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Theatre presentations

Immunomodulators as efficient alternatives to in-feed antimicrobials in pig production?

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In animal production, alternative strategies to in-feed growth-promoting antibiotics are being developed to increase the resistance of piglets to disease, especially during the weaning transition where they are highly sensitive to digestive disorders. The incorporation in feed of substances able to modulate immune functions, and thus to stimulate host defence, is a strategy which has gained increasing interest in animal research in past decade. This review will focus on main components known to have immunomodulatory properties, and which have been the subject of *in vivo* nutritional investigations in pig: yeast derivatives, different plant extracts and animal by-products. Yeast derivatives (β -glucans and mannans) are known to interact with immune cells, particularly phagocytic cells. However, inconsistent results have been observed when they have been fed to piglets, which questions their ability to target through the oral route the sensitive immune cells. The literature dealing with effects of different plant extracts on pig immunity offers some promising results, but is still too scarce and disparate to ascertain positive effects. To date, the most promising alternative is probably represented by spray-dried animal plasma, whose positive effects on piglet immunity and health would be mainly provided by specific antibodies, but also through non-specific competition of some plasma components with bacteria for intestinal receptors.

Keywords: pig, immunity, disease sensitivity, feed additive, immunomodulators

Expression of Avian β -Defensins in the chicken (*Gallus domesticus*) reproductive tract

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Gallinacins (Gal) are antimicrobial peptides that play significant roles in the innate immune system in chickens. The gallinacin genes clustered on chromosome 3 of the chicken genome encode a group of cationic antimicrobial peptides characteristic of β -defensins. Although many studies have reported the expression of Gals in various chicken organs and the interactions between *Salmonella* and cells of the chicken gastrointestinal tract little is known about the function of these genes in the chicken reproductive tract. Therefore the aim of this study was to identify the types of gallinacin genes expressed in the reproductive organs of male and female chicken. Total RNA was extracted from ovaries, oviduct, testis and epididymis from one year old male and female chickens. The expression of Gals in these reproductive organs was examined by reverse transcription PCR analysis. Expression analysis revealed that all gallinacin genes were expressed in the avian reproductive tract, apart from Gal-11, which was not expressed in the chicken ovary and Gal-5, which was not expressed in chicken epididymis. Higher levels of mRNA expression were observed for Gals -9 and -10 in the ovary, for Gals -9, -10, -11 and -12 in the oviduct, for Gals -7, -9, -10, -11 in testis and for Gals-9 and -11 in the epididymis. In addition, very low levels of expression were observed Gal-4 in all reproductive organs examined. These results provide evidence to suggest that the gallinacins host defence peptides play a critical role in the chicken reproductive tract and suggest that they are part of the innate defences of the chicken reproductive tract.

Keywords: gallinacins, chicken, reproductive tract

Influence of dietary plant extracts on mineral content of tissues in weaned piglets

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Lipids and fatty acid composition of *Longissimus thoracic* and *Semitendinosus* muscles in finishing Normand cows

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The study investigated the influence of dietary lipid (from linseed and rapeseed providing n-3 polyunsaturated fatty acids. PUFA) and of antioxidant (vitamin E plus plant extracts rich in polyphenols) supplements on lipid and FA characteristics of *Longissimus thoracis* (LT) and *Semitendinosus* (ST) muscles in 25 Normand (fat breed) cull cows for a 100d finishing period. Animals were randomly assigned to 5 isoenergetic and isonitrogenous diets consisting in a concentrate/straw based diet (70/30) (C group) or the same basal diet supplemented with extruded linseed (L) alone (40g lipid/kg DM diet) (L group) or with antioxidants (vit E -250 UI /Kg + extract of plants rich in polyphénols - 1%. LEP group) or with a mixture of extruded rapeseed (66) and linseed (33) (RL) (40g lipid/kg DM diet) alone (RL group) or with antioxidants (RLEP group). Beef samples. collected 24 h post-mortem were homogenized in N₂ liquid. Classes of their lipid were separated and analyzed by HPLC and the detailed FA composition of total lipids was analysed by GLC. Lipids of LT were 36% higher than that of ST (P<0.002) mainly due to the higher content of triglycerides. Dietary L and RL lipids did not modify beef lipid content but significantly increased. in both tissues. proportions of 18:3n-3, 18:1 Δ 11*trans* and CLA beneficial for human health. The addition of antioxidants reinforced their positive impact on the nutritional value of beef lipids.

Keywords: cull cows. extruded linseed and rapeseed. antioxidants. fatty acids. lipid classes

The effects of hazelnut oil usage on live weight, carcass and some blood parameters in Akkaraman lambs

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This study was carried out to determine the effects of hazelnut oil supplementation into the diet on growth, carcass quality, blood parameters and ash of the caput femurs of Akkaraman lambs. Forty native Akkaraman lambs were used as the study material. The experiment continued up to 84 days. The lambs were divided into 2 groups each comprising 20 lambs named as control and treatment. Hazelnut oil was supplemented 3% to the diet of the treatment group. Feed consumption was recorded weekly whereas live weight was recorded in fortnight base. All animals from both groups were slaughtered at the end of the experiment. Blood samples were taken and carcass traits were recorded. Using the blood samples, malondialdehyde, glutation, glucose, cholesterol, triglyceride and antioxidant activity values were measured. No significant difference was seen between the groups in terms of live weight gain. Feed conversion ratio value for control group was found as 4.67 kg/live weight while the same parameter was found as 4.85 kg/live weight for treatment group. The values regarding malondialdehyde, cholesterol, triglyceride and antioxidant activity were found higher in control group, while glucose and glutation values were higher in treatment group. No significant difference was seen in terms of pH, protozoa species and numbers regarding rumen parameter measurements as well as live weight, carcass and rumen parameters. In conclusion, 3% hazelnut oil supplementation into the diets of Akkaraman lambs, on the one hand increased the GSH and glucose levels, on the other hand decreased the cholesterol level. This could be a beneficial result in supplementation of hazelnut oil into the rations of lambs.

Keywords: Hazelnut oil, Akkaraman lambs, carcass quality, blood parameters

The effects of moderate inclusion of linseeds in layers diets

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Use of oil industry by-products in broiler diets

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In total, 184 broiler chicks were used to determine the availability by-products from the oil industry in broiler rations. We measured the growth performance, weight of carcass, abdominal fat, and composition of fatty acids in abdominal fat of broilers fed diets. The oils fed were crude sunflower oil (CSO; control group), sunflower soapstock (SS), acidulated sunflower soapstocks (ASS), and volatile matters (VM) 5% each were determined. The trial was lasted in 49 days. The highest feed consumption and the feed efficiency values were determined in broiler group fed acidulated soapstock. The lowest feed consumption and the highest average live weight values were found in the diet containing sunflower crude oil. It was concluded that the use of by-products of oil industry in broiler diets as energy source would be used without any harmful effect on broiler performance and they contain more omega-3 fatty acids which is very important for human health.

Key words: Soapstock, energy source, broiler chickens, growth performance.

Use of different silages as new feed resources for ruminants

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This study was conducted at the Regional Center for Food and Feed, Agric. Res. Center, Ministry of Agriculture (Regional Agricultural Program). The aim of this study was to investigate the possible ways of utilizing palm wastes as non-conventional agricultural by-product feed source for ruminants and try to improve its nutritive value by silage making and enriched by adding urea and molasse or vinasse. A comparison among whole corn silage (A) and palm wastes silages enriched either with urea and molasses (B) or urea & vinasse (c) were also investigated.

The parameters studied were silage quality, nutrients digestion coefficients, nutritive values, nitrogen balance. The impact of such situation of feed cost was also studied.

The results indicated that, all experimental whole corn silage and palm wastes silages were excellent with bright greenish yellow color and have a firm texture. All silages had a normal values of pH (3.88-4.22).

The overall mean concentration of TVFA's for different silages were within the normal ranged from 2.25 to 2.55. Results showed that, NH₃ – N concentration of the three silages ranged from 2.18 – 2.33 of DM.

The results showed that, the group fed ration C was significantly (P<0.05) higher in OM and NFE than the other two groups fed rations A and B. The results indicated that values recorded for TDN and DCP were nearly similar. During the experimental period all animals were in positive nitrogen balance.

Rams fed palm waste silages have the lowest cost / kg TDN and / kg DCP. These results introduce a novel technique towards making best use of palm residues which is applicable on medium sized farms to upgrade lignocelluloses agricultural wastes in such a way that can be used by small holders as fadder for ruminants.

The effects of mannanoligosaccharides on fattening performance in the Saanen x hair goats F₁ kids

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This study was carried out to determine the effect of mannanoligosaccharide (MOS) on fattening performance and in situ Rumen degradable processes in the Saanen x Hair goats F1 male kids. Twenty one male kids weaned at age of two months were used as animal material in this study. Kids were divided into three groups containing of 7 male kids in each group. The fattening trial end of one week training were put on groups fattening. The kids were fed ad-libitum and supplement mannanoligosaccharide concentrated level 0, 500 and 1000 ppm respectively. MOS and feeds which used in this experiment were examined in order to determine in situ rumen digestibility rate in the rumen cannulated rams using nylon bag method. Body weight gains, daily feed consumption and feed conversion ratio (kg feed/kg body weight gain) were found 242.38, 241.26, 211.19 g; 1.340, 1.490, 1.390 kg; 5.54, 6.18 and 6.58 kg/ kids respectively.

It is concluded that the kids on fattening performance were not significantly effected by mannanoligosaccharides however it has shown that MOS addition to the diets could be increase of feed digestibility.

Keywords: Mannanoligosaccharides, Goats, performance

The effect of heat treatment on ruminal degradation and digestibility of whole nonlinted cottonseeds

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The effect of the duration and intensity of the heat treatment of nonlinted whole cottonseeds (WCS) on the degradability of DM and CP in the rumen was determined using the in situ technique. Nonlinted whole cottonseeds were heated at 150°C for 60(t1), 90(t2) or 120 min(t3). The degradation of DM and CP was determined in nylon bags suspended in the rumen for 2, 4, 8, 16, 24 and 48h. The heat treatment of whole cottonseeds decreased the ruminal degradability of DM (-17, -26, -36 respectively) and CP (-5, -9, -14 respectively). Whole cottonseed treated at 150⁰ C for 90 min apparently gave the best protection for protein against rumen degradation. However, ADIN shows that longer exposure to treatment decreased digestibility.

