

Abstracts  
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ANIMAL FEEDING AND NUTRITION

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<b>Alina Rodica Ani, Aurel Șara, Aurelian Barbu, Mihai Bețeța</b> Organic Selenium (Sel-Plex) and its Impact on the Indices of Growth, Consumption and Meat Quality of Carp ( <i>Cyprinus Carpio</i> ), the Galitian Variety	<b>1</b>
<b>Abstract</b> This study is focused on the impact of organic selenium (Se) (Sel-Plex) on the growth performance, consumption and quality of meat in the case of carp ( <i>Cyprinus carpio</i> ), Galitian variety. The experiment was conducted over two years and had the following structure: (1) growth stage juveniles (159 days, year 2008); the period of hibernation; and (2) the status of fish for consumption (200 days, year 2009). Fish growth was conducted at Mărtinești fish farm, Romania. The total number of specimens was 200, organized in two equal groups: experimental group and control group. Average weight of individuals at the beginning of the experiment was 1.5 g/individual. Growth conditions were identical for the two groups, except food. The experimental group received 0.03 mg organic Se/kg food. At the end of the experiment the individual average weight of the experimental group was 1191±014.21g/individual, with a food conversion rate of 1.79:1:1 kg food/kg body weight; compared to the control group with a mean weight of 908.67±17.78g/individual and a food conversion rate of 1.88:1 kg food/kg body weight. Regarding these indices significant differences resulted between two groups when analyzing experiment results; while, regarding meat quality in terms of protein content, dry matter, water and fat there were no significant differences between the two groups. Analysis was done using ANOVA program. <b>Keywords:</b> carp Galitian variety, consumption, growth, organic Se, meat quality.	
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<b>Abstract</b> The researches had been made on a number of 150 broiler turkey juveniles, the Big 6 hybrid, assigned in 3 batches of 50 juveniles/batch for a period of 56 days (the growth stage). In the feed of batch 2(E) was added Allzyme SSF complex 0.02% and in the feed of batch 3(E) was added the organic Selenium (Sel-Plex) 0.03 %. The turkey broilers of the three batches were weighted at the beginning (at the age of one day) and each week following: the evolution of body mass, the daily average body gain, the daily average consumption and the specific consumption. The use of Sel-Plex in the feed of batch 3(E) and the use of Allzyme SSF in the feed of batch 2 determined the increase of the body weight at the end of experiment with 15.35 % at batch L3(E) and 8.00 % at batch L3(E), the increase of daily average body gain with 15.52 % respective 18,08% and the allowance of the specific consumption with 19.07 % at batch L3(E) and 14.88 % at batch L2(E) with low energy reformulated food comparative with batch L1(M) and batch L3(E). The results obtained confirm the positive influence of Sel-Plex and Allzyme SSF enzymatic complex on the main production and consumption parameters of broiler turkey juveniles. <b>Keywords:</b> alimentation, Allzyme SSF, enzymatic complex, organic Selenium, turkey juveniles	
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**Larisa Caisin, Vasile Harea**

Using Probiotics in Young Pig Nutrition

**20**

**Abstract**

The research was performed during the period 18.03.09 to 10.05.09 at the enterprise "Moldsuinghibrid". The aim of the experiment was to study the effectiveness of the utilization of the probiotic Biomin IMBO supplement at different levels, using the indices of weight growth and substance exchange in young pigs. The obtained data showed that the addition of preparation Biomin IMBO to the mixed fodders for young pigs at the level of 1.0 - 2.0 kg/t did not lead to an increased body weight (the experimental lots compared with the control lot); it also showed that the fodder consumption decreased and that it was eaten better.

**Keywords:** dose, nutrition, optimal rations pigs, probiotics

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**Bohuslav Cermak, Jana Hnisová, Eva Petraskova, Miloslav Šoch, Jaromir Kadlec, Frantisek Lad,**

**Bohuslav Vostoupal**

The Influence of the Different Levels of Crude Proteins in Feed Mixture for Pigs and Poultry and Biopolym Addition to Concentrate for Farm Building Microclimate

**26**

**Abstract**

Reducing level of protein at the concentrates for pigs and poultry allowed to solve duality of fair conditions at the farm buildings. By the fattening pigs increased on 0.032 kg daily gain weight and decreased on 0.45 kg feed consumption respectively. The addition of 400 g of Biopolym increased pigs daily gain and feed consumption was reduced. At the broiler chickens by the 2.92 % less of protein decreased a mortality of chickens about 1.8% in experiment group. The others results were the same as in control group of chickens. The levels of ammonia and hydrogen sulfide were lower than maximum data from Czech norms (NH<sub>3</sub> max. 25 ppm and H<sub>2</sub>S max. 7-10 ppm) at experiment and control groups.

**Keywords:** Biopolym, farm building microclimate, pig, poultry, true protein.

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**Olimpia Colibar, Gabriela Korodi, Daniel Popovici**

Influence of By-Products Obtained from Biofuels Industry on Productive Performances of Lambs

**29**

**Abstract**

Experiments were performed on 100 lambs, of common race, divided into 4 homogeneous groups of 25 lambs each, which were fed, differentiated for 3 weeks. Lots 1.2 and 3 received a supplement consisting of by-products obtained from the manufacture of biofuels in the area: Feed rations had similar nutritive values for all lambs in the experimental plots. The amount of crude protein in concentrates ratio was 17.40% for group 1, 18.44% for group 2, 17.60% for group 3, and 17.00% for group 4. Bulky feed were given ad libitum for all groups. After the first week of the experiment there was a spectacular evolution of body weight gain. All experimental lots were situated beyond the control group. Body mass growth rate is 3.5 times higher in the group fed with supplement of sunflower meal, 4.16 times higher in that fed with soybean meal supplements and 5.2 times higher in the group fed with additional rape meal. After the second week, the differences are decreasing, as the absolute value of body weight gain.

**Keywords:** biofuels, by- products, lambs, productive performances

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**Olimpia Colibar, Daniel Popovici, Gabriela Korodi**

Aspects Regarding the Gross Chemical Composition and Fatty Acids Content of Some By-Products Obtained from the Biofuel Industry

**32**

**Abstract**

Samples of by-products, obtained from the production of biofuels were collected. These products were introduced in different proportions in feed rations of fattening lambs. Gross chemical composition of feed was analyzed and compared with mean reference values. Ash and cellulose content does not influence the results. The percentage of raw protein, specific for each feed, is correlated with the body weight gain. Fat quantity of rape meal is the closest to that of granulated feed and also the highest compared with the other groups, so that it can justify the higher productive performance achieved by group 1, who received rape meal in ratio. The concentration of fatty acids was determined from analyzed feed after oils extraction, their saponification and their reading with a HPLC. The data showed that the fatty acid level is relatively close to that specified in the literature. Eucric acid, that is responsible for the toxic potential of the rape, has been found in rape meal.

**Keywords:** biofuels, by- products, toxic potential

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**Nicolae Corcionivoschi, Dan Drinceanu, Ioan Mircea Pop, Deirdre Stack, Lavinia Ștef, Călin Julean, Billy Bourke**

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The Effect of Probiotics on Animal Health

**Abstract**

The mechanisms of action of probiotic bacteria and their effect in combating digestive disorders in humans and animals has been demonstrated and supported in numerous scientific studies. Probiotic bacteria are used in a wide range of nutritional techniques in order to support the host organism during physiological strain, to reduce stress due to technology and to combat diarrheal syndromes (occurring naturally or pharmacologically induced). Based on a rich bibliographic material, this paper presents the role of probiotic bacteria to equilibrate the beneficial microbial population and in bacterial turnover by stimulating the host immune response via specific secretions (eg. bacteriocins) and competitive exclusion of potentially pathogenic germs in the digestive tract (Salmonella, E. coli). In the same context, this review presents the basic studies on the effect of probiotic bacteria in health maintenance for the main species of farm animals: pigs, poultry, cattle and sheep.

**Key words:** probiotic bacteria, mechanisms, farm animals

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**Dan Drinceanu, Ioan Luca, Călin Julean, Lavinia Ștef, Alda Mihai, Eliza Simiz, Voichița Gherasim, Domnica Sofian**

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Mineral Content of the Main Feed Ingredients Used in Poultry Biological Farms

In order to designate mineral premix structures for different poultry categories, bred in the biological system, this work presents the mineral content of the feed ingredients representing the base of the concentrated mixtures for poultry; we also make a comparison with the bibliographical data quoted [14, 15, 16, 17, 18, 19]. The mineral content (macro and microelements) of the analyzed feed ingredients may meet about 50-90% of the requirements of minerals for bio-bred poultry. Feed ingredients variations of mineral content may range from simple to double and they even impose chemical analyses of feed content, considering that the nutritive value charts comprise only or guiding data.

**Keywords:** biological farms, mineral content, poultry

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**Mărioara Drugă, Alexandra Trif, Mihai Drugă, Ducu Ștef, Ana Driha**

Aluminium Intake Impact on Broiler Chickens during a Production Cycle on Some Bioproductive Parameters

47

**Abstract**

The study was carried out on broiler chickens divided in 3 experimental groups (E<sub>1</sub>, E<sub>2</sub>, E<sub>3</sub>), fed during 7 weeks with a diet containing 20, 70 and 200 ppm Al, as aluminium oxide/ DM of the ration, and a control group. The goal of the study was to evaluate the effect of dietary aluminium oxide on some bioproductive parameters (daily and weekly medium weight gain, daily medium feed consumption and feed conversion rate). **Conclusions:** excepting E<sub>3</sub> group, both daily and weekly medium weight gain were inferior to control group; daily medium feed consumption was lower on experimental groups than on control group and feed conversion rate was slightly higher on experimental groups than on control group.

**Key words:** aluminium, broiler chickens, bioproductive parameters.

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**Mărioara Drugă, Alexandra Trif, Mihai Drugă, Ducu Ștef, Ștefan Munteanu**

Dietary Aluminium Intake Level for Rent Animals in a Primary and Secondary Aluminium Industry Surrounding Area

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**Abstract**

The study was carried out in an aluminium industry surrounding area on purpose to evaluate dietary aluminium intake level for rent animals originated from fodder and water consumed by them. There were taken feed and water samples in different periods and from increasing distances from industrial platform, determined the aluminium level by atomic spectroscopy and calculated the rations for cattle and poultry. **Conclusions:** aluminium dietary intake level by ration depends by forage period for studied species, rations structure and distance from industrial platform and didn't reach toxic level in any case.

**Key words:** aluminium, animals, dietary intake level

**Dragos Sorin Fota, Dan Drinceanu, Lavinia Ștef, Iosif Gergen, Ersilia Alexa, Eliza Simiz, Izabella Baliga, Ioan Luca**

The Effects of Different Fat Sources on Bioproductive Performances and Essential Fatty Acids Composition in Broiler Breast

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**Abstract**

their share in a desired structure, which can balance the n-6:n-3 ratio in food, according to the consumers needs. Thus, an experiment was conducted over a period of 42 days, on four groups of broilers fed with a basal diet, which incorporated various fats (sunflower oil-2%, soybean oil-2%, linseed oil-2%, lard-2%). The bioproductive indicators (food intake, body weight gain, and the conversion index CI) were established during the experiment, and in the end, the content of essential fatty acids (linoleic and linolenic acids) in broiler breast were determined. The obtained data, analyzed and statistically interpreted, have revealed that the established (evaluated) bioproductive indicators in the four experimental groups did not differ significantly. However there are some variations in the fatty acids content in broiler chicken breast. There are, though, some variations of the determined fatty acids content in broiler breast, in pectoral muscles as well as in breast skin.

