTIBIOTICS IN RAW COW'S MILK**

**Navrátilová, P., Borkovcová, I., Dračková, M., Janštová, B., Vorlová, L.**

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In this study was determined content of residual tetracyclines (tetracycline (TC), oxytetracycline (OTC) and chlortetracycline (CTC) in raw cow's milk. All samples (n=171) were assayed both by means of RP–HPLC method with UV detection and the group specific test (Milk Tetrasensor Kit). The HPLC system was the Breeze chromatographic system (Waters, U.S.). Milk samples were processed using the solid phase extraction clean–up procedure. The HPLC analyses were carried out using the mobile phase acetonitrile/methanol/0.05 M oxalic acid (13:13:74) on a C<sub>8</sub> column Nova Pack (3.9x150 mm i.d., 4 µm, Waters) at flow rate of 0.8 ml/min. The detection limits of TCs were 50 µg.l<sup>-1</sup> (OTC, CTC) and 35 µg.l<sup>-1</sup> for TC. Recoveries of TCs from spiked samples were ranged between 88.1% – 93.3% and their relative standard deviations 9.26% (OTC), 12.18% (TC) and 11.7% (CTC). Any TCs residues were not detected in milk using Milk Tetrasensor Kit. Low levels TC, near the detection limits, were found in 157 milk samples by HPLC method. At 10 tanker and 2 bulk samples concentration levels of TC exceeded value 100 µg.l<sup>-1</sup>.

### **TETRAHYMENA PYRIFORMIS AS BIOSENSOR FOR DETERMINATION OF TOXIC ORGANOPHOSPHATES**

**Nišťiar, F., Beňačka, R., Lovásová, E., Lukačínová, A.**

*Šafárik University, Košice, Slovak Republic*

The development of non-animal methods to predict the potential of chemicals to cause of toxicity is of great importance. The cytotoxic effect (LD<sub>50</sub>, and IC<sub>50</sub> for AChE) of four organophosphate (trichlorphon, dichlorvos,

methation, and O – ethyl – S – / 2 – diisopropyl aminoethyl / methyl – thiophosphonate) has been tested on the ciliate *Tetrahymena pyriformis*. This ciliate has been shown to be very sensitive biosensor to organophosphate. Results are comparable with those obtained using other biosensors.

## **RISK AND BENEFICIAL USES OF SEA ALGAE (*ULVA LACTUCA LINNAEUS*) IN ANIMAL FEEDSTUFFS**

**Okab, A. B.**

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Twelve adult male Rabbits were used to evaluate the effect of feeding a diet supplemented with 1% sea algae (*Ulva lactuca Linnaeus*) on semen characteristics and some selected biochemical properties of seminal plasma. The averages of maximum and minimum ambient temperature during the experiment (summer season) were 34.3°C and 27.3°C, while the average of relative humidity was 72.2%. Results revealed that motile sperm/ejaculate was significantly ( $P<0.05$ ) increased during treatment period. Sperm motility and motile sperm/ml were significantly ( $P<0.01$ ) increase. Meanwhile, percent of dead and abnormal sperm, and altered acrosomes were significantly ( $P<0.01$ ) decreased during the treatment period. Ejaculate volume and sperm concentration were insignificantly affected by treatment. Biochemical analyses of seminal plasma showed that, initial fructose, alkaline phosphatase (ALP), and blood plasma testosterone ( $P<0.01$ ) and total lipids ( $P<0.05$ ) were significantly increased during treatment period. Meanwhile, Total protein, albumin, cholesterol, aspartate aminotransferase (AST) and alanine aminotransferase (ALT) were insignificantly affected by treatment.