Effects of lycopene and vitamine E administration over gastric mucosal damage induced by aflatoxin B1

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In the present study, we aimed to determine the changes induced by aflatoxin B1 (AFB1) administration on rat gastric mucosal barrier and gastric mucins alongside revealing the protective effects of lycopene and Vit E. Thirty-five Wistar-Albino male rats weighing 180-220 g, were divided into 7 groups as to include 5 rats in

each group: (1) control, (2) lycopene (10mg/kg/day lycopene for 15 days (Lycopene %10 FS), (3) AFB1 (single dose of 2.5mg AFB1/kg on the 12th day of the study), (4) Lycopene + AFB1 (10mg lycopene/kg/day for 15 days and single dose of 2.5mg AFB1/kg on the 12th day of the study), (5) Vitamin E + AFB1 (10mg/kg/day Vitamin E for 15 days and single dose 2.5mg AFB1/kg on 12th day). Following the sacrifice of study subjects on the 15th day, gastric mucus and phospholipid levels were determined and their stomachs were examined histopathologically. Examination of mucus and phospholipid levels revealed a significant reduction in group 3,4, and 5 in which AFB1 has been applied (respectively, $P < 0.001$, $P < 0.001$). When lycopene and vitamin E groups are compared with the AFB1 group, a significant elevation was detected in mucus and phospholipid levels (respectively, $P < 0.001$, $p < 0.001$). Whereas histopathological examination of gastric mucosae of the aflatoxin group showed degenerative changes, gastric mucosae of the control group and the remaining study groups were normal. Histochemically, while neutral mucins were predominant in general structure of stomach, mixed and sialomucins were observed, as well. Particularly acid mucins with sulphate and periodate reactive acid mucins were found to be more predominant in the aflatoxin group compared to control and other groups. Histochemical features of mucins were observed to be consistent with specific functions of the different regions of stomach. Lycopene and vitamin E administrations were found to be protective against the damage induced by aflatoxin on gastric mucosa.

Key Words: Lycopene, aflatoxin B1, rat, gastric barrier, mucin.

Evaluation of homogeneity in feed by method of microtracers[®]

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The mixture homogeneity is an issue of serious concern in the course of adding insignificant amount of feed components in the mixture. Several different methods for determining animal feed homogeneity are used worldwide. In this paper are shown results for mixture homogeneity obtained by the physical method with "Microtracer" (coloured iron particles), during which the process of adding components in certain mixing ratio has been simulated. Due to the fact that the particle size plays the most important role in achieving homogeneity, two groups of feed mixtures with different particles size have been examined. Study results show that the satisfactory mixture homogeneity has been attained in the mixtures

with more uniform particles size, whereas it was not possible in the mixtures with less uniform particles size.

Key words: homogeneity, feed, mixing, particle size

Effects of bacterial xylanase on egg production in the laying quail (*Coturnix coturnix japonica*) diets based on corn and soybean meal.

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Corn and soybean meal (SBM) are high-quality feed ingredients for poultry diets. Despite the fact that such diets are low in indigestible carbohydrates, it has been suggested that the inclusion of exogenous feed enzymes to such diets could improve nutrient availability and, subsequently, improve energy digestibility. This study was carried out to determine the effects of bacterial xylanase (Nutrase® Xyla) on egg production, feed consumption, feed conversion ratio, egg weight and egg quality of laying quail (*Coturnix coturnix japonica*). A total of 120 8 week old laying quail (*Coturnix coturnix japonica*) were divided into six groups of 20 birds each. One basal diet with a content of 22% crude protein, 2900 kcal/kg of metabolisable energy was used in the experiment. The energy levels of experimental groups were reduced as follows: *Group I*; 1,5 % (43,5 kcal/kg), *Group II*; 2% (58 kcal/kg), *Group III*; 2,5% (72,5 kcal/kg), *Group IV*; 3% (87 kcal/kg), *Group V*; 3,5% (101,5 kcal/kg), respectively. Moreover, 100 ppm of bacterial xylanase was supplemented to all the experimental groups. The control group received no enzymes. The experiment lasted 12 weeks. Feed and water were supplied ad libitum and artificial light was provided for 16 h per day. Significant differences among the groups were examined by one-way ANOVA followed by Tukey test. There were no statistical differences in egg production. Results of this study indicate that enzyme addition to corn-SBM-based basal diets can significantly improve energy utilisation ($P < 0.01$). This result was supported with the findings in group IV which had a 3% decrease in energy. There were no statistical differences in terms of egg quality parameters between the groups.

Keywords: bacterial xylanase; egg production; laying quail

Comparative effects of mint, sage, thyme and flavomycin in wheat-based broiler diets

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This study was conducted to compare the effects of mint, sage, thyme and flavomycin in wheat-based (400g wheat/kg diet) enzyme supplemented broiler diets on growth performance, organ weights and some blood parameters. One hundred and five, 1-d-old male broiler chicks (Ross) was divided into five groups of 21 chicks each. The chicks were housed on a per wire-floored cage until 42 d of age. A replicate was an individual cage with one bird. The feeding regime consisted of a starter diet until 21 d of age and a finisher diet until 42 d of age. There were five treatment groups: control, flavomycin, mint powder; sage powder and thyme powder. The supplements were not added to diets after 35 d of age. Birds received flavomycin diet gained more body weight and consumed more feed than birds received control diet or herbal powders supplemented diets. Birds fed flavomycin had better feed conversion ratio than birds fed mint, sage or thyme powder contained diets. The sage powder had a negative effect on feed conversion ratio of birds compared to control or flavomycin. The dietary treatments did not significant effect on the relative weights of pancrease, spleen, liver and heart. Feding either flavomycin or herbal powders did not differed the blood IgB, IgM, HGB, HCT, WBC and BA levels. However, IgC, RBC, NE, LY, MO, EO, PLT and MPV were significantly influenced by the dietary treatments. In conclusion, the three herbal powders in wheat-based had no additional effect on the growth performance of broiler chickens.

Key words: Broiler, wheat, mint, sage, thyme

Improvement of forages to increase the efficiency of nutrient and energy use in temperate pastoral livestock systems

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This mini review considers some recent developments in forage breeding and rumen function that offer new opportunities to enhance livestock production and

reduced environmental pollution. The paper calls for more exacting, underpinning research which describes how best to exploit forages for livestock through better understanding of phenotypic expression of selected traits and characteristics. The review assumes significant background knowledge in genome analysis, mapping, marker-assisted selection, introgression and transformation and describes how breeding targets are being influenced by issues relating to sustainability and climate change the emerging science-based concepts of plant cell death in herbivores and their potentially associated protein protection mechanisms. Although the review has generic applicability, the focus is on temperate forages and grassland-based systems of ruminant production. The review concentrates on grass and legume forages and does not cover developments in cereal crops, such as wheat and maize.

Genetic history of Palas Merino breed during 1930-2003

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Institute of Research – Development for Sheep and Goats’ Breeding Palas-Constanța

Palas Merino breed was homologated in 1960. It developed since 1935 as a population almost isolated in the reproductive point of view, the isolation being total during 1940-1950 and 1970-2003. During its evolution, there were 8 migrations. After each migration, the genetic similitude of the breed with this raised the similitude with previous immigrations being diminished. During 1930-1940 the genetic similitude of the breed with Ramboiullet Merino was of 42.3-40.0%, this being decreased at 2.26% in 1970, disappearing in the breed evolution after this year. The genetic similitude with German Semiprecoce Merino progressively increases after 1930 (14.9%) reaching the value of 47.72% in 1950, and then decreases to the value of 12.78% in 1970. Diminishing the genetic similitude with this breed continued also 1970 reaching the zero value after 1980. Beginning with 1953 Palas Merino suffers the influence of Merino of Stavropol and Caucasian Merino breeds, imported from the former USSR. After 1970 Palas Merino has also suffered the influence of Australian Merino breed. It can be shown that the present Palas Merino have cca. 92% of the genes of the population that was homologated in 1960 and 5% from the genes of Australian Merino breed. During the whole studied period (1930-2003) the medium interval between generation was of 4.11 years, being bigger on mother-son and mother-daughter filiations; the selection was made on own performance and mother’s performance (the retains at reproductions were made from older sheep „good at wool and milk”). The total cosangvinization of Palas Merino breed increased from the value of 2.75% in 1940 to 7.24% in 1970, then decreasing to the value of 2.03% in 2003.

These data show that during breed's evolution the practice of consanguinization was systematically avoided. .

Key words: reproductive isolation, genetic similitude, important reproducers, interval between generations, consanguinization, relationship in itself

Trends of endangered population of Pinzgau Cattle in Slovakia

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Aim of the paper was to evaluate development of Slovak Pinzgau cattle population in last 10 years to present state and propose outlines for future trend.

Sustainable use of animal genetic resources and food production is proposed as the best strategy for their diversity. Achievement of sustainable use would continue to support livelihoods and minimize the long-term risk of survival of animal populations.

Size of purebred Pinzgau (P0) population decreased by 77 %, as well as P1 by 73 %, P2 by 85 % and P3 by 68 % between 1997 and 2007. Decrease of Pinzgau breed was straighter as overall trend in cows' population in Slovakia, which was consequence of subvention policy in Slovakia and disability of competitiveness if compared milk production with Holstein, or even Slovak Spotted (Simmental) cattle. Milk production level increased in purebred population from 1997-98 to 2006-07 over 142 %, followed by fat and protein production (144 %), but without equivalent response in fat and protein content. Change of existing selection index on total merit index with milk, growth and fitness traits in it, could decrease risk of survival via enriched genetic diversity. Average age at first calving was over 30 months. This remitter insufficient weaning and growth intensity of young heifers on pastures. Even increased milk production of farm due to calving interval over 365 days, it was shown that this is not economically optimal due to loss on number of calves and lactations.