**Keywords:** essential, fatty acids, fatty acids profile,  $\omega$ -3 enriched foods,  $\omega$ -6:  $\omega$ -3 ratio, vegetal oils.

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**Erol-Florian Gabor, Aurel Șara, Aurelian Barbu**

The Effects of Some Phytoadditives on Growth, Health and Meat Quality on Different Species of Fish

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**Abstract**

The growing tendency for food safety led to the ban of antibiotics. To replace their effects, the search for natural alternatives has begun. Thus, strong candidates to replace antibiotics are phytoadditives. Phytoadditives are fodder additives obtained from medicinal plants or plants extracts. Through their use it can be hoped to achieve the same results as in the use of antibiotics. Although they have a large spectrum of use, even today their mechanisms of action are not fully understood. Only recent, the study on the possibility of phytoadditives usage in aquaculture has begun. The present study is a review of the use of some plants as phytoadditives (garlic, onion, oregano, etc.) and of the researches made to reveal their effects on fish. The researches conducted in this field have shown the diverse effects of these phytoadditives used in fish as immunomodulators, immunostimulants, bioproductives, antioxidants, antimicrobials, stimulants of the enzymatic equipment, stimulants of nitrogen absorption. A major advantage in the use of phytoadditives is the fact that they are natural substances and do not pose any threat to fish, man or environment.

**Keywords:** fish, garlic, immunostimulants, onion, oregano, phytoadditives

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**Jana Hnisová, Eva Petrašková, Bohuslav Čermák, Miloslav Šoch, Bohuslav Vostoupal**

The Effect of Selected Stimulating Substances on Quality Components in Cow Milk

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**Abstract**

The aim of this work was to assess the impact of the liquid Biopolym FZT on quality components in cow milk. Biopolym was, calibrated by a milking robot, given to dairy cows in a selected breeding around České Budějovice for a selected period of time. A slight increase, 23.24L as compared to the 22.07 L of the control group, has been consequently found in values of the average daily milk yield. When considering the components of milk there has been a slight increase in values of fat in the milk, while the values of protein have been decreased.

**Keywords:** Biopolym, components of milk, rumen

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**Vačlav Kubat, František Lad, Bohuslav Čermák**

Nutrient Parameters of Grass Silages

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**Abstract**

The set of samples was classified by the phenophases: before the heading, the beginning of heading and full heading. Each group contained 12 samples. The parameters of nutritional value were evaluated. The chemical compositions (CP, PDIN and DOM) were highly significantly affected ( $P < 0.01$ ) by the phenophases. The best results have been reported in grass silage harvested in the phenophase before the heading. The chemical compositions CF and NEL were better ( $P < 0.01$ ) in grass silages harvested in the phenophase before the heading and in the phenophase the beginning of heading against grass silage harvested in the phenophase full heading.

**Keywords:** grass silages, qualitative parameters, phenophases

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**Monica Marin, Laura Urdes, Elena Pogurschi, Dumitru Dragotoiu**

Research Concerning the Influence of the Reducing Level of the Compound Feed on the Performances of the Pigs for Fattening

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**Abstract**

The test performed was aimed at analyzing the various levels of the crude protein parameters in the recipes of compound feed administered to pigs for fattening, as well as the influence of these levels on the quantity of excreted nitrogen and the production performances. Fattening was achieved in two stages: 30-60 kg and 60-100 kg. In the first stage the content in crude protein was 17.57%, respectively 16.06% and in the second stage was 15.03% and 13.47%. The others recipe parameters were approximately equal in all batches of the respective stage. The results of the tests showed that the productive performances of the pigs and the results obtained at slaughtering haven't been influenced significantly by the reducing proteic level of the compound feed and by the elimination protein of animal source, but the quantity of excreted nitrogen by pigs was decreased, playing for safety the environment pollution.

**Keywords:** compound feed, fattening, nitrogen balance protein, pigs, slaughtering

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**Marcel Matiuti, Eugeniu Crainiceanu, Daniel Crainiceanu**

Adaptation of Fleckvieh Cows to Climates and Nutrition Conditions in the Western Part of Romania

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**Abstract**

Our research sets out to quantify the way in which the nutritional value of the food ratios influences the milk production in Fleckvieh cows which were imported in Agriland ranch in the summer of 2008, from Germany. The different types of fodder existent at the ranch and their supply in the animals' ratios according to the season has been taking into consideration when calculating the nutritional value which has been afterwards compared with the expected values. The main objective was estimating the potential production and then comparing it with the real one obtained in the ranch, under the specific conditions of shelter and feeding. The health of the animals has also been observed. The evolution of the real graphic of lactation is very different from the potential one, in the sense that in the first two or three months of lactation the production decreases, and its peak is somewhere between the fourth month and the fifth month. This proves a feeding which is not proper, because it is not differentiated by production. The ratios should be made proper and this is done relatively easy by including phosphates into the ratio. The energy level can be corrected by individually administering the concentrated fodder which has to be correlated with the milk production.

**Keywords:** dairy cows, nutrition

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**Kamil Močár, Dávid Štofán, Mária Angelovičová, Daniela Liptaiová**

The Influence of Feed Mixtures with *Origanum Aetheroleum* on Broiler's Production in the Application of the Principles of Welfare

79

**Abstract**

In this paper the effect of the *Origanum aetheroleum* - essential oil on the production growth and health of broiler chickens in conditions of welfare was studied. The animals had a free access to feedstuff and water. The experiment was carried out in 2 cycles on broiler types Ross 308 and Cobb 500. The viability, welfare and the body weight of broiler chickens at the end of each cycle was detected. The breeding was kept in the terms of welfare. The viability in trial groups (fed with feedstuff enriched with *Origanum aetheroleum* - essential oil was 100% while in the control groups the viability was 98% in first cycle carried out on Ross 308 and 98% in the second cycle carried out on Cobb 500. The average body weight of chickens at the end of the first cycle in control group was 1376.80 g while the average body weight of chickens at the end of the first cycle in trial group was 1767.2 g. The differences between these two groups were highly significant ( $P < 0.05$ ). The average body weight of chickens at the end of the second cycle in control group was 1589.6 g while the average body weight of chickens at the end of the second cycle in trial group was 1567.2 g. The difference between these two groups was not significant ( $P > 0.05$ ).

**Keywords:** broiler, essential oil, feedstuff, *Origanum aetheroleum*, production.

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**Florin Molnar, Aurel Șara, Alina Rodica Ani**

The Influence of Some Fodder Additives on Growth Indices and Survival Rate of Common Carp Juveniles (*Cyprinus Carpio L.*) and Grass Carp (*Ctenopharyngodon Idella L.*)

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**Abstract**

The goal of this research was to evaluate the effects of some additives in common carp (*Cyprinus carpio*) and grass carp (*Ctenopharyngodon idella*) feeds on the growth indices and survival rate. Experimental period was 122 days for common carp and 115 days for grass carp in Martinești farm, Cluj County. Four groups were implied: LM-control group; L1E-group (Allzyme®SSF); L2E-group (Bio-Mos®); L3E-group (Allzyme®SSF plus Bio-Mos®), 50 common carp Lausitz var., 50 Galitian var., 50 grass carp juveniles/group. The initial body weight was 1.6g/specimen for common carp and 2.6g/specimen for grass carp. The best results regarding the growth indices for Galitian var. were recorded at group L2E (263±6.84g/specimen body weight) comparative with Control group(241±5.18g). The best survival rate was registered at group L3E (96%). Regarding Lausitz var. the best growth performances were noticed at group L2E 305±12.93g/specimen. The best survival rate was noticed at groups L1E, L3E with 94% comparative with Control group (287±3.69g/specimen body weight, 90% survival rate). For the grass carp the best results were recorded at group L3E (134±2.66g/specimen body weight, 90% survival rate) compared with Control group(120±5.09g/specimen body weight, 84% survival rate ). These results show that supplementation of common carp and grass carp feeds with Allzyme®SSF and Bio-Mos led to a better growth and survival rate.

**Keywords:** Allzyme SSF, Bio-Mos, common carp, enzymatic complex, grass carp, growth rate

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**Monica Pârvu, Ioana Cristina Andronic, Violeta-Elena Simion, Carmen Berghes, Adriana Amfim**

Feed Conversion Efficiency in Japanese Quail Egg Production Mathematical Assisted

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**Abstract**

It was study the feed conversion efficiency in Japanese quail using energy and protein balances during the peak period of laying. The quails were given a diet with 20% crude protein and 2880 ME kcal/kg feed. The feed was given *ad libitum*. The environmental temperature was 25°C (neutral thermal zone). The energy and protein balances were studied for three weeks. It was monitored the following parameters: feed intake, excreted waste, body weight evolution, egg production. Feed, excreta and samples of egg and meat were analyzed according to Weende scheme. On the basis of digestibility and comparative slaughtering, were determined the energy and protein requirements for maintenance and for protein and fat retention mathematical assisted. The daily feed intake was 361 KJ gross energy and 5.32 g crude protein. The energy and protein requirements for maintenance were 648 KJ/kg<sup>0.75</sup> and 6.2 g/ kg<sup>0.75</sup>. The efficiency of metabolisable energy utilisation on egg production was 26.6% and for corporal synthesis 5.5%. The obtained results will be used to develop a mathematical model for energy and protein retention in Japanese laying quail.

**Keywords:** feed conversion efficiency, Japanese quail

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**Eva Petrášková, Jana Hnisová, Bohuslav Čermák, Miloslav Šoch, Bohuslav Vostoupal**

The Influence of Biopolym FTZ on the Content of Nitrogen Compounds in Rumen

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**Abstract**

The aim of this study was to verify the effect of Biopolym FZT on the crude protein in the ruminal content. The experiment was conducted in laboratory conditions. Rumen content was removed from the Holstein breed cow fitted with ruminal fistula. The hydrolyzed brown seaweed was added to the samples of the ruminal content. After incubation of the samples the crude protein content was determined. In experiments with solid ruminal contents positive effects of Biopolym on the crude protein content was shown. The best results were achieved at the dilution of 1:2000.

**Keywords:** Biopolym FZT, nitrogen compounds, ruminal content

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**Aurel Șara, Aurelian Barbu, Ani Alina, Mihai Bențea**

The Effects of some Additives (Bio-Mos and SelPlex) on the Bioproductive Indices and Meat Quality of brook trout (*Salvelinus fontinalis M.*)

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**Abstract**

The trial was carried out for 35 weeks at the trout farm ICAS Gilau, Cluj County. Three groups were implied: a Control group and two experimental groups (Bio-Mos 0.2 % and SelPlex 0.03 %) each consisting of 250 brook trout juveniles. The experimental groups received 0.2 % Bio-Mos and 0.03% SelPlex. At the end fish reached an average weight of 238.55 g/specimen for experimental group 1 and 212.2 g/specimen for the second experimental group comparatively to the Control group (204.65 g/specimen). The analysis of indices regarding the quantification of the health status, survival and losses, shows the beneficial biological effects of the additives that had been incorporated in the basal diet of brook trout. The improvement of glutathion-peroxidase blood level in group 3 (5.63 UGPx/mlPCV) comparative with that registered at the Control group (4.34 UGPx/mlPCV) is another evidence of the biological beneficial effects of Selenium. Also there have been a significant improvement of selenium content of brook trout meat, with 287.15 % higher than the Control group (238.99 μg/kg comparative with 61.73 μg/kg) as a response to brook trout diet supplementation with organic selenium. The addition of Bio-Mos and SelPlex in brook trout feed did not have a major impact on the chemical composition of brook trout meat, the differences recorded being insignificant.