## **IODINE CONCENTRATION IN RAW COW MILK IN SOME SLOVAKIAN REGIONS**

**Paulíková, I., Seidel, H., Nagy, O., Kováč, G., Reichel, P., Konvičná, J.**

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Obsah jódu v mlieku bol vyšetrený v 457 vzorkách surového kravského mlieka odobratých v rôznych regiónoch Slovenska za roky 2002–2007. Priemerná hodnota z celkového počtu vyšetrených vzoriek predstavovala  $136,89 \mu\text{g.l}^{-1}$  s rozpätím  $8,06\text{--}1790,60 \mu\text{g.l}^{-1}$ . Z celkového počtu nami vyšetrených 457 vzoriek mlieka 113 vzoriek (29,94%) malo obsah nižší ako  $50 \mu\text{g.l}^{-1}$ , 294 vzoriek (64,33%) bolo v rozpätí  $50\text{--}200 \mu\text{g.l}^{-1}$ , 19 vzoriek (4,16%) od 200 do  $500 \mu\text{g.l}^{-1}$ , 17 vzoriek (3,72%) medzi  $500\text{--}1000 \mu\text{g.l}^{-1}$  a 13 vzoriek (2,85%) nad  $1000 \mu\text{g.l}^{-1}$ . Koncentrácia jódu v mlieku v rôznych regiónoch Slovenska ukázala najvyššie hodnoty v chovoch západného Slovenska, potom stredného, východného a najnižšie hodnoty na severe

krajiny. Z výsledkov je však zrejماً značná variabilita v rámci regiónov, ale aj chovov.

## **THE INFLUENCE OF LEPTIN GENE ON SELECTED BUTCHER INDICATORS OF BEEF-CATTLE**

**Pavličová, S., Kačániová, M., Angelovičová, M.**

*Slovak Agricultural University, Nitra, Slovak Republic*

The aims of this study were detection of leptin gene in beef-cattle by polymerase chain reaction and Real time PCR method and determination of leptin gene concentration by Real time PCR method and to determine correlation between leptin gene concentration and selected butcher indicators of beef-cattle. We were used bulls-calf (40 samples) like biological material in our experiments. We found the leptin gene in all samples. Body weight, butcher wroughted body, average daily growth of body weight and butcher recovery were also monitored. The minimal leptin gene concentration was  $2.45 \mu\text{g}\cdot\mu\text{l}^{-1}$ , maximal leptin gene concentration was  $36.89 \mu\text{g}\cdot\mu\text{l}^{-1}$  and average leptin gene concentration was  $12.78 \mu\text{g}\cdot\mu\text{l}^{-1}$ . The minimal body weight was 430 kg, maximal body weight was 607 kg and average body weight was 514.93 kg. The minimal weight of butcher wroughted body was 241 kg, maximal weight of butcher wroughted body was 341 kg and average weight of butcher wroughted body was 288.38 kg. The minimal butcher recovery was 53.67%, maximal butcher recovery was 57.99% and average butcher recovery was 55.50%. The minimal average daily growth of body weight was 0.52 kg, maximal average daily growth of body weight was 0.87 kg and average value of average daily growth of body weight was 0.75 kg.

## **RELATION BETWEEN LEPTIN GENE AND BODY WEIGHT IN SELECTED PIGS BREEDS**

**Pavličová, S., Kačániová, M., Angelovičová, M.**

*Slovak Agricultural University, Nitra, Slovak Republic*

The aim of this study was detection of leptin gene in two pigs breeds by Real time PCR method, determination of leptin concentration in individual pigs breeds by Real time PCR methods and detection of correlation between leptin gene concentration and body weight of pigs. Pigs of breeds Landras (7 samples) and biela ušľachtilá (7 samples) were used. The minimal concentration of leptin gene was  $18.34 \mu\text{g}\cdot\text{ml}^{-1}$  in breed biela ušľachtilá and maximal concentration of leptin gene was  $24.34 \mu\text{g}\cdot\text{ml}^{-1}$  in Landras, the average concentration of leptin gene was  $20.01 \mu\text{g}\cdot\mu\text{l}^{-1}$ . The minimal body weight was 80.00 kg in breed biela ušľachtilá, the maximal body weight was 130.00 kg in Landras and average body weight was 103.29 kg.