Keywords: Pinzgau cattle, milk recording, population size

***In vitro* Conservation and Preliminary Molecular Identification of Some Turkish Domestic Animal Genetic Resources - I**

Sezen Arat

Tubitak,. Turkey

Evaluation of the additive and epistatic variances based on the paternal half-sib heritability in farm animals

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Results from this paper are based on the expected paternal half-sib heritability (H_0), as a function of the additive variance V_a , epistatic variances V_{aa} , V_{aaa} , etc. and phenotypic variance V . One supposes the absence of the consanguinity and of the gene-environmental interaction. If one limits the maximum order of the additive interaction to Q , it is possible to obtain a set of inequalities, useful for numerical simulation. If $H_1 = V_a/V$ (*the narrow-sense heritability*), and $H_2 = V_{aa}/V$, $H_3 = V_{aaa}/V$, etc. (the similar determination coefficients given by epistasis), the simulation of a set of parameters H_1, H_2, \dots, H_Q consists in many trials to obtain solutions of the set of inequalities for a given value H_0 . For this purpose, one uses two methods: 1) simulation with a uniform distribution by the RAND() function under Microsoft Visual Fox Pro; 2) simulation with integer numbers by arithmetic progressions, after parameters transformation. The cases of non-repeated traits ($W=1$) and of those with the repeatability $W=\square$ when $0 \leq H_0 \leq W$ are examined. The simulation methods are denominated MC- Q , where $Q=2, 3, 4, 5$ (MC=*Monte Carlo*), and one adds suffix R for *random* and AP for *arithmetic progressions*. It is possible to obtain by trials many realizations of parameters for each method and situation. The statistical results calculated are the average and standard deviations or minimum and maximum values of parameters H_1, H_2 , etc., for $Q=2, 3, 4, 5$, for a specified H_0 value, for the non-repeated traits or traits with a specified repeatability (0.1, 0.2, ..., 0.6 or more). For example, under MC-3R method, it results that a non-repeated trait having the paternal half-sib heritability $H_0=0.25$ has the minimum, maximum and average of the narrow sense heritability H_1 equal with 0.009, 0.248 and 0.173 respectively, but equal with 0.171, 0.249 and 0.224 if the trait has the repeatability 0.5. When Q increases, the values of the statistics tend to establish. The linear regression of the statistics values obtained for $Q=2, 3, 4, 5$ on $1/Q$ is used to calculate the limit of the statistic value when $Q=\infty$, which is the intercept. So, the calculated average or standard deviation of H_1 is not dependent of Q . The simulation methods proposed and numerical values obtained give an image more complete about the magnitude of additive variance V_a and epistatic variances V_{aa} ,

V_{aaa} , etc. in terms of the determination coefficients H_1 , H_2 , etc., and by consequence the epistatic variances must not be neglected.

Keywords: variance, additive effect, epistatic effect, paternal half-sib heritability, simulation

Estimation of genetic parameters for milk yield of black and white cattle reared at Polatli state farm in Turkey

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In this study, between 1993 and 2006, lactation records were obtained from Polatli State Farm, Ankara in Turkey, belonging to the Ministry of Agriculture. Lactation milk yield was calculated by taking results of monthly test day milk yield tests in the farm by using Holland method. Lactations with less than 7 tests were not used in calculation. Milk yields were standardized to mature age and 305 days by using adjustment factors estimated for this herd, and were adjusted for year and season whose effects were significant, and then repeatability and heritability of first, second and all lactation milk yields was estimated on 2004, 936, 543 and 2653 standardized lactation records with minimum of 2 lactations/cow, 5 daughters/bull, 5 daughters/bull and 10 daughters per bull, respectively.

Heritability of first lactation milk yield was estimated by paternal half sib method from 2653 lactations of cows sired by 71 bulls which had at least 10 daughters. Heritability of milk yield for first, second and all lactations were estimated as 0.47 ± 0.12 , 0.38 ± 0.04 , and 0.30 ± 0.06 , respectively.

From a total of 2004 lactation records of cows which had at least two lactations, repeatability of milk yield was estimated as 0.51 ± 0.02 . By using successive two, three, four, five and total lactation data from records adjusted, the repeatability were estimated as 0.60 ± 0.02 , 0.49 ± 0.03 , 0.37 ± 0.05 , 0.37 ± 0.08 , 0.51 ± 0.02 for milk yield, respectively.

As repeatability was high, cows may be evaluated according to first milk yield records in culling. Heritability of milk yield for first lactations was at high level. So, both individual and relatives yield in this farm ought to be taken into consideration to select cows for milk yield. Selection of heifer for milk yield should be conducted in first lactation.

Keywords: Cattle, milk yield, genetic parameters, repeatability, heritability

Breeding potential of the Slovak Pinzgau cattle: Seeking for biochemical and molecular biologic traits.

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Slovak Pinzgau cattle belongs to the low populous, endangered breeds. In our study we tested 53 healthy steers for the single nucleotide polymorphism T/C at the nucleotide position 878 of the bovine stearoyl-CoA desaturase gene (SCD1) together with the cholesterol metabolites (HDL-cholesterol, LDL-cholesterol, total cholesterol). The group comprehend 33 extensive pastured and 20 corn -fattened animals.

We revealed presence of the genetic equilibrium in the population ($p=0,93$), significant higher values of HDL- cholesterol ($p=0,03$) and total cholesterol ($p=0,01$), but not LDL- cholesterol in pastured steers and non-significant lower concentrations of cholesterol metabolites in A/A homozygotes for T878C SCD1 polymorphism carriers.

Key words: Slovak Pinzgau cattle, SCD1 gene, cholesterol metabolites

Bio-aerosols in poultry houses – risks for animal, man and environment

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The air in modern poultry production systems contains a large variety of air pollutants such as gases like ammonia and carbon dioxide, dust micro-organisms and endotoxins. These pollutants, also addressed as bio-aerosols, are increasingly regarded as detrimental for the respiratory health of animals kept in these facilities, humans working in this atmosphere and annoying for residents living in the neighbourhood of such animal enterprises. Primary and opportunistic microbial pathogens may cause directly infectious and allergic diseases in farm animals, and chronic exposure to some types of aerial pollutants may exacerbate multi-factorial environmental diseases. There are, however, few international field surveys paying attention to the health of the farmers and the farm personnel working in such atmospheres and to the spread of pathogens from farm buildings. Studies reveal that up to 20 % of farmers and farm workers complain about symptoms of respiratory affections such as coughing, sputum, wheezing and others. Some

develop asthma others develop diseases which are described as e.g. ODTs (organic dust toxic syndrome). There are indications that various pathogens can survive in ambient air for several minutes and can be distributed over long distances, e.g. foot and mouth virus more than 50 km, *Staphylococcae* up to 500 m.

This paper briefly defines the term bio-aerosol, reports about the complex nature and composition of the aerial pollutants (gases, dust, micro-organisms, endotoxins), gives some quantitative data of air pollutants in poultry houses and shows their potential role in the development respiratory diseases in man and animal and their possible travel distances in the surrounding of farms and discusses “safe distances” between flocks and between farms and residential areas. A future-oriented sustainable farm animal production should enhance - beside the topics of animal welfare, consumer protection, economy and occupational health - also standards to prevent or reduce the spread of pathogens via the air.

Organic animal breeding and production; quality assessment of raw materials and products

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There is an increased need for the products of ecological/organic animal breeding origin (products from agro-units with ecological qualification or units to go organic). The marketing data seems to prove this concept. From the point of view of organic animal breeding Germany has an outstanding role, where the development of this sector sharply increases. As much as 21% of German products is marketed in direct way (ab Hof; ab Farm). The Austrian organic animal breeding is also very significant. This trend in other EU member countries is not so uniform, regarding the difficulties of direct marketing, too. The manufacturing of eco-raw materials (e.g. milk, eggs, meat) and products are strictly regulated by international laws. They are controlled on national levels, too. The authors present the analysing processes and the quality preferences concerning human nutrition. They are dealing with the protection of origin, prevention of adulteration and food safety questions. Furthermore they present examples for the advantages of indigenous, traditional breeds used in the organic production.

Keywords: organic animal breeding, traditional animal races, eco products, direct marketing

Effect of stocking density on litter microbial load in broiler chickens

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The purpose of this study was to evaluate the microbial load of the litter in broiler houses with different stocking densities. At the 35 to 42 days of growing period, forty poultry houses with wood shavings litter were selected at random and litter drag swap samples were collected in Bolu region. The houses were allocated into two groups according to the stocking density. Group I involved 10-13 birds/m² and group II involved 14-17 birds/m². Mortality figures were recorded for group comparisons. Twenty litter samples from each house were collected throughout the house. Samples were transported in cold chain to the laboratory for analysis. Following the incubations, standard plate counting techniques was used for aerobic, anaerobic, coliform, clostridium, salmonella and mold and yeast counts. Comparative results for Group I and II were 4,5x10⁸ and 4,9x10⁸ for PCA, 1,5x10⁴ and 1,2x10⁴ for E. coli, 3,1x10⁶ and 2,4x10⁶ for Coliform, 3,1x10⁶ and 3,2x10⁶ for Clostridium, 0,9x10⁵ and 1,3x10⁵ for Mold and Yeast, 7,5x10⁵ and 7,1x10⁵ Staphylococci and 3,1 x10⁴ and 3,3 x10⁴ for Salmonella. Results show that the stocking density had no significant effect on microbial count in any of the litter samples and it can be concluded that stocking density changing from 10 to 17 birds/m² did not affect microbial loads of the broiler litters.

Key Words: Broiler, microbial load, stocking density

The chemical composition of the green protein concentrate, prepared from various grasses.

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The article presents the researches carried out with the utilization of green mass of lucerne, cereals and motley grass. At the beginning the initial material was analyzed on the content of nutritious substances. Further the green mass was divided into fractions and out of the obtained sap of different kinds of plants a protein green concentrate was prepared which like the initial raw material was preserved with formic and propionic acid at the level of 3 and 5% to the mass.

After the preserving of the products they were analyzed chemically. In the work the comparative analysis of the chemical composition of GPC obtained out of lucerne and other grasses is given, which shows that the biggest protein and carotene extracts have been obtained out of lucerne, and that the grass products have been better kept at their preserving with formic acid at the level of 3% to the mass.

Key words: green protein concentrate, lucerne, motley grass, cereals, chemical composition.

Effects of zearalenone on the metabolism and meat quality in poultry

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Testing and evaluating the mathematical models applied in life sciences

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Mathematical modelling may contribute in many ways to animal feeding and production among which: the biological hypotheses expressed in mathematical language may provide a quantitative description and understanding of the biological problems; a mathematical model can supply the means to furnish the farmers with stored data in a readily usable way; the practical advantages of the proposed research methods can be synthesized with the mathematical models, thus stimulating the adoption of more efficient methods of production; modelling enables to have less ad-hoc experiments because it is easier, using the models, to design experiments which to respond to particular research demands, or to dissociate between alternative mechanisms; modelling may provide a strategic and tactic support to a research program, justifying the activity of the scientists and promoting collaboration.

Keywords: animal production, mathematical model, evaluation, testing, egg production.