**Keywords:** Bio-Mos, bioproductive indices, brook trout, meat quality, SelPlex.

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**Violeta-Elena Simion, Gheorghe Pâravu, Elena Potecea, Luiza Bădic, Monica Pâravu**

Alteration of some Biochemical and Haematological Parameters in the Dairy Cows due to the Intake of Mycotoxin Contaminated Feeds

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**Abstract**

The hepatogenic role of mycotoxins is well-known, but their action on some biochemical and haematological parameters in the dairy cows is yet to be completely clarified. The investigation monitored the modification of blood test values and of some biochemical parameters from the serum and urine of dairy cows reared in small family farms and which consumed feeds contaminated with mycotoxins.

Ten blood samples and 10 urine samples were collected and subsequently analysed. The samples were collected from 5 family farms, one in each of the following counties: Dolj, Giurgiu, Ilfov, Călărași and Galați.

The blood and urine samples were analysed for their biochemical parameters.

The results of the biochemical analyses of the blood and urine samples were correlated with the results of the mycotoxicological analysis of 105 samples of forages collected from the surveyed family dairy farms.

The results showed that some biochemical parameters exceeded the normal physiological level, which may be the result of a defence reaction of the organism to the aggressive action of the mycotoxins identified in the forages given to the dairy cows.

**Keywords:** , biochemical parameters, dairy cows, feed, mycotoxins,

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**Eliza Simiz, Călin Julean, Dan Drinceanu, Lavinia Ștef, Ileana Brudiu, Ioan Luca, Dominica Sofian, Alina Ioniță**

Bioproductive Effect of Different Microelement Levels Used to Feed Heavy-Breed Chicken, Bred Under Biological System

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**Abstract**

Ecological aviculture is in full ascent worldwide and at national level as well. We carried out an experiment on the quantification, by bioproductive indices (body weight, total forage intake, conversion index and microelement intake), of the effect exerted by mineral supplementation of the feed for heavy-breed chicken bred in the bio system. Consequently, we observed that the introduction of a mineral premix (PM<sub>3</sub>) into the concentrated feed mixture up to poultry requirements (according to NRC 1994) led to the achievement of superior bioproductive indices (body weight 1648.0±59.8 g), statistically assured compared with the experimental variant in which we did not use this supplement (body weight 1379.4±58.5 g) and statistically insignificant compared with the variant supplemented with doses reduced with about 50% for Fe, Mn, Zn and Cu (body weight 1575.2±51.8 g). The researches performed show the necessity of supplementing feed with microelements, in order to achieve superior productive indices, even in the biological system of heavy-breed poultry breeding.

**Keywords:** biological farms, heavy-breed poultry, mineral content

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**Lavinia Ștef, Gabi Dumitrescu, Dan Drinceanu, Ducu Ștef, Călin Julean, Nicolae Corcionivoschi, Cosmin Pandur, Ioana Șgura**

**111**

Impact of Wheat Non-Starch Polysaccharides on the Intestinal Wall and Microflora in Broilers

**Abstract**

Some cereals like barley, oat, and wheat contain significant quantities of non-starch polysaccharides (NSP). The main problems generated by NSPs are related to their viscous nature, to the physiological and morphological effects on the digestive tract and to their interaction with the intestinal flora. The objective of this experiment was to assess the impact exerted by wheat non-starch polysaccharides (NSP) on the intestinal flora and wall in broilers. The experiment was carried out during 6 weeks. We created two experimental groups: the experimental group EG1 fed on forage without wheat in its structure, and the experimental group EG2 fed on combined forage including 40% wheat. At 6 weeks old, after broiler killing, we sampled the intestinal wall and determined lactic bacteria and coliforms. Wheat incorporation in a proportion of 40 % in the combined forage determines the increase of NSP content with 1.84 percentage points; the number of lactic bacteria decreases insignificantly in EG2, fed on forage including wheat. In the experimental variant EG2, the mean height of the jejunal mucosa vilosity was bigger (684.6 $\mu$ ) than in the variant EG1 (403.9  $\mu$ ), and these were coated with a slightly-hypertrophic epithelium (32.4  $\mu$ ); on some of the areas, the capillaries were ectasied and we could notice hemorrhagic regions.

**Keywords:** broilers intestinal microflora, intestinal wall, non starch polysaccharides,

**Lavinia Ștef, Dan Drinceanu, Dragos Fota, Ducu Ștef, Calin Julean, Eliza Simiz, Cosmin Pandur, Voichita Gherasim**

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Evolution of Intestinal Viscosity in Broilers According to NSP Type and Levels in the Wheat-Based Forage Mixture

**Abstract**

The objective of this experiment was to assess the effect exerted by different levels and categories of non-starch polysaccharides (NSP) from wheat grains on viscosity in broilers. Wheat's percentage of participation in the forage mixture was between 0 and 40 %. The experiment was performed during 6 weeks, on 120 broilers distributed in four experimental variants (CG, EG1, EG2, and EG3). Between eclosion and 3-week old, the content in soluble non-starch polysaccharides (NSPs) increases directly proportional with the wheat proportion in the structure of the forage mixture, becoming 0.718 percentage points bigger in EG3 than in the EG1. During the second period of growth, respectively from 3 to 6 weeks, the NSPs content has the same evolution, with 0.7 percentage points in EG3. At the age of 3 weeks, viscosity increases with the increase of wheat percentage in the structure of the combined forage, being 53.07 % bigger in the group that was fed on the 40%-wheat forage. At 6 weeks, at duodenum level in EG2, viscosity had values of 2.53cP, 49.04% bigger compared with EG1. At jejuna level, viscosity increases like in duodenum, being also 33.15% bigger in the group fed on combined forage including 40 % wheat, too (EG2 – 3.13cP), compared with the group fed on combined forage without wheat (2.1cP).

**Keywords:** broilers, intestinal viscosity, non-starch polysaccharides, wheat

**Ducu Sandu Ștef, Iosif Gergen, Lavinia Ștef, Monica Hărmănescu, Cecilia Pop, Mărioara Drugă, Gabriel Bujancă, Mirela Popa**

**122**

Determination of the Macro Elements Content of Some Medicinal Herbs

**Abstract**

The metals contents of plants are variable, due to the factors like differences between the plants species, geographical area, conditions of drying process. Metals contents in soil are a great importance for their effect of animals and humans, through the biologic chain: soil – plant – feed and food. Analysis of metals content was made with ContrAA-300, Analytik-Jena device, by flame atomic absorption spectrometry (FASS) in air/acetylene flame. It were analyzed the macro elements content for 33 medicinal plants. The main macro elements (Ca, Mg K and Na) were quantified for each sample. The contents in macroelements for analysed samples were in range: 3.763 % (Plantago major) – 0.442 % (Hippophae rhamnoides), for Ca; 0.718% (Urtica dioica) – 0.107% (Hippophae rhamnoides and Pinus), for Mg; 1.417% (Chelidonium majus) – 0.319% (Rhamnus frangula), for K and 1.945% (Cynara scolymus) – 0.021% (Pinus), for Na.

**Keywords:** calcium, macroelements, magnesium, medicinal plants, potassium, sodium

**Ducu Sandu Ștef, Iosif Gergen, Teodor Ioan Trașcă, Monica Hărmanescu, Lavinia Ștef, Mărioara Drugă, Ramona Biron, Gabriel Hegheduș-Mîndru**  
Screening of 33 Medicinal Plants for the Microelements Content

127

**Abstract**

The microelements content of 33 medicinal plants was analyzed. The analysed microelements were: Iron, copper, zinc, manganese, cobalt, chromium, nickel, cadmium and lead. Mineral contents were determined by flame atomic absorption spectrometry (F-AAS) with high resolution continuum source ContrAA 300 spectrometer. The contents in microelements for analysed samples were in range: 18.1 ppm (*Symphytum officinale*) - 1.4 ppm (*Rhamnus frangula*), for Copper; 26,2 ppm (*Valeriana officinalis*) – 4,3 ppm (*Rhamnus frangula*), for Zinc; 214 ppm. (*Violae tricoloris herba*) - 18 ppm (*Equisetum arvense*), for Manganese; 826 ppm (*Calendula officinalis*) - 23 ppm (*Rhamnus frangula*), for Iron. The microelements contents (Cu, Zn, Mn, Fe, Co, Cr, Ni, Cd and Pb) have grouped the analyzed medicinal plants in two main clusters. First main cluster was formed by other two groups.

**Keywords:** Cooper, iron, manganese, microelements, medicinal plants, Zinc

**Adrian Toader-Williams, Aurel Șara**  
Studies on the Edible Snails *Helix Aspersa* Muller Specific Growth in a Closed Environment

133

**Abstract**

We used *Helix pomatia* and *Helix aspersa* species and measure their growth as the snails were approaching the hibernation season. *Helix pomatia* 2yo shown a decrease in weight while being raised in enclosed parcels of 4sqm the younger *Helix pomatia* 1yo as well as *Helix aspersa* Muller demonstrated the ability to adapt relatively fast to the same conditions. We established 5 experimental lots in a *Helix pomatia* farm, GPS coordinates N46.60604<sup>0</sup> E23.59995<sup>0</sup>. Control lot contained *Taraxacum officinales*, *Sonchus oleraceus*, *Equisetum arvense* and *Atriplex hortensis*, wild flora found within the farm. The other lots contained the same plants as the control lot plus different combinations of imported plants from other areals. The *H. pomatia* 2yo weight decreased in the control lot by a mean of -3.86% while *H. aspersa* 1yo marked an increase of +16.89% in the same lot during the same period. The lot containing *lupinus polyphyllus* delivered snails with weight gain of +24.66% for *H. pomatia* 2yo and an increase of only +1.98% for *H. aspersa* 1yo. As a contrast, *H. pomatia* 2yo gained only +7.72% while *H. aspersa* 1yo gained +28.89%, in the lot containing *Lavanda officinalis*, *Foeniculum vulgare* and *Hyssopus officinalis* among the other plants.