## **THE INFLUENCE THE ADDITIVE ON RHEOLOGY OF THE WHEAT FLOUR DOUGH**

**Pečivová, P., Hrabě, J., Pavlínek, V.**

*Tomas Bata University in Zlín, Zlín, Czech Republic*

In this study modification of rheological properties of wheat dough by addition of amino acid L-cysteine hydrochloride monohydrate was investigated. The dough was mixed with the use of spiral mixer and rheological properties of the dough were monitored by oscillation rheometry. Results showed softening of the dough with addition of L-cysteine hydrochloride monohydrate. Knowledge of rheological properties enables standardization of flour mixture preparation and development of wheat dough with required properties.

## **THE VARIETY INFLUENCE ON VITAMIN C CONTENT IN POTATOE (SOLANUM TUBEROSUM L.)**

**Peltznerová, L., Musilová, J., Harangozo, L.**

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Potatoes are the source of energy in saccharides form and they content fibre supporting digestion. Potatoes contain a number of important vitamins and minerals. They are easily digestible, thus it is recommended to consume them as dietary foods.

Work goal was to survey variety influence on content of C vitamin in potatoe. We surveyed the dependence between vitamin C content and fourth variety of potatoes - very early Junior, middle early Agria, early Livera, and middle late variety Asterix.

The experiment was realized by the form of pot vegetation survey, in which the soil from locality Výčapy–Opatovce was used, with addition of basic fertilizer NPK in a rate 15:10:10.

Vitamin C was determined spectrophotometric with method by Mukherjee and Choudhuri.

The content vitamin C by very early Junior variety was 182,20 mg.kg<sup>-1</sup>. In other variants the vitamin C content had risen in order: very early Junior<middle early Agria<early Livera<middle late variety Asterix.

These results are referred as of one year, thus there is a need to verify them in next experiments.

## **SENSITIVITY OF ALTERNARIA INFECTORIA ON CYCLOHEXIMIDE**

**Piovarčiová, Z., Labuda, R., Tančinová, D.**

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A total of 33 strains pertaining to four *Alternaria* species-groups, namely *A. alternata*, *A. arborescens*, *A. infectoria*, and *A. tenuissima* were tested for their growth response to 100 µg.ml<sup>-1</sup> cycloheximide in potato carrot agar. All *A. infectoria* strains were completely inhibited, showing no growth at all even after prolonged incubation. In contrast, all other strains representing the remnant three species exhibited a high resistance to this antibiotic. Cycloheximide sensitivity may thus represent further important physiological character for distinguishing *A. infectoria* from similar species.

## **GLAZING OF FISH**

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The application of a layer of ice to the surface of a frozen product by spraying, brushing on water or by dipping, is widely used to protect the product from the effects of dehydration and oxidation during cold storage. The ice layer sublimates rather than the fish below and it also excludes air from the surface of the fish and thereby reduces the rate of oxidation. When it is known that storage will be for a short period only, glazing or wrapping may not be necessary or practical. Blocks of whole cod, frozen at sea, are usually transferred to the ship's cold store without a protective wrapper or glaze but this may be added later, prior to long term storage on shore. During relatively short terms of storage, fish without a protective wrapper or glaze can be severely dehydrated in a poorly designed or operated store.

## **CUTTING PARAMETERS OF CARCASSES IN THE SEUROP MEATINESS CLASSES.**

**Říha, J., Homola, M., Bjelka, M., Burócziová, M.**

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In this paper we describe distributions of 23 cutting parameters of 54 carcasses in SEUROP meatiness classes. It is important to know this distributions because of different prices of kinds of the beef and for precision the classification. We use GLM and ANOVA methods for exploration

analysis of the distributions. After that we discuss analysed differences between classes in the relations with the SEUROP norm.

### **EFFECT OF GRADATIONAL AMOUNTS OF SOIL MANGANESE AND ZINC ON THEIR CONTENT AND DISTRIBUTION IN TOMATO PLANTS**

**Rop, O., Valášek, P., Kráčmar, S.**

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Manganese and zinc belong to essential microelements which have indispensable importance on physiologic processes in plant organism. Its enhanced quantity in environment can cause their higher amount in plant organism. The target of our trials was to monitor the effect of gradational amounts of manganese and zinc in soil on their content in tomato plants. The indicating plants were tomatoes of Domino variety. The gradational amounts of microelements in soil led to a statistically significant increasing amount of their content in roots, tops and fruits of tomatoes.