Estimating the live weight using some body measurements in Saanen goats reared in Bolu conditions

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This research was carried out to investigate the estimation of the live weight in Saanen Goats reared in Bolu conditions by statistical methods. Seventy Saanen Goats were used as the study material. The goats were divided into two groups. The first group included 2-2.5 years aged goats at first lactation period while the second group included the goats ready to be inseminated for the first time. According to the taken linear body measurements the average live weight, heart girth, shank circumference, withers height, body length and chest depth values were calculated as 55.37 kg, 91.57, 9.32, 66.94, 109.75 and 32.55 cm respectively for the first group whereas the same parametres were calculated as 41.03 kg, 84.00, 8.86, 62.07, 101.55 and 30.27 cm respectively for the second group. Live weight (LW) was found to be highly correlated with heart girth (HG), shank circumference (SC), withers height (WH), body length (BL) and chest depth (CD) in the first group, whereas in the second group live weight was highly correlated with heart girth and body length. The regression equation for the first group was established as $LW = -151,295 + 1,067*HG + 3,262*BL + 0,167*SC + 0,604*WH + 0,254*CD$ and it was $LW = -64,753 + 0,863*HG + 0,717*SC - 0,029*SC + 0,207*WH + 0,254*CD$ for the second group. As a result of this study, it is concluded that live weight could be predicted using several body measurements in Saanen goats.

Key words: Live weight, correlation, regression, Saanen goat, body measurements

The stimulation of milk secretion at sheep and goats by supplementing the fodder ratios with vegetal lecithin

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With the purpose of increasing the milk production at milking sheep and goats they were given a supplement of vegetal lecithin, residue (mucilage) from

manufacturing the soy and sunflower, which was administered in the morning, in the drinking water (200 ml mucilage), after a previous dilution with warm water in a proportion of 1/1. At the experimental lots of sheep the total milk production of milk increased with 15-24%, and at goats with 18-22%, even if sometimes the production of merchandise milk had close values between the experimental and witness lots, this being due to the lactation period, which was also variable. It was determined the chemical composition of the sheep and goat milk and it was noticed that at the experimental lots, which received a plus of vegetal lecithin in the fodder ratios there were determined higher values at the dry substance, fat and protein. At manufacturing the cheese it was noticed the decrease of the specific consumption: in the case of milk gathered from the sheep of the experimental lot the direct specific consumption was of 3,404 l/kg and in the case of milk gathered from the witness lot it was of 3,819 l/kg; in the case of milk gathered from the goats of the experimental lot the direct specific consumption was of 5,473 l/kg, and in the case of milk gathered from the witness lot it was of 5,917 l/k. By recalculating the parameters of milk and milk products at the standard values of the total dry substance it was noticed a decrease of 4% of the specific consumption in the case of manufacturing the cheese from sheep milk – experimental comparatively to the milk from the witness lot of sheep and with 5, 33% of the specific consumption in the case of manufacturing cheese from goat milk – experimental lot, comparatively to the milk from the witness lot of goats.

Keywords: vegetal lecithin, milk production, sheep, goats;

Poster session

A study on presence of brucellosis in milk from Afyon region sheep

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The aim of this experiment is to determine the brucellosis incidence from transmission to human by the consumption of cheese made with raw milk from Afyon region sheep which was contaminated with sub-clinically infected animals' milk.

Milk from one lactation period of 1100 sheep was tested with California Mastitis test (CMT).

Milk samples from 100 sub-clinically infected sheep were collected in sterile screw-capped tubes and tested with Milk Ring Test (MRT). Sixteen milk samples were found to be positive regarding *brucella*.

The positive animals were also tested microbiologically by monospecific antiserum agglutination test and *Brucella melitensis* type 3 was isolated and identified from 4 of them.

These milk samples were also tested regarding somatic cell count (SCC) and 800.000 to 10.000.000 cells per ml were determined. There appeared to be some sort of parallelism between MRT, isolation and SCC results.

Key words: Sheep, *Brucellosis*, Milk Ring Test, Isolation, Somatic Cell Count., Mono specific Antiserum.

Contribution and researches concerning intensive growing of catfish (*Silurus Glanis*) in open growth units under the influence of environmental factors

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In 2007, at the Research-Development Center for Pisciculture from Nucet, Dambovita, has been experimented the intensive growth of the Catfish (*Silurus glanis*) of 2 and 3 years of age, in open growth units, located in a water pond already extant, the growth units being exposed to the environmental factors.

The growth units with a capacity of up to 1500 m³ are composed of modules, each with a capacity of 300 m³ of water.

The experimentation of the intensive growth of the catfish has been performed in only two of the growth modules. The population density: 300 specimens per module (in the case of 2 years old catfish) and 200 specimens per module (for the 3 year old catfish).

The individual growth increase recorded was of 1.012 kg for the first variant, and 1.368 kg for the second variant, at a survival rate of 89%, and 94% respectively.

The catfish, an ichthyophagous fish in his natural habitat, in the first month of the experiment was fed with a mixed diet (low quality fish and forage, afterwards the catfish being exclusively fed with high quality forage).

The production increase per module was of 239 kg for the 3 year old catfish and of 241 kg for the 2 year old one.

The opne growth system, exposed to the environmental factors may be an alternative to the fish farming technology as it offers the possibility of growing of catfish and other fish species for the market, the fish could be easily extracted anytime, for selling purposes, during the entire growth cycle.

Keywords: *Silurus glanis*, intensive growth, open units/modules

Effect of maize treatment on starch and cell walls ruminal degradability and total digestibility in cows

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In the 2 x 2 Latin square experiment was studied effect of crushed or ground maize grain on ruminal starch and cell walls degradability, intestinal and total digestibility and ruminal fermentation. We used four non lactating cows with rumen fistulae and duodenal T- cannulae. Animals were fed diets consisting of, %: forage 70, maize grain crushed or ground 27, soybean meal 2 and Vitanix S 1, on dry matter basis. The diets were balanced at 1.25 x maintenance ME requirements. The total VFA concentration in rumen fluid was somewhat increased ($P>0.1$) when animals were fed ground maize. Crushing considerably increased starch out flow from the rumen (33.5 vs. 21.1%) and intestinal and total digestibility of starch were high (82% vs. 85%, resp. 94% vs. 97 %). Cell walls digestibility was not negatively affected by processing. A substantial part of the ingested amounts of ADF (63.6 % vs. 58.8 %; $P<0.05$) and NDF (69.2 % vs. 65.2 %; $P<0.05$) was degraded in the rumen (59.7 % vs. 57.0 % resp. 65.0 % vs. 62.8%). Also the processing of maize grain did not effected feed intake.

Key words:maize processing; ruminal starch degradation; cell walls digestibility; rumen fermentation

Utilization of an extract product from ginseng supplementation in diets and different energy levels of granulated feed in the nutrition of rabbits

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In fattening experiments a total of 96♂ weaned rabbits (35th day of age, Hycole hybrid) were fed a diets containing 15.2 % (groups A,B) or 41 % (group C) of dehydrated lucerne meal in combination with 67 % or 39% of agricultural by-

products and rape oil (1.7 % vs. 0 %) in group. In one experimental group (EG) we studied the effect of *Eleutherococcus senticosus* dry extract which was applied to feed mixture at 30g/100kg on the zootechnical, microbiological and biochemical parameters in rabbits as well as quality of rabbit meat. Treated animals were compared with untreated ones (control diet B). Rabbits were fed three diets ad libitum. The study was conducted to evaluate chemical composition of meat from rabbits slaughtered at 77 day of age. The MLD (*Musculus longissimus dorsi*) muscles were sampled from nine animals. Fatty acids in intramuscular fat are composed of 42.1, 40.2, 31.5% monounsaturated (MUFA), 17.9, 18.2, 20.8 % to polyunsaturated (PUFA) and 39.7, 41.9, 47.7 % saturated fatty acids (SFA). The ratio PUFA/SFA (0.43 vs. 0.46), the atherogenic index (0.63 vs. 0.91), and the ratio n-6/n-3 (7.59 vs. 6.23) were calculated. Slaughter parameters and the quality of meat were practically the similar in each experimental group. All animals were found in good health conditions during the trial. The application of *Eleutherococcus* reduced the mortality and increased feed conversion ratio and average daily weight gain ($P<0.05$).

Keywords: rabbits, meat quality, fatty acid composition, phytogenic feed additives

Estimation of breeding values of Simmental cows reared at Kazova state farm using test day milk yields

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In this study, between 1993 and 2002, lactation records were obtained from Kazova State Farm, Tokat in Turkey (middle Anatolia), belonging to the Ministry of Agriculture. It was aimed to calculate genetic parameters of 305 day milk yield and breeding value estimation of Simmental Cattle reared on Kazova State Farm. Later, analysis results were compared. In this study, 611 first lactation records of daughter sired by 86 bulls that had at least 5 daughters were used. From the first 10 test milk yield, 305-day milk yield was calculated by taking results of monthly test day milk yield tests in the farm by using Holland method. Additive genetic variance, error variance, permanent variance, environment variance, heritability, repeatability and breeding value were estimated using REML animal model. Heritability of test day milk yields (0, 14) was higher than the heritability of 305

day milk yield (0, 22). Correlation between breeding values estimated using test day milk yields and breeding values of 305 day milk yield was found statistically significant and as 0.876. In estimation of breeding value for test day milk yields and 305 day milk yield, Spearman and Kendall correlations between rankings of bulls were found 0.906 and 0.906 and statistically significant.

According to results of this study, test day milk yields should be used in genetic evaluation of dairy cows. Furthermore, in genetic evaluation of dairy cows, there are advantages for using test day milk yields. Test day milk yields ought to be taken into consideration in early culling and selection of heifer for milk yield.

Keywords: breeding value, cattle, test day milk yields, Simmental

Lactation curve traits of brown Swiss cattle at reared Ulas state farm in Turkey

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This study was done to determine lactation curves traits of Brown Swiss cows in raised at Ulaş state farm, Sivas in Turkey (Middle Anatolia), belonging to the Ministry of Agriculture. Gamma curve parameters ($Y_t = At^b e^{-ct}$) of Wood (1967) in determination the shape and type of lactation curve were used. In lactation curves investigated in this study, percent of atypical lactations was found as 15.2 %, 15.5 %, 23.6 %, and 21.7 % for calving in winter, spring, summer, autumn, respectively (b and c of parameter are negative)

The least square means of beginning yield (a), coefficient of rising (b), coefficient of decreasing (c), coefficient of persistency (S), average maximum daily peak yield (Y_{max}) and the time after parturition when the peak yield occurs (T_{max}), coefficient of determination of variation (R^2) are 23.085±0.2773, 0.4192±0.0142, 0.1979±0.0044, 2.36±0.019, 21.97±0.257, 2.75±0.668, 74.73±0.59 for winter; 24.484±0.309, 0.3869±0.0143, 0.2088±0.0046, 2.228±0.0177, 21.771±0.2527, 2.33±0.7102, 78.06±0.60 for spring; 24.4353±0.3515, 0.2829±0.0155, 0.1757±0.0055, 2.3336757±0.0241, 21.64889±0.2940, 2.990427±0.9924, 75.72±0.72 for summer; 20.8659±0.2810, 0.3079±0.0153, 0.1518±0.0048, 2.587592305±0.0272, 0.963122382±4.4944, 19.55090832±0.2419, 68.59±0.77 for autumn, respectively.