**Keywords:** Cornu aspersum, Cluj-Napoca, helicicultura, food selection, ecological farm management, mollusk

**Adrian Toader-Williams, Mihai Bențea**  
Comparative Study on the Adaptation and Development of *Helix Pomatia* and *Helix Aspersa* Muller in Intense Edible Snail Farming Conditions

143

**Abstract**

Terrestrial edible snail breeding is an agricultural activity that finds itself at pioneering stage in Romania. One of the species used in snail farming is *Helix aspersa* Muller. In order to accelerate their growth, farmers feed the snails with pumpkins as well as concentrated forage consisting of mix of flours to which calcium carbonate is added in order to supplement snails need for shell's development. In a controlled microclimate environment we measured the average growth of six weeks old *Helix aspersa* Muller snails placed in four different plastic enclosures. The consumption of different type of foods within 24 hours period was measured. The wheat (60%), corn flour (20%) and calcium carbonate (20%) mix had a superior food conversion ratio (FCR) of 4.80, whereas the second FCR registered 6.04 in the case of 53% pumpkin and 47% flour mix served in the same time followed by the pure fresh vegetable mix accounting for a FCR of 8.00 and by 19.02 when only the pumpkin has been administrated as meal. During the experiments the snails did not have access to soil, being known that soil is an integral part of their diet.

**Keywords:** Cornu aspersum, ecological snail farm management, FCR, helicicultura, mollusk, weight gain.

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**Java Voříšková, Miroslav Maršálek, Bohuslav Čermák, Jana Zedníková, Milan Kobes**  
Rearing of Meat Breed Calves in the System without Commercial Milk Production

**151**

**Abstract**

In this article the results of rearing purebred meat breeds of cattle in the system without commercial milk production on a private farm situated at the foot of the mountains in South Bohemia are shown. The herd of dams consisted of 149 pcs. of the breed Charolaise (CH), Meat Simmental (MS), Blonde d'Aquitaine (BA), Limousine (LI) and Belgian Blue (BM). The average age at first calving was the lowest in the breed MS (941 days) and the highest in the breed CH (1087 days). The average length of the Between-calving interval of the herd was 442.6 days. The highest birth weight was achieved by the calves of the breed BA (51.2 kg) and the lowest by the breed MS (42.4 kg at  $P \leq 0.001$ ). At the age of 120 and 210 days the highest live weight was proved in the breed CH (193.8 kg resp. 316.5 kg). The calves of the breed ET showed a significantly higher live weight only in the age of 120 days (difference of 12.8 kg at  $P \leq 0.01$ ). The influence of bulls on the growth parameters of calves was proved within the breed CH in live weight at the age of 210 days.

**Keywords:** cattle fertility, meat breeds, live weight

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**Simona Zarcu, Horia Cernescu, Calin Mircu, Camelia Tulcan, Attila Morvay, Simona Baul, Daniel Popovici**

Influence of Breed, Parity and Food Intake on Chemical Composition of First Colostrum in Cow

**154**

**Abstract**

The aim of this research was to establish the influence of breed, parity and food intake on chemical composition of first colostrum. We observed that fat, proteins, lactose and dry matter were higher in cows from second and third lactation compared to those in fourth lactation. Cow's breed also influenced the colostrum composition, superior quality being obtained in case of Romanian White and Black comparing Holstein Friesian cows. The unbalanced energe-proteic ratio had a negative impact on chemical composition of first colostrum.

**Keywords:** breed, colostrum, parity, feed intake.

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## ANIMAL REPRODUCTION AND GENETICS

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**Valeriu Carabă, Nicolae Păcală, Nicolae Corin, Ioan Bencsik, Bujor Avramescu, Ramona Untaru, Alexan Caraba, Alexandra Ivan**

The Influence of Cow Puerperal Infections Considering the Main Reproduction Indicators

**158**

**Abstract**

This article it's presenting results regarding the main reproduction indicators for German Spotted and Frizz Holstein. In stand to achieve this goal we follow 3 main reproduction indicators to the cows with normal uterine involution and to the cows with puerperal infections: uterine repose (UR), Insemination index (Ig) and gestation rate (G). Regarding the uterine repose we notice that there were no significantly differences between the two breeds for the cows with normal uterine involution, 114.00±8.80 days for German Spotted and 126.79±12.86 days for Frizz Holstein. For the cows with puerperal infections we notice very significant differences, 128.58±10.16 days for German Spotted and 184.27±12.68 days for Frizz Holstein. Regarding the number of insemination/gestation there were no significant differences between the cows with normal calving. In this way, the index/gestation was 1.45±0.11 for German Spotted and 1.57±0.17 for Frizz Holstein. For the cows with puerperal infections was a distinguished significant difference regarding the index/gestation, so we have 1.59±0.16 for German Spotted and 2.32±0.20 for Frizz Holstein. The pregnancy rate for the cows with normal uterine involution was 66% for German Spotted and 64% for Frizz Holstein. The gestation rate for Frizz Holstein was smaller for both categories (64% at the cows with normal uterine involution and 42% at the cows with puerperal infection). After that research we can conclude that, generally, the cows with post calving infections registered middle values for different reproduction indicators comparative with the healthy cows.

**Keywords:** gestation rate (G), insemination index (Ig) and uterine repose (UR),

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**Dorel Dronca, Nicolae Păcală, Ioan Bencsik, Teofil Oroian, Vasile Cighi, Mihaela Ivancia, Gabi Dumitrescu, Sorin Voia, Ada Cean, Liliana Boca**

Dynamics of the Wild Animals Populations for Hunting from Șarlota Aria, Forest District Timisoara, in 2005-2009 Period

161

**Abstract**

Integration of the Romania in the UE, is imposing a special attention to hunting animals populations. The aim of the present paper was to study the quantitative evolution of the hunting population for the 13th species, in the period 2005-2009, in the hunting terrain Șarlota, from Forest Domain – Timisoara, with a total surface of 6149 ha. The conclusion was that the numeric evolution of the species studied was normal, maintaining a balance between populations as a conclusion of natural and artificial selection. It was also noticed that there is a good correlation between the numbers of individuals from the species studied and the biogenic capacity of the hunting fond studied.

**Key words:** cynegetic, hunting animals, hunt population,

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**Dorel Dronca, Nicolae Păcală, Ioan Bencsik, Marian Bura, Teofil Oroian, Vasile Cighi, Mihaela Ivancia, Gabi Dumitrescu, Adela Marcu, Daniela Goina, Ada Cean, Liliana Boca**

The Appreciation of the Special Combinative Capacity at Three Rabbit Populations from Timis County, for Corporal Mass of the Descendants at Birth

164

**Abstract**

Non additive genetic component that is the base of a quantitative character has no predictability, this is the reason for which the present paper is proposing to appreciate the special combinatory capacity for corporal mass of the descendants at birth in a specific crossing scheme combining three rabbit breeds common in Timis county breeders New Zealand White, Large Chinchilla and Californian. The data obtained, statistic presented prove a good special combinative capacity for this character, reason for which the crossing scheme is recommended for producing meat individuals destined for slaughterhouses. This scheme provides an exploitation of the high fervency of the heterozygote at maternal forms and at the final hybrids.

**Key words:** crossing, hybrids, special combinative capacity

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**Ioana Hașegan, Alexandru Șonea, Alin Birțoiu, Liviu Vintilă, Alina Botea**

The Influence of the Culture Medium on *In Vitro* Meiotic Competence of Canine Oocytes

167

**Abstract**

Although in carnivores modern breeding biotechnologies have developed particularly over the last 15 years, studies in the bitch oocytes are less than in other species due to the reduced availability of biological material. A major problem for *in vitro* embryo production in dogs is the particular ovulation physiology in this species. *In vitro* maturation of bitch oocytes is influenced by several factors: age of the donor female, estrous phase, hormonal stimulation, transport conditions of the samples, size and quality of the oocytes, the culture medium and atmosphere. To increase the rate of *in vitro* maturation of bitch oocytes, over time different media were used. The present approach focuses on summarizing the most frequently used mediums and their results for *in vitro* maturation of canine oocytes.

**Keywords:** canine, *in vitro*, maturation, medium, oocyte

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**Iudith Ipate, Alexandru Bogdan, Gotfried Brem, Ianos Seregi, George Florea Toba, Marcel Paraschivescu, Amalia Strateanu, Mihai Enache, Mariana Sandu, Simona Ivana**

Research Regarding the New Biodiversity Indicators in Genetic Diversity of the Region -Country Hateg

170

**Abstract**

The present research started in June 2009 by identification of the species and breeds in the livestock of the 11 villages and 1 town existing in the Hatseg Land area. We use the modern genotyping tool for the study of zootechnical biodiversity- molecular biology tests- based on identification, amplification and characterization of nucleic acid, revolutionized the conservation of indigene animal genetic resources, gene assisted selection, pathology diagnostic and food traceability. The original Tipy Fix methods – internatinal patented by Prof.Brem - that were used in Romania (using for the first time in Romania by the researchers of CSCBA) to reveal DNA polymorphism are described as their applicability in species identification and meat traceability. Vulnerability of farm animal breeds is caused by the lack of interest apart breeders for one breed. In Hateg land area the main mean of reducing biodiversity in farm animals is the crossbreeding. It was analysis the prion protein for scrapie resistance genotyping *as codon-* amino acid at codon 136, 154, 171 from 5 known haplotypes resulting PrP Genotype .In results of analysis in Hateg country 41 the probes present the arginine (R) at codon 171 of the prion protein who confers resistance to the structural change of prion scrapie.We presented biodiversity indicator for domestic animal in Hateg country.

**Keywords:**genotyping, prion protein, Tipy Fix methods, zootechnical biodiversity

**Nicoleta Işfan, Dana Popa, Răzvan Popa, Carmen Nicolae, Monica Marin, Marius Maftai**  
The Genetic Determinism of Biochemical Systems Polymorphous From the Blood Serum in Pigs

177

**Abstract**

The study of genetic markers and identification of new markers make the subject of an increasing number of research projects in various fields such as genetics of immunology, biochemical genetics, molecular genetics, quantitative genetics and the genetic amelioration of animals. The information provided by electrophoresis graphs has been used to determine the frequency of various categories of alleles (for the loci of pre-albumin, transferines and serum amylases), the frequency of various phenotypes and the genetic structure for each and every locus and, simultaneously, for the loci being studied. The discussion over the varieties of serum proteins was carried on for the purpose of using them as genetic markers, in order to appreciate the levels of genetic unity or diversity within the stock of swine that has been studied. A pair of simple alleles has been determined for each of the three loci. When the three loci were studied simultaneously, out of the 27 possible combinations, only 15 have been found. The sample studied has found to be genetically balanced for every of the three loci. However, when the simultaneous study has been applied, the same sample has not been found genetically balanced.

**Keywords:** amylases, combined genotype, genetic polymorphism, pre-albumin, transferines.

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**Gabriela Korodi, Olimpia Colibar, Horia Cernescu, Vasile Ardelean, Gheorghe Bonca, Călin Mircu, Dan Popovici**  
Study Regarding the Evolution with Age of Ultrasound Prostate Dimensions in German Shepherd Dogs

182

**Abstract**

The aim of this study is to analyze the evolution with age of the prostatic dimensions in German shepherd dogs. For the veterinarians, these results could help to recognize more easily a pathological state of the German shepherd dog's prostate, only by an ultrasound examination. After examining 22 German shepherd dogs, for dogs of 2 to 5 years old, we obtained a mean prostatic volume of 16.239 cmc, for dogs between 6 and 10 years old the mean prostatic volume was 37.712 cmc and for dogs older than 10 years, the mean prostatic volume was 40.327 cmc. In conclusion, regarding the results, it can be affirmed that in German shepherd dogs, prostate dimensions are increasing with age.