### **RISK ASSESSMENT OF THE DIETARY EXPOSURE TO COUMARIN**

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In higher concentrations coumarin is found in types of cinnamon grouped together under the name “cassia cinnamon”. Relatively small amount of coumarin can already damage the liver of sensitive individuals. According to the results of coumarin occurrence analyzes, obtained by the State Veterinary and Food Administration, considerable amount of the samples were over-limited. The following paper is focused on the assessment of the health risk from the dietary exposure to coumarin from products with cinnamon. The assessment is based on modelled consumption of cinnamon containing commodities. Daily exposure doses are calculated for average consumer and also for children, which are considered potentially risk group; using normal- and high-consumption models for evaluated commodities. Results of the assessment reported potential risk of exposure in case of children, when the 97.5<sup>th</sup> percentile and maximum level of findings, and data for normal consumption were used for the calculation. When the high consumption data were used, the exposure limit was exceeded even in case, when the mean or median values of findings were used for calculation both, in case of the average consumer (mean findings: 131.73% TAMDI) and children (mean findings: 412.73% TAMDI; median findings: 130.04% TAMDI).

## **EVALUATION OF MOTILITY AND SPERM CONCENTRATION AFTER EXPERIMENTAL NICKEL AND ZINC INTAKE IN RABBITS.**

**Schneidgenová, M., Kalafová, A., Chrenek, P.<sup>1</sup>, Massányi, P., Lukáč, N.**

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The aim of this study was to compare concentration and motility of rabbit spermatozoa after experimental peroral administration of nickel and zinc. For analysis the semen samples from 5 groups were used (n= 20) and were collected 5 periods (Day 0, 20, 40, 60, 90). We fed the control group with KKV1 feed without nickel and zinc. Experimental groups of rabbits received different concentrations of nickel and zinc for 90 day – P1 (17.5 g NiCl<sub>2</sub>·100 kg<sup>-1</sup> food), P2 (30g NiCl<sub>2</sub>·100 kg<sup>-1</sup> food), P3 (17.5g NiCl<sub>2</sub>·100 kg<sup>-1</sup> food + 30g ZnCl<sub>2</sub>·100 kg<sup>-1</sup> food), P4 (35g NiCl<sub>2</sub>·100 kg<sup>-1</sup> food + 30g ZnCl<sub>2</sub>·100 kg<sup>-1</sup> food) Spermatozoa motility parameters were evaluated by the CASA method. In general, analysis detected that the average spermatozoa concentration was 0.02–1.08·10<sup>9</sup> mL and spermatozoa motility 46.17–91.02%. Significant differences were found in spermatozoa concentrations at Day 0 between K:P1 and at Day 40 between K:P1, P2 and P3. Motility analysis report significant differences between groups K:P1 at Time 0; K:P2 at Time 40; K:P4 at Time 60 and between K:P3. According to relative high variability it is difficult to evaluate spermatozoa quality parameters and further analysis have to be done. In general, our research suggest possible negative effect of nickel administration on reproductive parameters in males.

## **SIGNALLING SUBSTANCES MEDIATING EFFECT OF NUTRITION ON OVARIAN FUNCTIONS AND THEIR PREDISPOSITION TO CANCER DEVELOPMENT**

**Sirotkin, A.<sup>1,2</sup>, Švarcová, O.<sup>2</sup>, Rafay, J.<sup>1</sup>, Chrastinová, L.<sup>1</sup>, Makerevič, A.<sup>1</sup>, Grossmann, R.<sup>3</sup>, Benčo, A.<sup>2</sup>, Pavlova, S.<sup>2</sup>, Lauková, M.<sup>4</sup>, Kotwica, J.<sup>5</sup>, Ovcharenko, D.<sup>6</sup>, Mlynček, M.<sup>7</sup>, Bulla, J.<sup>4</sup>**