Key Words: Cattle, Brown Swiss, Lactation Curve, Persistency, Milk Yield, Mathematical Model

Effect of lycopene treatment on toxicity of aflatoxin B1 in rats

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Aflatoxin B₁ (AFB₁) is a potent hepatocarcinogen. Lycopene, a carotenoid is one of the most efficient antioxidant, present in predominantly tomatoes. The aim of this study was to investigate if lycopene could diminish the toxicity of AFB₁ in rats. A total of 28 adult male Wistar- Albino rats (8 weeks old weighing 180–220 g) were assigned into four groups of 7 rats each; Controls, lycopene treated rats (10 mg/kg BW, daily by gavage), AFB₁ treated rats (2.5 mg/kg BW, single dose ip.) and lycopene + AFB₁ treated rats. Blood samples and liver, kidney and spleen organs were collected at the end of the experiment for hematological, biochemical and histopathological analysis. Our results indicated that AFB₁ alone administration resulted in typical hematological, biochemical changes for aflatoxicosis. AFB₁ administration resulted also in significantly lesions in liver, kidney and spleen tissues. Treatment with lycopene significantly alleviated the negative effects of AFB₁ on the many parameters evaluated. In conclusion our results showed that consumption of 10 mg of lycopene/BW given by gavage protected the rats to the toxicity of AFB₁ when it is administrated as a single dose ip.

Key words: Aflatoxin B₁, Lycopene, biochemistry, histopathology, rats

Evaluation of octylphenol effect on embryo development in zebra fish (*Danio rerio*) and common carp (*Cyprinus carpio*)

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Worldwide, the scientific researches performed during the last years are focused on the determination of the negative effects caused by natural and antropogeneous chemical compounds on aquatic species; these species are more exposed to most pollutants than the land species, for the simple reason that the aquatic environment is the last destination for most residues. Our research team proposed to test the toxic effect caused by octylphenol, a substance belonging to the category of polyetoxy alkylphenols, on embryo development in zebra fish (*Danio rerio*) and common carp (*Cyprinus carpio*). Zebra fish embryos were obtained in laboratory, using for this 6 fish families (6 females and 12 males). Common carp embryos were purchased from the fish farm S.C. Acva Prod S.R.L. Cefa, Bihor country; these ones were obtained by artificial reproduction. After taking and selection, the fecundated spawns were introduced in 10 Nunk culture plates of 45 ml, where we introduced 40 ml water, too. For each species, we created 3 batches, with two replications, namely: batch I – control, batch II – in water, we added octylphenol (OP) in concentration of $1.5 \mu\text{g L}^{-1}$ and batch III – we added in water a concentration of $60 \mu\text{g L}^{-1}$ OP. During the incubation, the Nunk plates were kept in breeding aquariums, at a temperature of 28°C for zebra fish, respectively 24°C for carp. Embryo supervision was performed with the research microscope Olympus CX41, endowed with digital photo camera and software for image analysis. Beginning with 12 hours post-fecundation, we observed a higher sensibility of zebra fish under octylphenol action, so that, between 23 and 27 hours post-fecundation, the percentage of mortality increases in batches II and III to 30%, respectively 40%. 73 hours post-fecundation, 60% of the zebra fish embryos belonging to the control batch are already eclosed, while embryos belonging to batches II and III stagnate in the advanced faringula stage and in the eclosion period. 77 hours post-fecundation, all embryos belonging to the control group are eclosed, being in the larva stage; this stage is reached only by 80%, respectively 60% of the embryos belonging to batches II and III, and only after 82 hours. In carp, embryo eclosion occurred 100% in the control group after 85 hours post-fecundation, while in batches II and III it was carried out in a proportion of 80, respectively 70%. In these two batches, the other embryos, up to 100%, stagnated in the advanced faringula stage, when they died.

Key words: *Danio rerio*, *Cyprinus carpio*, embryos, octylphenol, development

Changes caused by some nutritional factors on rib structure in pigs

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Calcium plays an important role in bone physiology and homeostasis. It is stored in bone during bone formation and is released during bone resorption. Calcium resorption at intestinal level is a complicated process, involving the presence of sexual hormones, especially estrogens. The researches performed so far show boron implication in the synthesis of estrogens, vitamin D and other steroid hormones, and, indirectly, in the mineralization of bone matrix. Under the context of researches performed in the entire world, the problems approached by our team are represented by the involvement of different sources and levels of calcium, namely calcium carbonate, fructoborate and alfalfa, in the mineralization of bone tissue. So, we made fix histological preparations of tissue fragments taken from ribs, from 9 pigs belonging to three batches: the control batch, where calcium was provided in a proportion of 1% through calcium carbonate, experimental batch 1, where calcium was provided in a proportion of 1.04% through fructoborate, on a calcium carbonate support, and experimental batch 2, where calcium was provided in a proportion of 1.13% through fructoborate + alfalfa, on a calcium carbonate support. After introduction in histological paraffin, the tissue fragments were sectioned at the width of 4μ and stained with the hematoxylin-eosin, trichromic Mallory and trichromic Masson methods. The histomorphometric study was performed with the help of the research microscope Olympus CX41 endowed with digital photo camera and software for image analysis. The histomorphometric parameters assessed were represented by the volume of bone trabeculae (BV/TV, %) or the percentage of bone tissue in a given volume and the mean width of bone trabeculae. At the same time, in order to establish fructoborate and alfalfa implication in bone mineralization, we supervised the presence and activity of osteoblasts, respectively osteoclasts. In the case of the experimental batch 1, the histomorphometric study shows an increase of bone trabeculae dimension, with a mean width of about $110.4\ \mu$, and also an increase of their mean volume, which is about 34.06 %. The presence of a great number of osteoblasts located peritrabecular suggests an intense process of ossification, osteoblasts being involved in the synthesis of prebone matrix, and in its mineralization, as well. The process of ossification occurs by apposition, and also interstitially and involves chondroblasts, by changing them into fibroblasts, and thereafter these ones turn into osteoblasts, by metaplasia. In the case of individuals from experimental batch 2,

trabecula mean width is about 109.5 μ , while their volume is 27.64%. In this situation, too, osteoblast surfaces are large, and the peritrabecular presence of osteoblasts signifies an accelerated process of osteogenesis.

Key words: pig, bone, fructoborate, calcium, histomorphometry

Assessment of the muscle tissue in pig carcasses according to the new EU rules

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Romania

The effect of a condensed tannin containing some native legume species

Gurbuz Yavuz

Turkey

Effect of lactoferricin B and cecropin P1 on performance and intestinal parameters of weaned piglets challenged with enterotoxigenic Escherichia coli – a preliminary study

Hou Zhenping

China

Effect of chromium yeast (co-factor III, Alltech inc.) and folic acid supplementation on egg yolk folic acid, chromium and cholesterol levels in laying hens

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In this research the effect of chromium yeast and folic acid on the cholesterol, folic acid and chromium levels of egg yolk was observed. 180 Lohmann White line 40 weeks age layers were separated into 4 groups having 15 layers. The trial was replicated 3 times and it took 56 days long. The 4 groups were fed as follows: basal diet with control group, chromium yeast (150 mg/ton) group, folic acid (10 mg/ton) group and folic acid + chromium yeast (10 mg/ton+150 mg/ton) group, respectively. The folic acid, chromium and cholesterol levels of the obtained eggs were determined. In comparison to the control and folic acid groups, the egg yolk cholesterol levels of chromium added group had decreased in samples taken on the 4th and 8th weeks of the trial ($p<0.001$). Folic acid levels of egg yolk had increased, in folic acid supplemented groups. No chromium level differences have been determined in chromium yeast fed groups when compared with control group and only folic acid fed group. As a result, in this study it was decided that we could change affirmative side levels of egg folic acid depending on animal nutrition, but by using chromium yeast, a distinct decrease of egg yolk cholesterol level could be provided markedly, thus both could be carried weight in practice and produced with aiming foodstuff fortified egg.

Keywords: Chromium yeast, Folic Acid, Egg, Cholesterol

Biotechnological studies concerning the lactic-acid producing selected microorganisms

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This paper presents the results obtained and the issues which will be continued, in the frame of a National Research Programme unrolling in Romania, which has in view the biotechnical studies concerning a probiotic obtenance, using some selected bacterial strains, in order to obtain the lactic acid more economically profitable and to contribute to the public health development. A set of chemical and microbiological analyses was established, in order to substantiate scientifically their biosynthetical potential.

Keywords: microbiological properties, bacterial strains

Antimicrobial and immunomodulatory activity of some probiotic fractions with potential clinical application

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The aim of this work was the identification of a new a strategy for the attenuation of bacterial pathogenicity and virulence using antagonist molecules secreted by probiotic bacterial strains as an ecological alternative to the misemployment of antibiotics in farm animals. In this purpose the virulence patterns of pathogenic bacteria [*Staphylococcus (S.) aureus* and *Pseudomonas (Ps.) aeruginosa*] treated with cell free cultures of lactic bacteria with probiotic potential, their influence on adherence capacity and also the imunomodulatory effect of these strains on animal models were assessed. All tested lactic bacteria strains inhibited the expression of some soluble bacterial virulence factors and also decreased their adherence capacity to the cellular substrate represented by HeLa cells. Cell free cultures

tested exhibited an immunomodulatory effect, triggering a proinflammatory type response.

Keywords: *Staphylococcus aureus*, *Pseudomonas aeruginosa*, probiotics, antimicrobial activity, immunomodulation

Cows' health in different management systems in Latvia

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The present study was undertaken to assess the correlation between grass forages content in trace elements (copper, zinc, iron, manganese) and dairy cow's health status. In organic dairy herds the aim is to produce milk in a sustainable system, while maintaining good animal health and welfare. Were monitored two farms in organic and respectively conventional system during summer when animal should be offered forage *ad libitum*. Forages were analyzed for chemical composition but mainly focused on trace elements content. Mineral element content in the plants was found to be species- and family dependent as well as the soil properties, cultivation and fertilization system and finally but not the last important is the climate.