**Keywords:** age, dogs, prostate, ultrasound, volume

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**Adrian Marcu, Adela Marcu, Cornelia Vintilă, Dorel Dronca, Daniela Radu**  
Studies Regarding Some Phenotype Parameters and the Evolution of Shepherd dog Breeds in Romania

185

**Abstract**

Now days, Romania have three dog breeds homologated by FCI (Federation Chynologique Internationale): Romanian Mioritic Shepherd Dog, Romanian Charpatian Shepherd Dog and Southeastern European Shepherd Dog. The fourth breed, Romanian Shepherd Dog Corby is in homologation. It was studied the evolution of the population and two phenotype parameters (weight and wither height) at the Romanian shepherd dogs. The first three breeds have a good homogeneity and a positive numeric evolution. Romanian Shepherd Dog Corby are less homogene and the selection process must be improve..

**Keywords:** parameters, phenotype, Romanian Shepherd Dogs

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**Marcel Mafiuti, Alexandru T. Bogdan, Eugeniu Crainiceanu, Carmen Matiuti**  
Research Regarding the Hybrids Resulted from the Domestic Pig and the Wild Boar

188

**Abstract**

Research was conducted between 2005-2009 in Barzava, Arad county. The villagers breed pigs traditionally, the animals having the freedom to roam the outskirts of the villages. Over the years the domestic sows (*Sus scrofa domesticus*) which had been let by their owners to roam the forests for mast and acorn, have mated with wild boars (*Sus scrofa ferus*), thus obtaining crossbreeds in various colours – either resembling the female or the male. In Bazava the total number of swine is 1820 specimens out of which 546 is formed by hybrids or crossbreeds in 2009. In the case of these hybrids the length of the head together with that of the trunk can reach 150-170 cm. An adult male can have a weight of 150-200 kg and the female 100-150 kg. These specimens are easily recognizable by the fact that they have the trunk covered in thick, long, spiky hairs. There are also other external characteristics of these crossbreeds. Data has been gathered on what concerns the colour and the length of the hair, external features, maintenance and feeding. Behavioural observations have been made also. The local people appreciate a lot these hybrids because of their qualitative meat, out of which they obtain traditional dishes, combining this meat with that from domestic pigs and veal. Moreover, the maintenance of these hybrids is very low-cost, the only conditions which have to be met being simple shelters during the night and during the winter. The demand for such animals is great. These hybrids are being bought by the Zoos or are used for repopulating the areas in which the wild boars are on the verge of extinction because of excessive poaching. Foreign buyers are also interested in these hybrids, wanting to breed them in special parks and then to organize hunting outings.

**Keywords:** hybrid pigs, zoogenetic biodiversity

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**Vasile Miclea, Marius Zăhan, Vasile Rău, Alexandru Nagy, Ileana Miclea**

Reproductive Activity of Tsigai Sheep Belonging to the Hill and Mountain Ecotypes

192

**Abstract**

The reproductive value of sheep belonging to the hill and mountain ecotypes of the Tsigai breed was characterized based on the analysis of specific indexes. This operation was deemed necessary given our interest in the ex situ conservation of these ecotypes. Our research resulted in establishing that the hill ecotype is superior to the mountain ecotype, as is apparent by comparing indices for the two. The number of sheep in oestrus is higher by 9.56%, the pregnancy rate by 9.14%, the insemination index by 37.11%, the index of abortions by 6.96%, the fertility index by 19.76%, the sterility index by 14.18% and the number of lambed sheep by 15.06%. Only the prolificacy index is higher in the mountain ecotype by 5.96%. This situation stems from the particular biology of each ecotype and warrants optimal keeping and feeding for the mountain ecotype so that future research will not negatively influenced.

**Keywords:** ecotypes, reproductive indices, Tsigai

**Teofil Oroian, Rareș Oroian, Simona Pașcalău, Elvira Oroian, Dorel Dronca**

Aspects of the Genotype-Environment Interaction at the Japanese Quail (*Coturnix-Coturnix Japonica*)

195

**Abstract**

We analyzed the problems of genotype-environment interaction at three *Coturnix Coturnix Japonica* varieties. The environment where the experiment took place is perfect identically for all the activities, to ensure that the observed differences at the followed traits to be strictly attributed to the genotype differences. We analyzed the body weight, eggs weight, eggs large and small diameter, yolk and egg white weight, egg-shell weight. The data were statistically interpreted using the average and dispersal indices estimation, and the significance testing using Student test.

**Keywords:** *Coturnix Coturnix Japonica*, Genotype-Environment Interaction, Body Weight.

**Teofil Oroian, Rareș Gelu Oroian, Aurel Vlaic, Vasile Cighi**

Phenotypical Performances of Lipitzan Horse Breed Offsprings from Sambata de Jos and Beclean pe Somes Studs

199

**Abstract**

The biological material was represented by a number of 86 male and 101 female offsprings from Sambata de Jos stud and 47 males and 25 females from Beclean pe Somes stud, born between 2001 and 2005. We observed by direct measurements, the evolution of withers height, thoracic perimeter and cannon-bone perimeter at the ages of 6 months, 12 months, 2 years and 3 years. We calculated the average and dispersal indices for these traits, the differences between sexes and studs using 'STUDENT' test. At 6 months of age all the offsprings are included in breed parameter respecting the withers height with values of 126,18-132,16 cm; 141,35-144,25 cm at 1 year of age; 145,9-154 cm at 2 years of age; and 155,35-156,9 cm at 3 years of age. The significant differences are observed at 1 year of age between the males and the females from Sambata de Jos stud, as well between the two studs. We can conclude that all the analyzed offsprings belonging to the two studs are included in European Lipitzan standard breed, the differences observed are influenced by the strain origin and welfare conditions.

**Keywords:** Lipitzan breed, withers hight, Sambata de Jos, Beclen pe Somes

**Ioan Pădeanu, Călin Mircu, Ioan Bratu, Sorin Voia, Marinela Popovici, Dinu Gavojdian, Iulian Frățilă**

Evolution of the Thyroid Hormones ( $T_3$ ,  $T_4$ ) and Progesterone Levels in Ewes and Gimmers after the Insertion of Melatonin Implants

203

**Abstract**

Investigations were carried on in a private farm from Cenad, Timis County, on 14-15 months of age gimmers from the indigenous breeds Transylvanian Merino (9) and Turcana (6). The gimmers were inserted in 14 May 2009 with Melatonin implants of 18 mg. Blood samples were collected immediately after the insertion of the implants and after 15 and 30 days. Hormones analysis triiodothyronine ( $T_3$ ), triiodothyronine ( $T_4$ ) and progesterone level from the blood samples were assayed using ELISA method. Data shown a decrease of the progesterone levels after 30 days from the insertion of the implants, but the difference of 4.69 mg/ml is not statistically significant ( $p>0.05$ ), and the triiodothyronine ( $T_3$ ,  $T_4$ ) levels have registered small and insignificant variations ( $p>0.05$ ). Results may suggest that melatonin implants do not influence significant ( $p>0.05$ ) the thyroid hormones ( $T_3$ ,  $T_4$ ) and the progesterone levels.

**Keywords:** ewe, progesteron, thyroid hormones

**Snejana Petrovici, Alexandra Trif, Eugenia Dumitrescu, Florin Muselin, Milca Petrovici**

Potassium Dichromate Impact on some Biomarkers of Female Reproductive System Performances (Litter Size, Sex Ratio) and Physical Development (Vaginal Opening) in Rats (F<sub>2</sub> Generation)

207

**Abstract**

The aim of this study was to emphasize potassium dichromate impact on some female reproductive system performances and physical development biomarkers in rats.

Exposure to potassium dichromate (25 - LOAEL, 50 and 75 ppm Cr VI) *in utero*, during suckling period and until sexual maturity, of F<sub>2</sub> female white Wistar rats generation (derived from F<sub>0</sub> and F<sub>1</sub> generations, exposed to the same Cr VI levels), pointed out significant decrease of alive/increase of dead pup number at birth, impaired sex ratio in male favor, significant dose dependent delay of puberty onset and lower body weight comparative to the optimum one at sexual maturity - the vaginal opening moment.

**Keywords:** rat, female, sex ratio, vaginal opening

**Snejana Petrovici, Alexandra Trif, Violeta Igna, Milca Petrovici, Camelia Tulcan**

Potassium Dichromate Impact on Sexual Cycle Duration and Regularity in Female Rats (F<sub>1</sub> Generation)

211

**Abstract**

The study was carried out on 28 white Wistar adult female rats from F<sub>1</sub> generation (derived from females and males exposed for three months before mating to potassium dichromate, 25, 50 and 75 ppm CrVI). F<sub>1</sub> generation was exposed *in utero* and until sexual maturity to the same Cr VI levels. The study pointed out: significant increase of sexual cycles duration comparative to control group and over the physiological limits, directly correlated to exposure level (p<0.01); changes in regularity of sexual cycles, respectively: significant (p<0.01) decrease of proestrus, estrus and diestrus percentages in physiological limits as duration and inversely correlated to exposure level, appearance of sexual cycles with absent proestrus and estrus, directly correlated with the exposure level (p<0.01) and of prolonged diestrus, directly correlated to exposure level, (p<0.01).

**Keywords:** female, F<sub>1</sub>, sexual cycle, rat

**Dana Popa, Razvan Popa, Cristiana Diaconescu, Carmen Nicolae, Livia Vidu, Marius Maftei, Nicoleta Isfan**

Genetic parameters in a Swine Population

215

**Abstract**

The estimation of the variance-covariance components is a very important step in animal breeding because these components are necessary for: estimation of the genetic parameters, prediction of the breeding value and design of animal breeding programs.

The estimation of genetic parameters is the first step in the development of a swine breeding program, using artificial insemination.

Various procedures exist for estimation of heritability. There are three major procedures used for estimating heritability: analysis of variance (ANOVA), parents-offspring regression and restricted maximum likelihood (REML). By using ANOVA methodology or regression method it is possible to obtain aberrant values of genetic parameters (negative or over unit value of heritability coefficient, for example) which can not be interpreting because is out of biological limits.

**Keywords:** animal breeding, genetic correlations, heritability

**Razvan Alexandru Popa, Dana Popa, Carmen Nicolae, Livia Vidu, Monica Marin, Elena Pogurschi, Marius Maftei, Nicoleta Isfan**

Analyze of Selection Difference, Selection Ratio and Selection Intensity in a Swine Pattern Line

218

**Abstract**

The researches were effectuated in a selection farm, in a swine pattern line utilized as a generator of commercial hybrid father obtained in this unit. The national program of swine improvement takes in account that genetic evaluation of selection candidates it's made based on BLUP methodology and selection effect estimation it's made by difference between average breeding values of candidates by successive generations. In analyzed population, the genetic evaluation it's made based on individual performance. Analyzing selection difference and selection ratio we can draw interesting conclusions related with breeding work efficiency.