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It is known, that nutrition can affect reproductive system and substances relating to malignant transformation of this system via metabolic hormones–

leptin, ghrelin and insulin-like growth factor IGF-I. The aim of our in-vivo and in-vitro experiments was to examine the role of these metabolic hormones in mediating effect of food restriction on ovarian functions, in controlling these functions, especially on expression of proliferation, apoptosis and cancer-related substances in different species. In in-vivo experiments, rabbits were subjected to food restriction and IGF-I treatments, whilst plasma L and IGF-I levels were measured. In in-vitro experiments, rabbit, human, porcine and chicken ovarian cells were cultured in the presence of leptin, ghrelin, antiserum against IGF-I, inhibitors of protein kinase A, MAP kinase and of CDC2 kinase or their combination. Part of rabbit, porcine and human ovarian granulosa cells were transfected with gene constructs for apoptosis-stimulated protein kinase 1 (ASK-1) and transcription factors p53 (anti-cancer substance), STAT-1 and CREB-1 and subsequently cultured with or without leptin, ghrelin and IGF-I. In some cases human granulosa cells were transfected with siRNA and miRNA constructs influencing protein kinases and other signaling substances. Expression of intracellular peptides associated with proliferation, apoptosis, cancerogenesis, as well as hormone release were determined by using RIA/IRMA, TUNEL, immunocytochemistry and Western immunoblotting.

Food restriction in rabbits results in a reduction in plasma L and IGF-I levels, IGF-I addition has an opposite effect. Addition of leptin, ghrelin and IGF-I altered hormone release and the expression of intracellular substances mentioned above by cultured rabbit, human, porcine and chicken ovarian cells. Immunoneutralisation of IGF-I reversed the effects of L on the secretory activity of human granulosa cells. Inhibitors of protein kinases PKA, MAPK and CDC2, as well as the transfection of ovarian cells with gene constructs encoding ASK-1, p53, STAT-1 and CREB-1 were able to affect ovarian functions listed above, as well as to promote or prevent effects of leptin, ghrelin and IGF-I. Furthermore, inhibition of some protein kinases by using transfection with some si RNA and miRNA constructs was able to promote proliferation, apoptosis, accumulation of cancer-preventing substance p53 in human ovarian granulosa cells.

The present observations suggest (1) that metabolic hormones leptin, ghrelin and IGF-I can be controlled by pattern of nutrition, (2) that they directly control ovarian cell proliferation, apoptosis, and secretory activity including signaling substances involved in development (estrogen, proliferation-related peptides) and prevention (apoptosis-related substances and p53) of ovarian cancer and (3) these hormones may act through local IGF-I-, protein kinase-, transcription factor- and miRNA-dependent intracellular mechanisms.

## **INFLUENCE OF CHROMIUM AND CADMIUM ON QUALITY OF JAPANESE QUAIL EGGS**

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An experiment was conducted to evaluate the effect of chromium (Cr) and cadmium (Cd) on the quality of Japanese quail's eggs. Birds (n=60) were divided into 3 groups of 20 animals each. Group 1 was the control group. In the experimental group 2 was administered 0.12 mg Cr/d per quail in drinking water, whereas in group 3 were given a combination of 0.12 of Cd/d and 0.12 mg/Cr. The distribution of Cd in the eggs, the eggs' mass, and the strength and thickness of the shells were determined after 35 and 58 d of application. Addition of Cr had positive effect on the weight of eggs. The statistically significant decrease of eggshell strength ( $p < 0.05$ ) was found after 35 and 58 day of experiment in the Cd-Cr group in comparison to control group. These data shows, that addition of Cr can improve quality parameters of quail's eggs.

## **EPIDEMIOLOGIC STUDY OF BODY FAT CONTENT IN ORGANISM IN VARIOUS AGE GROUPS OF PEOPLE AND RISK OF ITS HIGH RATIO**

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The aim of the study was to evaluate body fat content in different age groups and risk of the extreme high values. In the study of the health-nutritional status parameter by means of body fat took part 2147 probands, namely 1719 of women (80.07%) and 428 of men (19.93%) at the age of 14–83 years (average age  $40.46 \pm 16.70$  years in complete,  $40.42 \pm 16.19$  years in women,  $40.65 \pm 18.62$  years in men). In randomly selected probands were with the aim overweight and obesity prevalence examination measured the body fat content using bioelectrical impedance analyse. According to the obtained body fat values, the probands were divided into three groups: slim – 19% (22.05% of women and 6.78% of men), normal – 33.35% (32.81% of women and 35.51% of men), overweight – 20.35% (18.85% of women and 26.40% of men), obesity – 27.29% (26.29% of women and 31.31% of men). It was confirmed the influence of the higher age as the risk factor of the overweight and obesity.