It has been questioned whether a diet with a large proportion of forage can meet the trace elements requirements of dairy cows with a genetic capacity for a high milk yield. The cows' health and feeding routines and were recorded. Cows' health was assessed in terms of level of trace elements content, biochemical and morphological indices in blood.

Keywords: dairy cows, health status, management systems, grass forages, trace elements

Effect of soybean oil meal, sunflower oil meal and pea on milk production of sheep

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The objective of this study was to compare the effect of soybean oil meal, sunflower oil meal and pea grain on milk quantity and composition in dairy sheep of the Pleven Blackface breed. The study was conducted with 36 sheep divided in three groups by the analogue method. The sheep were fed twice a day with

balanced rations composed of maize silage, wheat and maize grain and containing soybean oil meal, sunflower oil meal and pea grain, respectively, as a protein source. The milk of the sheep fed with the ration containing sunflower oil meal had higher fat content than the milk obtained from feeding with soybean oil meal or pea. There was a trend to greater quantity of 6,5% fat corrected milk from the sheep fed with sunflower oil meal, as compared to the other two groups fed with pea or soybean oil meal. As for the indicator of milk curdling capacity, the trend was to decrease of the time in the following direction: soybean oil meal – sunflower oil meal – pea. The milk of the sheep fed with pea had lower magnesium content and lower amino acid content.

Effects of ascorbic acid supplementation on performance, carcass and blood traits in broilers

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Turkey

The effectiveness of the use of a ferment preparation in pig breeding

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The researches were carried out in the period from November 2007 to May 2008 in the conditions of the enterprise “Moldsuinhibrid”. The purpose of the experiment was to study the effectiveness of the utilization of the ferment preparation Farmezyme 2575 addition at different level using the indices of weight growth and substance exchange in the young pigs. The data obtained in the scientific and economic experiment showed, that the addition of ferment preparation Farmazyme 2575 into the mixed fodders for young pigs at the level of 0.8-1.0 g/t contributed to the living mass increase (with 3.8 – 4.14 % in the experimental groups in comparison with the control group correspondingly), to the decrease of fodder expenditure, and to their better consumption, but it did not exert any influence on the blood biochemical indices.

Keywords: ferments, pigs, nutritious substances, rations, digestion, optimal dose

Comparative study on some Romanian and Bulgarian silkworm hybrids with the aim of their introduction in the family sericultural seed farms – II. Technological and productive traits of the raw cocoon

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ABSTRACT

The aim of the study was to evaluate nine Romanian and ten Bulgarian hybrids for their use in the family sericultural seed farms. The evaluation was made on the base of the cocoon yield/box of silkworm eggs and technological traits of the raw cocoon. The cocoon yield/box of silkworm eggs was within 36.300 to 41.650 kg in the indigenous hybrids and within 35.230 to 41.520 kg in Bulgarian hybrids. The high cocoon yield was recorded in the following hybrids: B₁ x AC₂₉ (41.650 kg), AC₂₉ x SK₂/F (40.420 kg), S₁ x H₂ (41.520 kg) and V₆₃ x V₂₀₁₂ (40.480 kg). The maximum values of the shell weight have been recorded at the following hybrid combinations: AC₂₉ x B₁ (0.483 g), SK₂/F x S₈ (0.480 g), AC/T x SK₂/F (0.479 g), V₂₀₀₃ x V₂₀₀₅ (0.485 g), V₆₃ x V₂₀₁₂ (0.481 g). A high shell ratio of fresh cocoons was determined at the hybrids: AC₂₉ x B₁ (25.0%), AC/T x B₁ (24.45%), B₁ x AC/T (24.02%), V₂₀₀₃ x V₂₀₀₅ (23.22%), V₂₀₁₂ x V₆₃ (23.10%), V₆₃ x V₂₀₁₂ (22.94%).

Keywords: silkworm, hybrids, raw cocoon, shell ratio

Biotechnological studies concerning the biogas obtenance with selected microorganisms

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This paper presents the results obtained and the issues which will be continued, in the frame of a National Research Programme unrolling in Romania, which has in view a method for improving biogas production with selected bacteria. The method is concerned with an improvement of biogas production from manure, using selected bacteria. Using dairy cattle dung as a source of biogas producing microorganisms, 6 bacterial strains were selected according established criteria and cultivated in optimal conditions. Based on this method, the average content of methane in biogas is 82 % and the corresponding conversion yield is 545 L biogas/Kg organic matter of cattle manure, surpassing to a large extent known conventional values (max. 300 L /Kg o.m. of 60 % biogas methane content).

Keywords: selected strains, biogas producing microorganisms

Unconventional methods to process medicinal and aromatic plants in view of their utilization in the nutrition of farm animals

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The paper aims at presenting the medicinal and aromatic plants processing in a drying microwave installation under continuous flow and use of the resulted products as dietary feed additives.

The high capitalization of herbs of medicinal and aromatic plants has imposed the elaboration and development of ecological modern and efficient processing technologies that ensure the conservation of herbs active substances. Therefore, alternative environmental- friendly methods have been developed, aiming at reducing the time and temperature effects on plant products. Among the up-to-date

non-conventional methods of dehydrating vegetal products we mention: ionized and non-ionized electromagnetic treatments, ultrasounds, high pressure processing, oscillating magnetic fields, packing in modified atmosphere or combination of methods above with drying conventional methods.

The drying installation which combines microwaves with solar energy is designed at artificial desiccation of medicinal and aromatic plants, crop plants or spontaneous flora plants, under continuous flow. The installation uses two power sources: non-ionized electromagnetic radiations (microwaves) and solar energy transformed in thermal energy.

The preliminary experimental results support the use of medicinal and aromatic herbs as feed additives in farm animal feeding, as potential alternative source for a modern feeding management.

Keywords: medicinal and aromatic herbs, microwaves, continuous flow, feed additives.

Forage feeding value evaluation of perennial grass and legume species in pure stands and mixtures

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The energy feeding value and protein feeding value of perennial legume (*Lotus corniculatus* L., *Onobrychis* Adans., *Trifilium pretense* L.) and grass (*Agropyron cristatum* L., *Dactylis glomerata* L.) forage species in pure stands and their two, three or multi component mixtures were evaluated in field plot trial (22 variants) in the IFC-Pleven (2003-2006). The ratio of legume:grass species in mixtures was equal, as well as participation in grass or legumes quotes. The net energy feeding value was estimated by the New French system (UFL-UFV) and recalculated in the New Bulgarian system (FUM-FUG) by coefficient of digestibility of organic matter dMO_{invivo} obtained by relation, using *in vitro* digestibility of organic matter experimentally determined. It was established: 1.The mixtures of crested wheatgrass and orchardgrass with legume crops showed that energy feeding value was higher than those of grasses in pure stands and lower than those of legume crops.2.The higher energy feeding value of legume pure stands, the lower energy feeding value of grasses, were expressed clearly in second and third growths and medium energy feeding value, but sufficiently high for ensuring high quality forage for ruminants at mixed growing of two, three and multi component mixtures.3.The mixtures of crested wheatgrass with white clover and orchardgrass with white clover were established as high nutritive.4.The multi component mixtures of perennial forage legumes and grasses showed medium forage quality and nutritivity between those of contained components. 5.The parameters of

energy and protein feeding value were predicted by chemical composition with regression equations - high statistical significance (R: 0,550-0,999; p<00001).

Keywords: forage, legumes, grasses, legume-grass mixtures, energy feeding value, protein feeding value

Estimation of protein feeding value of forage crops

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Evaluation of biochemical characters of broiler chickens during dietary aflatoxin and clinoptilolite exposure

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Aflatoxin (AF) and clinoptilolite (CLI, a natural zeolite) were added to broiler food and some biochemical values and enzyme activities were evaluated. The experimental design consisted of six dietary treatments. (1) Control: basal diet; (2) CLI: basal diet plus 15 g CLI/kg diet; (3) 50 ppb AF: basal diet plus 50 ppb total aflatoxin; (4) 50 ppb AF + CLI: basal diet plus 50 ppb AF plus 15 g CLI/kg diet; (5) 100 ppb AF: basal diet plus 100 ppb AF; (6) 100 ppb AF + CLI: basal diet plus 100 ppb AF plus 15 g CLI/kg diet. A commercially available CLI was provided from the west region of Turkey and its chemical formula is “ $\text{KNa}_2\text{Ca}_2(\text{Si}_{29}\text{Al}_7)\text{O}_{72}\cdot 32\text{H}_2\text{O}$ ”. For this a total of 576 1-day-old Ross broiler chicks were housed in six treatment groups from days 1 to 42. AF treatment significantly increased the serum Na levels and the aspartate-amino-transferase (ASAT) and alanine-amino-transferase (ALAT) enzyme activities, while total protein, albumin, total cholesterol uric acid, and K levels were not significantly different between groups. These results suggest that these low AF levels in food did not change the serum biochemistry but significantly affected the enzyme activities in broilers.

Key Words: aflatoxin, clinoptilolite, broiler, blood parameters

The effect of genotype on sensory and technological quality of beef

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Abstract: Quality of meat represents one of the most important current issues in modern cattle production. It is known that breed and genetics are the most important pre-slaughter factors which influence the quality of meat. In Serbia, most of the meat that can be found on the market derives from domestic cattle of Simmental breed (80%) whose carcass and meat quality do not satisfy the demand of consumers and meat industry. Industrial crossing of Domestic Simmental breed with French fattening breeds is fast and efficient method for improvement of mentioned properties. In this paper, results of the research of sensory and technological quality of meat from Domestic Simmental cattle and its crosses F1 generation with Charolais and Limousine breed (N=96) are presented. Genotype influenced highly significantly ($p \leq 0,01$) sensory meat properties. The best color (3,59/5) and structure (2,84/3) was established in crosses with Limousine, whereas the most distinct marbling was determined in heads of Domestic Simmental breed (2,80/5). Genotype had no significant effect on investigated properties of technological meat quality, except pigment content ($p \leq 0,01$), the highest value of this trait was established in domestic breed (101,9 p.p.m.), which was in accordance with visually evaluated lighter nuances of meat color in crosses. Crosses with Limousine breed realized slightly better water holding ability (9,08 ml) and lower cooking losses (38,02) compared to other genotypes, whereas pH_{24} value was statistically considerably different ($p \leq 0,05$) between domestic breed (5,61) and Charolais crosses (5,56). The greatest diameter of muscle tissue (62,94 μ) and the greatest cutting force (8,49 kg) were determined in domestic breed. By analysis of chemical composition of musculus longissimus dorsi the highest protein content was established in meat from Limousine crosses (22,79%). Content of fat in meat, contrary to low evaluated marbling, was the highest in the meat of Charolais crosses (1,59%).