**Keywords:** efficiency, selection difference, selection ratio.

**Razvan Alexandru Popa, Dana Popa, Carmen Nicolae, Livia Vidu, Monica Marin, Elena Pogurschi, Marius Maftai, Nicoleta Isfan**  
Selection Parameters for Production Traits in a Duroc Population

221

**Abstract**

The goal of this paper is to estimate the genetic parameters for production traits in a pattern pig line. The estimation of the variance-covariance components is a very important step in animal breeding because these components are necessary for: (1) estimation of the genetic parameters, (2) prediction of the breeding value and (3) the design of animal breeding programs. The estimation of the selection parameters ( $h^2$ ,  $r_G$ ,  $r_F$ ,  $r_E$ ) is the first step in the development of a Duroc line breeding program, using artificial insemination.

**Keywords:** breeding program, genetic correlations, heritability,

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**Jelena Rankov, Alexandra Trif, Diana Brezovan, Florin Muselin**  
Potassium Dichromate Impact on Male Reproductive Integrity Biomarker in Rat. Two Generation Study

224

**Abstract**

The aim of this study was the evaluation of Cr VI cumulative and differentiate exposure on integrity biomarker of male reproductive system. The objective was evaluation of potassium dichromate intake on genital organs and sexual accessory glands architecture in male rats from two generation. Males and females from  $F_0$  generation were exposed to potassium dichromate three months before mating.  $F_1$  generation was represented by male pups, resulted from  $F_0$  generation, exposed to potassium dichromate *in utero*, during suckling (via milk and water) period and until sexual maturity. All the animals were divided in one control and three experimental groups, exposed to Cr VI trough drinking water, as followed  $E_1$ : 25 ppm (LOAEL);  $E_2$ : 50 ppm;  $E_3$ : 75 ppm; control group received tap water without chromium content. The experiment was carried out with respecting legislation regarding ethics in animal experiments. The study revealed the presence of congestive and degenerative lesions in genital organs and sexual accessory glands of exposed individuals from  $F_0$  and  $F_1$  generation such as: interstitial edema, epithelial necrosis and atrophy, membrane exfoliation and necrosis. The lesions frequency and intensity were directly correlated to exposure level, the most affected being  $E_3$  group and generation, more pronounced in  $F_1$  generation.

**Keywords:** chromium VI, histoarchitecture, male, rat, toxicity

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**Jelena Rankov, Alexandra Trif, Simona Steliac (marr. Munteanu)**  
Testosterone and LH Seric Level Dynamics in Male Rats after Potassium Dichromate Intake (Two Generation Study)

230

**Abstract**

The aim of this study was the evaluation of potassium dichromate impact on biochemical biomarkers for testicular function (serum testosterone and LH level) (two generations experiment). Males and females from  $F_0$  generation were exposed to potassium dichromate three months before mating.  $F_1$  generation was represented by male pups, resulted from  $F_0$  generation, exposed to potassium dichromate *in utero*, in suckling period (via milk and water) and until sexual maturity. All the animals were divided in four groups: three experimental and one control, exposed to Cr VI trough drinking water, as follows  $E_1$ : 25 ppm (LOAEL);  $E_2$ : 50 ppm;  $E_3$ : 75 ppm; control group received tap water without chromium content. The study was performed in compliance with national and international law regarding animal welfare and ethics in animal experiments. In male rats, from  $F_0$  and  $F_1$  generation, exposure to Cr VI determined: significant decrease of testosterone and significant increase of LH seric level in all experimental groups comparative to control one, indirectly, respectively, directly correlated to exposure level. Comparative to  $F_0$  generation, in  $F_1$  generation seric testosterone level was lower, significantly only in  $E_1$  and  $E_3$  groups, and LH seric level was significantly higher.

**Keywords:** chromium VI, male, rat, hormone, sex

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**Stelian Sertu, Maria Paraschivescu, Maria Voiculescu, Marinela Enculescu**

Considerations on the Present and Future of Buffalo in Terms of Sustainability

234

**Abstract**

This paper is a brief analysis on the evolution of the buffalo herds nationally and internationally. It is noted that depending on the size of herds in each country may speak of countries with active population, the countries of Italy in increasing Asian buffaloes for milk production or animal labor and Brazil as countries with vulnerable populations, the number of animals decreasing, as situation in Romania. Among the key factors that have decreased the buffalo herd of buffaloes are low fertility and low energy conversion of feed energy product compared to steers. In contrast to Romania is situated countries as Brazil and Italy recorded a large increase efectvelor buffalo .. If primary production in Brazil is produced in Italy tractive force main target is the production of milk, which is offering very little in Europe. For future increase buffalo in Romania is of great importance good milk price and the possibility of using coarse fodder. Growth strategy in Romania is transforming buffalo population of vulnerable indigenous active focusing on increasing its fertility.

**Keywords:** buffalo, working population, population at risk

**Alexandru Șonea, Liviu Vintila, Ioana Hașegan**

Diagnosis of the Dogs Prostatic Diseases

238

**Abstract**

Abdominal ultrasound provides information about shape, size and position. Lumbar vertebrae radiography for revealing possible bone metastases. Urethrograme contrast revealing cysts. Ultrasound can provide information about prostate ecogenity parenchyma lesions and can identify any prostate. To obtain cellular material for cytological and microbiological examination is performed by massaging the prostate and urethral catheterization..

**Keywords:** dogs, diagnosis, diseases, prostate .

**Alexandra Trif, Snejana Petrovici, Violeta Igna, Simona Steliac (mar. Munteanu), Milca Petrovici**

Potassium Dichromate (Cr VI) Impact on Fundamental Biomarkers of Reproductive Functionality in Female Rats (Six Months Exposure)

243

**Abstract**

The study carried out on 28 white Wistar adult female rats, divided in four groups: one control and three experimental, exposed in drinking water for six months to 25 ppm Cr VI – LOAEL (E<sub>1</sub>), 50 ppm Cr VI - 2XLOAEL (E<sub>2</sub>), 75 ppm CR VI - 3XLOAEL (E<sub>3</sub>), pointed out: significant (p<0.01) increase of sexual cycle duration comparative to control group and over the physiological limits, in direct correlation to exposure level; modification of sexual stages regularity: significant decrease of sexual cycles percentage with proestrus, estrus and diestrus in physiological limits as duration comparative to control group and inversely correlated to exposure level; appearance of sexual cycles with absent proestrus and estrus directly correlated to exposure level and of prolonged diestrus, directly, significantly (p<0.01) correlated to exposure level.

**Keywords:** female, hexavalent chromium, rat, sexual cycle

**Alexandra Trif, Snejana Petrovici, Eugenia Dumitrescu, Florin Muselin, Milca Petrovici**

Potassium Dichromate Impact on some Biomarkers of Physiological Development (Vaginal Opening and Weight at Sexual Maturity) in Female Rats Related to Exposure Moment

247

**Abstract**

The study was carried out on white Wistar female rats exposed to potassium dichromate (Cr VI) in different periods: *in utero* (28 female rats, derived from 20 exposed pregnant females, divided in four groups, one control - C and three experimental – E), in suckling and prepubertal period (in each stage, 28 offspring were divided in four groups: one C and three E).

The levels of exposure were: E<sub>1</sub> – 25 - LOAEL, E<sub>2</sub> - 50 - 2XLOAEL, E<sub>3</sub> - 75 -3XLOAEL ppm Cr VI in drinking water or through milk in suckling period.

Exposure to Cr VI determined significant delay of vaginal opening (onset of puberty) in direct correlation with the exposure level and significant decrease of body weight in the moment of vaginal opening under the optimum weight and inversely correlated to exposure level.

The most critical period of exposure for both biomarkers was *in utero*.

**Keywords:** female, hexavalent chromium, rat, vaginal opening

<b>Ramona Untaru, Robert Matthis, Nicolae Păcală</b> Researches Regarding the Estrus Induction to Wean Sows, During the Summer Season, Using the Hormonal Products Maprelin XP10 and P.G. 600	<b>251</b>
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**Abstract**

The researches were made with the goal to induce estrus to the wean sows, during the summer season. To the pluriparous sows we administrate 2 ml Maprelin XP 10 at 24 hours after weaning to the experimental group. Control group didn't receive any hormonal product. Primiparous sows were split in two groups: to one group we administrate 0.5 ml Maprelin XP 10 at 24 hours after weaning; to the other group we administrate 5 ml P.G. 600 in the weaning day. Weaning to estrus interval was  $5.33 \pm 0.21$  days for 2 ml Maprelin XP group,  $5.16 \pm 0.24$  days for control group,  $6.32 \pm 0.39$  days for 0.5 ml Maprelin XP and  $5.18 \pm 0.35$  days for P.G. 600 group. Proportion in estrus after weaning was 98.01% for 2 ml Maprelin XP group, 96.28% for control group, 89.56% for 0.5 ml Maprelin XP and 91.22% for P.G. 600 group. Fecundity at 28 days after the A.I. was 91.71% for 2 ml Maprelin XP group, 92.26% for control group, 83.41% for 0.5 ml Maprelin XP and 86.61% for P.G. 600 group. Farrowing rate was 86.00% for 2 ml Maprelin XP group, 85.11% for control group, 76.68% for 0.5 ml Maprelin XP and 78.66% for P.G. 600 group.

**Keywords:** estrus, Maprelin XP10, P.G. 600, sows

<b>Maria Voiculescu, Marinela Enculescu, Maria Paraschivescu, Stelian Sertu</b> Frequency Weaning – Fertilization Interval in Large White Sows	<b>255</b>
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**Abstract**

The time from weaning to fertilization is a non productive interval in sows fertility. The present paper has studied the number of weaned piglets and farrowing rang as factors of influence in sows fertility, based on 1230 deliveries in Large White sows. The purpose of the research is to find end recommend measures for reducing this non productive interval. The analysis of this study showed the following results: 55.04% in first farrowing sows and 80.65% in the older ones were fertilized within 12 days after weaning farrows. The average time of the interval from weaning piglets to fertilization was 9 days in older sows and 16 days in gilts.

**Keywords:** frequency, sows, weaning-fertilization interval.

<b>Marius Maftei, Popa Razvan, Popa Dana, Nistor Lucica, Nicolae Carmen, Pogurschi Elena, Vlad Iulian, Suler Andra</b> Study about chest width average performances in Romanian Hucul horse breed – Goral bloodline	<b>528</b>
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**Abstract**

Study of average performances in a population have a huge importance because, regarding a population, the average of phenotypic value is equal with average of genotypic value. So, the studies of the average value of characters offer us an idea about the population genetic level.

The biological material is represented by 87 hucul horse from Goral bloodline divided in 5 stallion families analyzed at 18, 30 and 42 months old, owned by Lucina hucul stood farm.

The average performances for chest width are presented in paper. We can observe a good growth from one age to another and a small differences between sexes.

The average performances of the character are between characteristic limits of the breed.

**Keywords:** Chest, bloodline, horse, hucul, width

<b>Marius Maftei, Popa Razvan, Popa Dana, Nistor Lucica, Pogurschi Elena, Nicolae Carmen, Vlad Iulian, Suler Andra</b> Study about chest width average performances in Romanian Hucul horse breed – Hroby bloodline	<b>531</b>
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**Abstract**

Study of average performances in a population have a huge importance because, regarding to a population, the average of phenotypic value is equal with average of genotypic value. So, the studies of the average value of characters offer us an idea about the population genetic level.