## **CHOLESTEROLAEMIA – A FACTOR OF CIVIL DISEASES AFFECTED BY NUTRITION AND A RISK OF UNFOURABLE VALUES**

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The aim of the study was to monitor risk factor of civilisation disease – total cholesterol in blood of 976 probands – 814 females (83.40%) and 162 men (16.60%) at the age 16–64 years. Normal blood cholesterol (5.0 mmol/l and less) was assed in 67.44% women and 68.52% men (67.62% of all probands). High cholesterol (6.0 mmol/l and more) was evaluated in 9.34% women and 12.96% men (9.94% of all probands). In the probands with higher age (in older people) was detected higher blood cholesterol too.

## **USE OF PHYTOTHERAPEUTICS MAY IMPROVE THE BIOSPHERE & CLIMATE**

**Šutiak, V.<sup>1</sup>, Šutiaková, I.<sup>1</sup>, Benhammou, N.<sup>2</sup>, Skalka, J.<sup>1</sup>, Sabová, L.<sup>1</sup>**

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In this contribution we are dealing with the worsening of global biosphere conditions especially in the period of last 3 decades of years. We point to risk of intensive chemicalizations, as the main factor responsible for the worsening of the global state of biosphere. It contributes to increase of various oxides in biosphere & ROS radicals in animal body, which have dangerous effect on living creature health. We also point to the eventuality for at least partial supplementation of chemotherapeutics with phytotherapeutics. In this way could be also initialized at least the milderling of the dangerous biosphere conditions & evoked the reduction of mentioned dangers, also thanks to therapeutic effects of mentioned phytotherapeutics.

## **MEASUREMENT OF MICRONUCLEI FREQUENCY IN SHEEP PERIPHERAL LYMPHOCYTES FOR GENOTOXIC RISK ASSESSMENT OF AGENTS FROM FOOD CHAIN**

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In this work was studied the frequency of micronuclei in the peripheral lymphocytes during the autumn period in ecologically Improved Wallachian sheep. The frequency of micronuclei was  $22.11 \pm 13.72$  per 1000 binucleated cells in peripheral lymphocytes of sheep and NDI value was  $1.87 \pm 0.125$ . With view to the continuing presence of different genotoxic substances in the environment the importance of using cytogenetic biomarkers to prevent health disturbances and produce ecological food.

## **POSSIBILITIES FOR THE USE OF V. ALBUM IN VETERINARY PRACTICE & CERTAIN ITS CHARACTERISTICS**

**Šutiak, V.<sup>1</sup>, Benhammou, N.<sup>2</sup>, Šutiaková, I.<sup>1</sup>, Šutiak, R.<sup>1</sup>**

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Various stressors induce various damages & defects of nucleic acid. Some of these problems may be treated by certain chemotherapeutics & phytotherapeutics. However with the use of chemicalization & chemotherapeutics are lately connected also some dangerous changes both the climate & nature & this is why are newly advised for their dosing & use also certain useful phytotherapeutics, especially, when it is such chance. In this text we would like to point on the plant *V. album* L. which may be used for the treatment of more than 20 various indications in veterinary medicine thanks to containing more than 25 active ingredients present in the herbal mass. Up to now there were used various preparation forms from it e.g. decoctions (35–40 g of herb per 1l of water) & to large animals can be used  $1/3 - 1/2$  of glass volume several times per day. Infusum may be also prepared (use 4 tea-spoonful of powdered herb & pour 1000 ml of boiled water over the drug & allow it to stand for 15 min. with stirring occasionally). From this solution can be administered 0.5 l of solution 2 x a day to large animals; to middle animals use 5–8 of table-spoonful 2–3 x a day and for small animals use 2–4 tea-spoonful volume 2–4 x a day of cooled preparation & adapt doses to size & health state of animals. In further part we present results of studies in which we expressed extensity & intensity of white mistletoe distribution in two Košice localities. We registered significant differences in both extensity and intensity of infestation in Košice deciduous trees. Chemical analyses of

two different samples of dried *V. album* L. plant (leaves and stems) demonstrated that in stems were present higher contains of phenols as in leaves & stems demonstrated higher reduction power & higher % of antioxidant activity as the leaves. In the further part we briefly discuss about obtained results & also present our experience with this plant for the practical usage, as well as for their propagation.