Keywords: genotype, crossing, beef, quality properties

Correlations between non-starch polysaccharides levels from combined forages with different percentage of wheat and viscosity at intestinal level

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The purpose of this paper work is to establish the correlations between soluble non-starch polysaccharides (NSPs), insoluble non-starch polysaccharides (NSPi) and total non-starch polysaccharides (NSPt) levels from combined forages with different wheat inclusion percentage and viscosity at intestinal level. The experiment was made on a period of six weeks on 120 broiler chickens, hybrid ROSS 308, divided in four experimental lots: CL without wheat in the structure of combined forage, EL1 with 10% respectively 20% of wheat, EL2 with 20-30% wheat and EL3 whit 30% and 40% wheat in the first and respectively the second period of growth. The determination of intestinal viscosity was made at 3 weeks by slaughtering the chickens and sampling the duodenal content and respectively at 6 weeks by sampling the content from duodenum and jejunum. To establish the correlation between viscosity at intestinal level and the levels of non-starch polysaccharides from combined forages with different inclusion percentage of wheat were used the simple correlation and curvilinear regression. It can be seen that at duodenum level the viscosity rises with the rising of the wheat inclusion percentage and was with 28.71% greater at experimental lot with 20% wheat in structure of combined forage and with 53.07% at experimental lot whit 40% wheat in the structure of combined forage. It was found that the correlation coefficients between NSP content and the viscosity at duodenum level at 3 weeks are positive, the greatest correlation coefficient was registered in the case of NSPs (0.995) which indicate that the digestion viscosity at intestinal level is influenced by the forage content in NSPs. At duodenum level the intestinal viscosity rises with the rising of wheat inclusion percentage in the structure of combined forage and was with 49.04% at experimental lot with 40% wheat percentage. At jejunum level the intestinal viscosity rises with the rising of wheat inclusion percentage in the structure of combined forage and was with 33.15% at experimental lot with 40% wheat percentage comparative with control lot. At 6 weeks the correlation coefficients between the NSP content of combined forages fed to broiler chickens and the viscosity at duodenum level respectively at jejunum level are positive, the greatest correlation coefficient was registered in the case of NSPs (0.942) which

indicate that the digestion viscosity at intestinal level is influenced by the forage content in NSPs.

Keywords: non-starch polysaccharides, viscosity, small intestine, correlations, broiler

Genetic correlations of productive and reproductive traits of Simmental cows in republic of Serbia

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Investigation of production capacities of cattle with objective to increase the production of milk, milk fat and number of calves greatly depends on the phenotypic and genetic variability, heritability and correlation between wanted traits, as well as the production level within the population. This research included 3.461 first calving cows of Simmental breed under control with lactations concluded within one year. All first calving cows were reared by individual producers – farmers on the territory of Republic of Serbia. Genetic correlations were calculated using the equation of mixed model which included bull-sire, breeding region and calving year and season: $Y_{ijklm} = \mu + B_i + R_j + G_k + S_l + e_{ijklm}$. Coefficients of genetic correlation between service period and milk traits were following: duration of lactation 0,239, milk yield 0,089, percentage of milk fat 0,095, quantity of milk fat 0,105 and yield of 4%FCM 0,099. Correlation between service period and age at calving was 0,535. Genetic correlation of age at calving with milk traits was following: duration of lactation 0,245, production of milk 0,003, percentage of milk fat 0,531, quantity of milk fat 0,082 and production of 4%FCM 0,050.

Key words: genetic correlations, milk yield, fertility, Simmental breed

Cows and wethers BUN concentration in depend on nutrition

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The effects of the age and genotype on Morphological egg quality of parent stock hens

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Assessment of serum mineral and certain biochemical variables in self-sucking dairy cows

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Self-sucking, that is, a cow sucking on her own teats, is an important and leading cause of economic loss. However, the causes of self-sucking are virtually unknown, although numerous possible influencing factors, such as feeding management, nutrient deficits, genetic factors and housing systems have been suggested. In this study, our main objective was to investigate the possible effects of mineral levels on self-sucking in dairy cows. Biochemical variables of blood serum were also investigated.

Cows which self-sucked had significantly lower serum concentrations of Mn, Co, Zn, P, Na, Cl, K, and total protein, compared with the control group. Levels of serum cholesterol, HDL-C, LDL-C and ALP activity were significantly increased in the self-sucking group. There were no significant differences in serum levels of Ca, Mg, Cu, Fe, saturated Fe, iron binding capacity, urea, creatinin, uric acid, total bilirubin, amylase, gamaglutnmyl transaminase, lactate dehydrogenase, creatin kinase, creatine kinase-MB, alanine transaminase and aspartate transaminase activities between the self-sucking group and the control group.

The findings provide novel information about whether macro and micro element deficiency may cause self-sucking in dairy cows. An evaluation of our results

supports the hypothesis that energy deficiency is a possible cause of self-sucking. Although the explanation is not clear, it may be related to decreased Co, Mn and P levels, which are important in carbohydrate and energy metabolism.

Use of combined breeding criteria for Lipitzan horses

Sandu Balan

Romania

The influence of the organic selenium (Sel-Plex) administered in broiler chickens' feeding on meat quality

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Emphasizing the influence of 0.02% organic selenium supplements (Sel-Plex) in combined forage on meat quality in broiler chickens was the aim of this trial. The carcass weight increased by 2.5% in broiler chickens which received selenium supplements, compared to control group. In chickens from group 2, the share of the high quality meat in carcass was 2.38% higher compared to chickens from the control group. The meat quality was improved by the increase of the protein content and decrease of the fat in broiler chickens, which received Sel-Plex. The meat was considerably enriched in selenium. The results confirm the favorable effects of the selenium on both poultry meat production and quality.

Keywords: broiler chickens, meat quality, organic selenium

Influence of pig body mass on meat and carcass quality of black Slavonian pig

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The research was conducted on pig carcasses and meat of 16 Black Slavonian pigs, fattened to approximately 130 kg body mass (group A), and 16 pigs of the same breed fattened to approximately 110 kg body mass (group B). Pigs were kept in the semi-outdoor system, with the same housing and feeding conditions. Dissection of right cooled pig carcasses (+4°C) was conducted according to the modified method of Weniger et al. (1963). Meat quality was determined on the sample from M. longissimus dorsi, taken between the 13th and 14th rib. Body mass of pigs prior to slaughter (110,17 kg and 130,37 kg) significantly influenced the quality of Black Slavonian pig carcasses, but not the quality of their meat. Pigs with higher body mass (130, 37 kg) had carcasses of different conformation (significantly higher relative share of yawl and abdominal-rib part and a lower relative share of less worth parts and shoulder) and composition (a lower relative share of meat on shoulder and a higher relative share of meat on abdominal-rib part) in relation to pigs with lower body mass (110,17 kg). The meat contents in carcasses was almost equal (47, 06 % and 47,16 %) in both analyzed groups of pigs. In terms of meat quality, that was usual, no significant differences ($p>0,05$) were determined between the analyzed groups of pigs.

Key words: Black Slavonian Pig, body mass, meat and carcass quality

Relationships between estimates of fertility and motility for porcine spermatozoa collected from landrace boars

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The objective of the present study was to estimate the relationship between motility and fertility of porcine semen. While it is generally accepted that motility is a fairly accurate indicator of viability, its relationship with fertility is less clear. Our researches were conducted on 375 semen samples from 16 Landrace boars. In

the present study, results indicate that at motilities above 60%, no relationship between motility and fertility exists. In other words, a sample of semen with a motility of 100% may produce the same farrowing rate and litter size as a sample with a motility score of 60%. In contrast, semen samples exhibiting less than 60% progressive forward motility were less fertile than samples with motility scores greater than 60%.

Keywords: boars, semen, motility, fertility.

Hydrolyzed brewery yeast product like immunomodulator in weaned piglets

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Maintaining a good immune status in the gut helps the animal to protect itself against pathogenic bacteria, viruses and parasites. Low immune status often causes problems in animal production with high demands on production efficiency. The situation is typical in young animals, when passive immunity is lowered and active immunity has not yet fully developed. In commercial farming conditions always with multiple pathogen challenge, good immune status decreases the frequency of diarrhoea and gut infections and increase liveability of animals. Progut® is a hydrolyzed brewery yeast product (a complex carbohydrate product derived from brewery yeast after patented process) which contains both cell wall and extract components of the yeast. It is rich in betaglucans and nucleotides having immunostimulatory effects. Two groups of weaned piglets (N=46), crossbred (SLxLW) x Pietrein, the same sex proportions, aged 28 days were involved in the trial. Piglets from all groups were fed on fodder mixture for weaned piglets. The experimental group (E) was added 0.2% Progut® in the feed mixture, during the whole experimental period. Body weight was controled every seven days after weaning day. No significant differences were determined in average body mass and feed conversion ratio. While total leukocytes count was significantly higher in the control group (C) 28th day, probably because of infection, share of lymphocytes was significantly higher in E group 14th, 21st, 28th and 35th day of the trial. Share of neutrophyle was significantly higher in E group 21st day of the trial.

Keywords: weaned piglets, Progut®, body mass, hematological parameters, CD4 and CD8 cell type,

Modern methods ensuring sanitary-veterinary protection for animal farms, based on using of electrolyzed water

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The bacteriological parameters of water stand as indices for the status of digestive microflora in poultry and for faecal contamination. The term refers at total coliformes, termophilic coliformes (especially *E. coli*), and streptococci. A great variety of studies and reports regarding infectious diseases evidenced water as an important pathogenic carrier, like *Staphylococcus*, *Streptococcus*, *E. coli*, *Cryptosporidium*, *Giardia Lamblia*, *Listeria* and *Legionella* – bacteria that causes the so-called legionary disease. Bacterial contaminants can be found inside biofilms formed around living premises and water distribution systems. Biofilms are microorganisms layers, contained in a matrix formed at water contact on different surfaces.