The biological material is represented by 177 hucul horse, 84 males and 93 females, from Hroby bloodline, divided in 6 stallion families analyzed at 18, 30 and 42 months old, owned by Lucina hucul stood farm .

The average performances for chest width are presented in the paper. We can observe a small grade of variability with decreasing tendencies from one age to another at both sexes.

The average performances of the character are between characteristic limits of the breed.

**Keywords:** Chest, bloodline, Hroby, horse, hucul, width.

## BIOTECHNOLOGIES

**Ada Cean, Nicolae Păcală, Alexandra Boleman**

Fast Cryopreservation of the Mammalian Embryos in Different Developmental Stages by 0.25 mL Straws Vitrification with One Equilibration Step

261

### Abstract

The aim of our study was to test the cryoprotective proprieties of 7 vitrification media, designed in our laboratory, using the 0.25 mL straws vitrification method, with one equilibration step. As biological material we used mouse females, age 2 months superovulated with 5UI PMSG (Pregnant Mare Serum Gonadotropine) and 5 UI hCG (human Corionic Gonadotropine). For freezing we used embryos in three developmental stages: 2 cells, morula and blastocyst. After recovery, the embryos were placed in equilibration media, after 5 minutes, the embryos were introduced in straws, in vitrification media and plugged directly into liquid nitrogen. After vitrification the straws were thawed in water bath at 37°C, the embryos were rehydrated for 5 minutes and then *in vitro* cultured. The percent of embryos that rehydrated, resumed development and hatched were registered. The best results were obtained with embryos in morula stage that had a hatching rate of 20.83% when MV1 was used for vitrification. None of the embryos in 2 cells and blastocyst stage hatched after thawing and *in vitro* culture, regardless of the vitrification media used. From the vitrification media tested, the worst results were obtained with MV4 and MV6, none of the embryos reached hatching stage, regardless of the development stage. The vitrification method in 0.25 mL straws, with one equilibration step can be used for cryopreservation of the morula stage embryos, but is ineffective for vitrification of the 2 cells and blastocyst stage embryo. Media VM4 and VM6 are not suited for vitrification in 0.25 mL straws, with one equilibration step, of mouse embryos.

**Keywords:** mouse embryos, vitrification media, hatching rate, cryoprotectors

**Levente Czeglédi, Gabriella Gulyas, Andrea Radacsi, Szilvia Kusza, Janka Bekefi, Bela Beri, Andras Jav**

Two-Dimensional Polyacrylamide Gel Electrophoresis for Protein Separation of Animal Tissues

267

### Abstract

Proteomics in animal science as well as in other biological sciences is a significant tool in the post-genomic era. In proteomic studies the presence and relative abundance of expressed proteins of a cell, tissue or biological fluid is studied. Recently, the whole genome of more and more domestic animal species is known, but genes and the transcribed mRNA have no direct effect on biological systems as they are regulated by proteins, which explain the importance of proteomics. The most common tool in proteomic approach is the two-dimensional polyacrylamide gel electrophoresis (2D PAGE), when proteins are separated by their isoelectric point followed by their mass separation as a second dimension. In this study authors used different sample preparation and protein staining methods on meat, liver and blood plasma and carried out 2D PAGE experiments. The most appropriate sample preparation methods are described in this paper. We concluded that depletion of major proteins in plasma is required but not necessary for meat and liver samples.

**Keywords:** animal tissue, protein expression, proteome, 2D PAGE

**Monica Dragomirescu, Teodor Vintila, Gabriela Preda, Ana-Maria Luca, Veronica Croitoru**

Microbial Cellulases Immobilized in/on Porous Supports

271

### Abstract

Biodegradation of cellulose by enzymatic hydrolysis using cellulases has an important value in biotechnology and the immobilization of enzyme on inorganic materials is very useful in practical applications. Enzymatic preparations with cellulase and cellobiase activities from *Trichoderma viride* were liophylized from the culture medium and immobilized in/on porous matrices. The methods used for immobilization were physical adsorption on ceramics and entrapment in glass sol-gel matrices using as alkoxysilane precursors tetraethoxysilane (TEOS) and tetramethoxysilane (TMOS). The immobilization efficiency of the solid enzymatic preparations was about 60%. The immobilized enzymatic preparations were used for hydrolysis of carboxymethyl cellulose (CMC) and cellobiose at different temperature and pH values. The resulted immobilized enzymes had the same optimum pH of 4.0 in the case of cellobiase substrate and a shifted optimum pH towards the less acid side (pH 5.0) in the hydrolysis of CMC. The optimum temperature of entrapped enzyme against CMC was shifted to a lower temperature (40°C) in comparison with the native one (60°C).

**Keywords:** cellobiase, cellulase, entrapment, physical adsorbtion, sol-gel, *Trichoderma*

**Cornel Igna, Larisa Schuszler, Aurel Sala, Roxana Dascălu, Marius Sabău, Călin Luca**  
Technological Stress Prevention to Nutria (*Myocastor coypus*)

275

**Abstract**

Animal grouping, groups restructure, changing the docks and various technological operations causes disorders to the nutria manifested by aggressive behaviour. Tranquilizers prevent the stress and lower the catecholamine's levels. In a number of 300 individuals grouped into four groups (one control group and three experimental groups) was surveyed the effect of Promazine (20 mg/kg, experimental group I), Diazepam (15 mg/kg, experimental group II) and Nitrazepam (15 mg/kg, experimental group III) administration for preventing stress and aggression resulted from various technological operations. Grouping animals and groups restructure generates behaviour disorders manifested by acute aggression, maximum within 4-6 hours and maintained for 24-36 hours. In the three experimental groups the intensity and frequency of aggressive acts decreased near zero, with greater efficacy in experimental group II and III. Duration of cataleptic effect was 3-7 hours (experimental group I), and 8-12 hours in the other two experimental groups, covering the period in which aggression is greatest. Waking up is done in 2-3 hours, moment at which the behaviour is almost that of an old group. The negative consequences of groups restructure, transport and other technological disturbing measures can be prevented by animal's tranquilization, and the three substances investigated had an efficient preventive effect.

**Keywords:** aggression, behaviour, nutria, stress, tranquilizers.

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**Daniela Elena Ilie, Aurelia Sălăjeanu, Anuța Magdin, Radu Neamț, Ioan Vintilă**  
Early Determination of Animals with Favorable Genes in Milk Production for Profitable Private Farms

279

**Abstract**

The primary goal of dairy industry has been to identify an efficient and economical way of increasing milk production and its constituents without increasing the size of the dairy herd. The use of milk protein polymorphisms as detectable molecular markers has been studied intensively because of their effect on the yield and processing properties of milk and its products. Thus, molecular markers are promising alternative to the current methods of trait selection once these genes are proven to be associated with traits of interest in animals. Kappa-casein (CSN3) and beta-lactoglobulin (BLG) are two of the most important proteins in the milk of mammals that play a crucial role in the milk quality and coagulation, an essential process for cheese and butter. The A and B variant of k-casein and  $\beta$ -lactoglobulin were distinguished by Polymerase Chain Reaction and Restriction Fragment Length Polymorphism (PCR-RFLP) analysis in 108 Romanian Simmental and 60 Holstein Friesian cattle.

**Keywords:** beta-lactoglobulin, kappa-casein, milk production traits, polymorphism.

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**Alexandra Ivan, Nicolae Păcală, Ada Cean, Florina Bojin, Valeriu Carabă**  
Molecular Mechanisms Controlling the Early Mouse Embryo Development

283

**Abstract**

Few are known about the molecular mechanism controlling the early embryo development. The reduce dimension of the embryos, only a few  $\mu\text{m}$ , the small quantities of proteins synthesized and the artificial environment influence makes difficult to decode the mechanisms controlling early embryonic stages of development. Although, in the last few years many genes have been showed to be active in the early embryonic stages of development, only a few have been characterized and found to be implicated in the molecular mechanism responsible of preimplantational embryos development. Ped gene (Preimplantational embryo development) is considered to be involved in regulation of embryonic cleavage division and subsequent embryo survival. This review presents, based on a rich documentation, the main mechanisms involved in early embryo development.

**Keywords:** embryo development, molecular mechanism, Ped gene

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**Ileana Miclea, Andrea Hettig, Iulian Roman, Marius Zăhan, Vasile Miclea**

Exposure to  $\alpha$ -Tocopherol, Lutein or Ascorbic Acid improve Cumulus Expansion, Viability and Maturation of Swine Oocytes

289

**Abstract**

Protection of the fatty acid and lipid components of oocytes that render them susceptible to free radical or other oxidative injury may prevent the damage currently associated with culture. The goal of this study was to establish the influence of several  $\alpha$ -tocopherol, lutein and ascorbic acid concentrations on swine oocyte maturation, viability and the function of cumulus cells in order to improve culture media. Pig oocytes were cultured for 45 hours at 37°C in 5% CO<sub>2</sub> atmosphere; in M199 containing several  $\alpha$ -tocopherol (5, 10, 20, 40, 80  $\mu$ M), lutein (2.5, 4, 5, 8, 10  $\mu$ M) or ascorbic acid (50, 150, 250, 500, 750  $\mu$ M) concentrations and cumulus expansion was assessed. Afterwards oocytes were coloured using FDA, PI and Hoechst 33258. The differences between treatments were analyzed by the analysis of variance and interpreted using the Newman-Keuls method. When cultured in  $\alpha$ -tocopherol supplemented medium the number of expanded COCs to be scored as 3 was significantly greater ( $p < 0.05$ ) for the 5 and 40  $\mu$ M concentrations. The addition of 8  $\mu$ M lutein to the maturation medium lead to a significant ( $p < 0.05$ ) increase in the number of COCs that were scored at 4. For both  $\alpha$ -tocopherol and lutein additions the numbers of oocytes stained by FDA, as well as those stained by Hoechst were greater than the control without being statistically significant. When cultured in 150 and 500  $\mu$ M ascorbic acid the percentages of COCs scored at 4 were significantly lower ( $p < 0.05$ ) than the control. Also, significantly ( $p < 0.05$ ) fewer oocytes were stained with FDA when matured in 500  $\mu$ M. Differences between the control and the several concentrations were significant ( $p < 0.05$ ) for 150 and 750  $\mu$ M and distinctly significant ( $p < 0.01$ ) for 250  $\mu$ M.

**Keywords:** ascorbic acid,  $\alpha$ -tocopherol, lutein, maturation, oocytes

**Tomáš Minarovič, Anna Trakovická, Alica Rafayová, Zuzana Lieskovská**

Animal Species Identification by PCR – RFLP of Cytochrome b

296

**Abstract**

An alternative DNA detection system is based on the polymerase chain reaction (PCR) amplification of a segment of the mitochondrial cytochrome b gene. Subsequent cleavage by a restriction enzymes gives rise to a specie-specific pattern on an agarose gel. We used five animal species (*Mustela vison*, *Mustela putorius furo*, *Sus scrofa domesticus*, *Oryctolagus cuniculus*, *Anser anser*). Length of PCR product was 359 bp and we used universal primers. Restriction fragment length polymorphism was analyzed by using the restriction endonuclease *AluI*. Results of cleavage were visualized by using electrophoresis and UV transilluminator. Every animal species has a unique combination of restriction fragments i.e. *Mustela vison* 81 bp, 109 bp and 169 bp, *Mustela putorius furo* 169 bp and 190 bp, *Sus scrofa domesticus* 115 bp and 244 bp, *Oryctolagus cuniculus* is not cleaved by *AluI* so it has whole 359 bp fragment on agarose gel, *Anser anser* 130 bp and 229 bp. The results suggest that the method of PCR - RFLP is rapid and simple method for identification of species. PCR – RFLP can reliably identify chosen species. Application of genetic methods is very useful for breeding of livestock and protection of biodiversity.