## **ASPERGILLUS SECTION FLAVI – POTENTIAL PRODUCENTS OF MYCOTOXINS**

**Tančinová, D., Dovičičová, M., Labuda, R.**

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The samples of poultry feed mixtures were obtained from State Veterinary and Food Institute in Nitra; wheat, soya and sunflower were obtained from large granaries; wheat bran were collected from mill and wheat (crop 2006) from the different producers. We isolated the numbers of *Aspergillus section flavi* (*A. flavus*, *A. parasiticus* and *A. nomius*), which are important potential producers of mycotoxins. From analysed samples from *Aspergillus section flavi* were detected only isolates of species *Aspergillus flavus*. The frequency of occurrence of *Aspergillus flavus* ranged from 0% (wheat, conventional agriculture) to 83.3% (sunflower). From the total number of 415 isolates tested for their ability to produce aflatoxins *in vitro*, using a thin layer chromatography technique (TLC), only three isolates produced aflatoxin B1. Aflatoxigenic isolates were isolated from poultry feed mixture and the possible source of contamination of this poultry feed mixture was extracted soybean grout, which is imported to our country from South America. 68.6% of tested *Aspergillus flavus* isolates (using TLC) were able to produce *in vitro* cyclopiazonic acid.

## **BIODIVERSITY VARIATION IN THE FIVE SLOVAK CATTLE BREEDS BY MICROSATELLITE DATA**

**Židek, R.<sup>1</sup>, Jakabová, D.<sup>1</sup>, Trandžík, J.<sup>1</sup>, Rajtarová, K.<sup>1</sup>, Massányi, P.<sup>2</sup>, Jakab, F.<sup>3</sup>, Kozlík, P.<sup>1</sup>, Buleca, J. Jr.<sup>4</sup>, Martvoňová, M.<sup>5</sup>**

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Genetic variability and relationships among five Slovak cattle breeds (Holstein, Pinzgau, Limousin, Slovak Spotted and Charolais) were investigated separately using 11 microsatellite markers (BM1824, BM2113,

ETH3, ETH10, ETH225, INRA23, SPS115, TGLA53, TGLA122, TGLA126, TGLA222). Allele frequency, heterozygosity (HO, HE) and PIC values were investigated. For microsatellite markers F–statistic FIS, FIT, FST parameters were calculated. The goal of the study was detection of genetic diversity of the 5 purebred populations of Slovak breeds–Holstein, Pinzgau, Limousin, Slovak Spotted and Charolais using microsatellite datas.

## **CONTAMINATION OF THE WILD ANIMALS WITH PERSISTENT ORGANIC POLLUTANTS IN THE SLOVAK REPUBLIC**

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The aim of „Monitoring of game and fish“, the one of three subsystems of the Partial Monitoring System “Food and Feed Contamination”, implemented in 1995, is observation of entrance of contaminants into the organism of free–living animals and fish, representing typical bioindicators of environment as well as of foodstuffs for human consumption. Within the project, group of predators (wild boar, rabbit, hare, hunting bird, deer and damage–causing animals) and two species of fish (predatory freshwater fish and non-predatory freshwater fish) are monitored. The aim of this paper is to evaluate level of the contamination with persistent organic pollutants (aldrin, dieldrin, heptachlor, hexachlorbenzene, DDT, PCBs) in the Slovak Republic. Within the “Monitoring of game and fish” subsystem, total of 5753 samples were analysed. Higher values of over limited samples were found in freshwater fish. The highest values exceeding the hygienic limits were found for PCB and DDT. The districts of Eastern Slovakia seem to be the most contaminated.

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