Studies based on electrochemical activated substances developed a clean substance, known as hypochloric acid (HOCl). The technical designation for HOCl in solution is neutral electrolyzed water (ANK). ANK has become the most important disinfecting solution for pathogens carried in water and in the distribution systems. Three samples of electrolyzed water were obtained using the Envirolite EL 400 instrument, showing the subsequent characteristics: Sample 1 – Neutral Anolite ANK, pH=7,3; ORP (redox potential)=796,4 mV; Active Chlorine 400 mg/l. Sample 2 – Neutral Anolite ANK, pH=7,8; ORP (redox potential)=743 mV; Active Chlorine 500 mg/l. Sample 3 Catholite, pH=11,2-11,3; ORP (redox potential)= - 865 mV. Microbiological content was determined in the first stage for all three electrolyzed water samples, as follows: Total number of germs / ml and Total Coliformes / 100 ml. In the second stage, the activity of the electrolyzed water was determined over Total number of germs / ml and Total Coliformes / 100 ml, over a water sample with : Total number of germs / ml= $2,0 \times 10^3$; Total Coliformes / 100 ml= 16. Electrolyzed water had the following effects: sample 1 significantly reduced Total number of germs from 2000 / ml to 100 / ml; sample 2 reduced even more Total number of germs from 2000 / ml to 40 / ml. Both samples of electrolyzed water showed a bactericidal effect over Total Coliformes. All these results obtained in the preliminary experiments, suggest the idea that electrolyzed water could be useful in controlling microorganisms from: water, forages, poultry premises, eggshells, etc.

Keywords: electrolyzed water, Neutral Anolite ANK, bactericidal effect, electrochemically activated substances

Effect of dietary probiotic on performance and humoral immune response in layer hens

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Abstract: In the present study, the effects of dietary supplementation of commercial probiotic (ProtexinTM) on daily feed consumption, egg yield, egg weight, food conversion ratio and humoral immune response in layer hens were investigated. In 7 replicates, a total of 280 40-week-old *Hysex Brown* layers were fed diets containing either 0, 250, 500 or 750 parts per million (ppm) for 90 days. When compared with the controls, the food consumption, food conversion ratio and the damaged egg ratios were found lower in the group consuming 500 ppm probiotic ($P < 0.05$).

There was no significant difference between the controls and the groups receiving 250 and 750 ppm probiotic on food consumption, food conversion ratio and damaged egg ratio. Similarly, the egg yield, egg weight, specific gravity, and peripheral immune response showed no statistically significant differences between the groups.

Effect of the dietary calcium fructoborate given to weaned piglets on calcium balance

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The balance determination is one of the best methods to evaluate calcium sources bioavailability. The purpose of the paper is to evaluate comparatively the effect of two calcium sources (calcium carbonate and calcium fructoborate) on calcium balance in weaned piglets, starting from the hypothesis that boron might improve calcium absorption. For 35 days we conducted a feeding experiment on weaned piglets (4 piglets per group) with an average initial weight of 15.5 ± 0.8 kg. The diets of both groups were based on corn and soybean meal and differed in the source of calcium: calcium carbonate for the control group (C) and calcium fructoborate for the experimental group (E).

The mineral balance determinations showed the following values of the coefficients of apparent Ca absorption: 77.26 ± 1.09 for the control group, and 73.15 ± 4.65 for the experimental group; the difference between groups not being significant. Good correlations were observed between the ingested and eliminated

Ca ($R^2 = 0.81$ for group C and $R^2 = 0.71$ for group E). Both groups displayed negative correlations for the correlations between the eliminated calcium and the absorption coefficients. The experimental data shows that the calcium fructoborate can be an alternative source of calcium but its administration didn't improve Ca absorption in the organism compared to the calcium carbonate. The experiment was conducted within CEEEX project 110- NUTRIMINEROS.

Keywords: calcium, calcium fructoborate, piglet, absorption, balance

Studies concerning the obtaining of biomass from *Lactobacillus plantarum* bs6 using corn extract as nitrogen source

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The modern zootechnics characterised by keeping the animals in unnatural conditions (high density, industrial feeding, chicken separation and stress) is not favourable for the animals. It results production problems with high economic risk by decreasing the zootechnic performances (low weight gain and high consumption index) and health alterations (intestinal disorders, diarrhea, infections).

Thus, the purpose of this study consists in proving that the *Lctobacillus plantarum* strain has a similar productivity to the MRS medium. So as to perform the tests, a medium containing 2% glucose, 50% corn extract – 1% d.s., 1% $\text{Ca}(\text{OH})_2$ was used. This medium was chosen because corn extract is a natural raw material often used in the biosynthesis processes in drug industry. Corn extract is a subproduct resulted from corn processing for starch and sugar obtaining. It represents one of the most complex nutritive substrata for microorganisms development and a well-balanced source of nitrogen, carbon, sulfur and mineral salts. Three batch fermentations were realised. Glucose consumption, lactic acid accumulation, viability, maximum growth speed (μ_{max}), duplication time (T_D), productivity (P) were determined. The results analysis proved that the development of *Lactobacillus plantarum* strain is similar to that of the MRS medium.

Determination of purine derivatives using modern chromatographic methods

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The determination of rumen microbial yield involves a laborious and imprecise work. It also requires animals fitted with abomasal or duodenal cannulas. The excretion of urinary purine derivatives (allantoin, uric acid, xanthine and hypoxanthine) may constitute an alternative noninvasive technique, because the urinary purine derivatives is derived from microbial nucleic acid flowing out from rumen. The classical method used for the determination of purine derivatives in urine is a simple spectrometric one. The disadvantage of this method is that the procedure is lengthy and requires critical timing of operation, and only a small number of samples can be analysed a day. The aim of this paper is to investigate the identification and quantification of the allantoin, uric acid, xanthine and hypoxanthine respectively using different faster and precise chromatographic methods (High Performance Liquid Chromatography, HPLC; Over-Pressured Layer Chromatography, OPLC; Thin Layer Chromatography, TLC). The HPLC chromatograms were registered using a Jasco-980 liquid chromatograph with UV detection at 260 nm. The compounds were eluted on a Nucleosil 100-5 C18 column (5 μ m, 250 x 4 mm) with 0.02 M NH₄H₂PO₄, at pH 3.0 as mobile phase at a flow rate of 1 mL/min. TLC of purines were performed on Nano-Sil C18-50 UV₂₅₄ HPTLC glass plates using 1 M acetic acid in water/methanol (4:1, v/v) as mobile phase, and UV detection at 254 nm. The densitograms were measured by a CD 60 HPTLC densitometer. OPLC method was also used to study the mentioned purine derivatives.

Key words: Purine derivatives, Chromatographic methods, HPLC, TLC, OPLC

Preliminary investigations on the use of photodynamic inactivation to treat open wounds contaminated with *Staphylococcus* and *Pseudomonas* bacteria and clinical evaluation of pigs

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To demonstrate and apply an alternative method of antimicrobial therapy, the bacteria from open wounds were inactivated photodynamically in Large White growing pigs with average initial weight of 11 kg, housed for 21 days in a specially fitted area. The lesions induced to the pigs and inoculated with *Staphylococcus aureus*, *Staphylococcus hyicus* and *Pseudomonas aeruginosa*, bacteria, didn't change feed intake, didn't cause losses in the animal stock and didn't affect animal health, thus their performance. The average feed intake of 1.234 kg/pig produced an average daily gain of 612 g/pig. Each animal was monitored for the body temperature and it was concluded that the infection occurred only locally, where the lesions were, and didn't affect the general state of the animal. The state of the wounds was monitored at regular periods starting with their inoculation with bacterial cultures until healing, observing the gradual reduction of the wounds until disappearance.

Keywords: growing pigs, wounds, bacteria, infection, method, irradiation, treatment.

Origanum vulgare ssp. hirum: the proven & researched alternative to infeed antibiotic growth promoters & coccidiostats

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Is it possible this way? This is how it is made! Examples from the Hungarian eco animal breeding

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The development of eco animal breeding is slow and difficult in Hungary. The number of eco standard animals is not higher than 14.000. The authors present some farms where the eco animal husbandry was already introduced. One of the biggest eco farms with large connected territories is situated on Hortobágy eco-region: the Hortobágy Nature Conservation and Gene Preservation Company. The company is the leader of the Hungarian bio production and is engaged with the keeping of traditional species and races, with gastronomy and tourism as well. Four different indigenous animal species – mangalitza pig, racka sheep, grey cattle and domestic buffalo – are extensively kept on a 17.000 hectare area. The principal aim is the reproduction of the traditional animals, but they also deal with the production and marketing of special quality raw materials and products.

Another eco unit is the Deer Farm of Bószénfa (Zselic Game Company), where about 2.000 wild animals – e.g. wild boar, deer, and roe – are extensively housed on a 1.200 hectare natural territory. The farm will soon be qualified and authorized for slaughtering and manufacturing raw materials and meat products such as game ham, salami and sausages. They are the only game reserve and game producers in this territory (Southern Transdanubia).

Many other family farms intend to switch their breeding activity into eco animal breeding. The farm of Csöde (Zala County) from its 225 hectares territory has switched 120 into bio production. Their bio grass seeds are used in other national bio farms, and their bio hay is used for eco animal keeping. The horse, mangalitza, merino sheep and traditional poultry production is evolving as well. Own slaughterhouse is also planned.

With the increasing number of bio farms, the number of employees in agriculture can be raised with about 20-22 persons for the year 2010. This also means a higher production of meat products, with approximately 8.750 tons in meat equivalents.

Influence of age on exterior traits, blood biochemical parameters and thyroid hormones of Tsigai sheep

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Biological investigations were carried out on 20 Tsigai sheep divided by age (10 from 3 and 10 sheep younger than 1 year). The sheep fed with of 300 g a feed mixture and meadow hay (*ad libitum*). In this investigation determined body weights, exterior traits and blood biochemical concentration (glucose, urea, total proteins, albumin and cholesterol) and thyroid hormones (T_3 , T_4) of sheep. The average body weight of adult sheep was statistically much higher ($P < 0.01$) comparing to the sheep younger than 1 year (76.60 and 46.15 kg) as well as exterior traits (body measures: body length, chest circumference, chest width and chest depth; index of anamorphosis, body proportion and body condition score) with comparing to the sheep younger than 1 year. The concentrations of total proteins and albumin within the blood of the adult sheep (74.98 and 30.31 g/L) have been statistically much higher ($P < 0.01$) comparing to the sheep younger than 1 year (68.73 and 27.19 g/L). Analyses of thyroid hormones in Tsigai showed statistically lower ($P < 0.05$) levels of T_3 in ewes under 1 year in comparison with adult ewes (1.29 and 1.56 mmol/L). Results of these investigations showed that of most exterior traits and the blood biochemical parameters (total proteins and albumine) as well as thyroid hormone (T_3) were significantly affected by the age of the sheep.

Key words: Tsigai sheep, exterior characteristics, biochemical blood concentration, thyroid hormones