**Keywords:** animal biodiversity, cytochrome b, mitochondrial DNA, PCR – RFLP,

**Daniela Moț, Ileana Nichita, Emil Tîrziu, Teodor Moț**

The Antibacterial Effect Assay of a Few Officinal Plants

300

**Abstract**

From very old times plants were used for man or animal health, with good results in slightly, functional injuries or in incipient stages of diseases. In chronic, when already appeared organic affection, officinal plants has an adjuvant part and can contributes to a partial reversibility of symptoms or lesions. This study was been performed using aqueous solutions or essential oils from *Mentha spicata*, *Ocimum basilicum*, *Thymus vulgaris* and *Rosa sp.* with bacterial cultures on usual or special culture mediums of *Bacillus cereus*, *Escherichia coli*, *Pseudomonas aeruginosa*, *Salmonella enterica* and *Staphylococcus aureus*. In view of antibacterial assay emphasizing were been used small pieces of absorbent paper immersed in solutions or essential oils above mentioned officinal plants. These pieces of papers then were been deposited in usual and special culture mediums containing the mentioned species of bacteria and then incubated 24 hours. The obtained result emphasized by the inhibition areas development recommend the antibacterial effect of essential oils of *Rosa sp.* (25.5 mm inhibition area), *Mentha spicata* (16.5 mm), *Thymus vulgaris* (7.3 mm) and *Ocimum basilicum* (5.1 mm) in therapeutic purpose, both in intern and extern way in infections caused by *Bacillus cereus*, *Escherichia coli*, *Salmonella enterica* and *Staphylococcus aureus*, in incipient stages.

**Keywords:** antibacterial assay, bacterial culture mediums, essential oils, inhibition areas.

**Ivana Nováková, Miroslava Kačániová**

Identification of *Enterococcus* sp. in GIT of Broiler Chickens after Application of Biological Preparations

**304**

**Abstract**

The aim of the present study was a rapid detection and identification of *Enterococcus* sp. in various segments of chicken gastrointestinal tract by polymerase chain reaction (PCR) analysis. As a biological material were used broiler chickens Hybro. They were fattening by the combined probiotic preparation for elimination of pathogens and better utilization of feed. In our study, the identification of *Enterococcus* species was based on the superoxid dismutase gene (*sodA*). *Enterococcus faecium*, *Enterococcus faecalis* were determined in all samples (100% occurrence). Occurrence of *Enterococcus gallinarum* was 87.5% and *Enterococcus cecorum* was 0%.

**Key words:** *Enterococcus*, chicken, detection, polymerase chain reaction

**Ivana Nováková, Miroslava Kačániová, Henrieta Arpášová, Peter Haščík, Simona Kunová, Juraj Čuboň**

Antibiotic Resistance of Enterococci and Coliform Bacteria in Dairy Products from Commercial Farms

**307**

**Abstract**

The aim of this study was to determine the prevalence and antibiotic resistance of enterococci and coliform bacteria isolated from sheep and cows cheese from commercial farms. Susceptibilities of isolated enterococci and coliform bacteria were tested using the disk diffusion method. The bacteria were tested on antibiotics enrofloxacin, sulphonamides, tetracycline and streptomycin. All isolates of *Enterococcus* strains were resistant of all used antibiotics. The similar results were detected of coliform bacteria on tested antibiotics.

**Keywords:** antibiotic resistance, coliform bacteria, *Enterococcus* sp., sheep and cows cheese

**Letitia Oprean, Cornelia Nicoara, Ecaterina Lengyel**

Stimulation of Egg Production in Japanese Quails by Enriching Feed with Residual Yeast

**310**

**Abstract**

Quail eggs are more and more approved for consumers because they bring many benefits to the human body. Therefore, quails breeding for eggs production have become a very profitable business. Residual yeast may be a nutritional supplement, especially rich in vitamins and proteins. This article studies the influence of residual beer yeast on egg laying in Japanese quails. In order to be integrated into the diet of quails the yeast has undergone a process of autolysis; its influence has been examined on separate groups. The results were reported as a percentage compared with the control group, where the feed does not contain this supplement. Due to its content rich in vitamins and proteins, the residual beer yeast used in feeding the quails bred for eggs stimulates egg laying.

**Keywords:** autolysis, eggs, food, quail, yeast.

**Cornelia Nicoară**

Influence of the Addition of Riboflavin in Culture Medium on Delivering Biomass Using Yeast Strains of *Saccharomyces Carlsbergensis*

**313**

**Abstract**

Yeasts requirements for growth factors should be considered both in terms of ability to summarize the simple average and the dependence on external supplies. Vitamins are components of coenzymes or enzymes prosthetic groups and thus they are growth factors for yeast. The study concerns about the influence of the addition of riboflavin in culture medium in different quantities, the accumulation of yeast biomass under the action of yeast strains of beer. The process of cultivation has been made for 24 hours at a temperature of 22°C. The addition of riboflavin in culture medium of yeast biomass increased in each strain of yeast compared with the witness - the sample without added riboflavin. Biomass obtained by follow this procedure could be used to create new food products with high ration nutritional value.

**Keywords:** biomass, environment, riboflavin, *Saccharomyces carlsbergensis*.

Nicolae Păcală, Nicolae Corin, Ioan Bencsik, Dorel Dronca, Ada Cean, Alexandra Boleman, Valeriu Carabă, Ștefan Papp

Stimulation of the Reproductive Functions at Acyclic Cows by Ovsynch and PRID/ eCG

317

**Abstract**

The aim of our work was to compare the efficiency of two programs for induction and synchronization of estrus and ovulations in acyclic cows (Ovsynch and gestagene program (PRID) + eCG). At the first lot, of 63 cows, 2 mL Ovorelin (100 mcg GnRH), were administrated (0 day), in the 7<sup>th</sup> day 0.500 mg Cloprostenol were administered, in the 9<sup>th</sup> day 100 mcg GnRH were administered and after 16 hours artificial insemination was performed. At the 41 cows in the second lot, PRID (1.55g Progesteron) were inserted (0 day), in the 7<sup>th</sup> day 0.500 mcg Cloprostenol were administrated, in the 8<sup>th</sup> day PRID were redraw and 500 UI eCG were administrated, after 56 hours artificial insemination was performed and 100 mcg GnRH were administrated. After 60 days from the artificial insemination 20 cows (31.7%) of from the first lot and 16 cows (39%) from the second lot, were diagnosed as pregnant, the differences are significant ( $p < 0.05$ ). Both protocols used for stimulation of reproductive function in acyclic cows is inducing the grouping of the oestrous and ovulations, which allows the fixed term insemination. The oestrus inducing programme with progestagene (PRID) and eCG induction seems more efficient in acyclic cows.

**Keywords:** acyclic cows, Ovsynch, PRID, eCG

Iulian Roman, Vasile Miclea, Zăhan Marius, Paul Tăpăloagă, Hettig Andrea, Ileana Miclea, Rusu Alexandru, Ghiuru Florin

Influence of in Vitro Maturation System of Swine Oocytes on Embryo Obtaining thru ICSI Technique

321

**Abstract**

An experiment was conducted to evaluate the effects of Folligon and Chorulon (hormons) supplementation during IVM on porcine oocyte maturation and subsequent fertilization with intracytoplasmic sperm injection, cleavage and embryo development. Cumulus-oocyte complexes were cultured 44 hours with 10 IU Folligon and 10 IU Chorulon (0-44 h), or 22 hours with the same amount of hormones (0-22 h) followed by a 22 hours culture period without hormones. Nuclear maturation was assessed after IVM culture by examining the morphology and the presence of the first polar body using the micromanipulation system. The oocytes were injected with a single sperm cell and cultured in NCSU-23 medium. The percentage of cleaved embryos were determined, also the embryo development.

The presence of Folligon and Chorulon during the first 22 hours of IVM gave better results in the terms of polar body extrusion (63%) compared to the group exposed for 44 hours to the hormones (37%). After 6 days of culture, the number of advanced embryo development stage (more than 16 cells per embryo) was also significantly different in the 0-22 h group.

**Keywords:** embryo, ICSI, maturation, oocyte, porcine

Dávid Štofán, Kamil Močár, Daniela Liptaiová, Mária Angelovičová, Miroslava Kačániová

The Use of the Addition of Probiotics on the Production Growth and Health of Broilers

326

**Abstract**

Probiotic ingestion can be recommended as a preventative approach to maintaining the balance of the intestinal microflora and thereby enhance 'well-being'. The aim of this study was to determine the effect of probiotics on the health and growth of broiler chickens. Feed stuff enriched with 0.10 % probiotics was used for this purpose. The experiment was carried out on two groups – control (without addition of probiotics) and experimental group (with addition of 0.10 % of probiotics). Samples of caecal chime were collected and the number of *Enterococcus* sp. from 5.79 to 5.85 log CFU.g<sup>-1</sup>, the number of *Lactobacillus* sp. from 5.48 to 6.88 log CFU.g<sup>-1</sup>, and the number of *Enterobacteriaceae* sp. from 6.92 to 7.06 log CFU.g<sup>-1</sup> was determined. After feeding of feed mixtures with probiotics addition a decrease of *Lactobacillus* sp. and an increase of *Enterococcus* sp. counts was detected. Also the increase of *Enterobacteriaceae* sp. counts in the experimental group comparing with the control group was detected.

**Keywords:** Broiler, caecum properties, intestinal microflora, probiotics,

**Emanuel Vamanu, Adrian Vamanu, Ovidiu Popa, Narcisa Băbeanu**

The Antioxidant Effect of a Functional Product Based on Probiotic Biomass, Pollen and Honey

331

**Abstract**

The effect of prebiotics on the multiplication of some probiotic strains used in a pollen and honey medium was investigated in laboratory conditions, aiming to obtain a bee bread-like product. The experiment were carried out using six different bacterial species belonging to the genera *Lactobacillus* (four strains) and *Bifidobacterium* (two strains). The prebiotics inulin, lactulose and raffinose were tested and compared to honey. A productivity similar to that of honey resulted for inulin and lactulose. The medium based on pollen and honey was supplemented with the two prebiotics, the optimal values being obtained by using ground pollen and inulin, in the case of viability, as well as in the case of total antioxidant activity. After seven days of fermentation, the viability was over 300 CFU $\times 10^6$ /g and the total antioxidant activity was over 45%.

**Keywords:** probiotic, inulin, lactulose, antioxidant

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**Teodor Vintila, Veronica Croitoriu, Monica Dragomirescu**

The Effects of Bioprocess Parameters on Cellulase Production with *Trichoderma viride* CMIT35

337

**Abstract**

Fungal cellulases are well-studied, and have various applications in industry, health or agriculture. Species of *Trichoderma* can produce substantial amounts of endoglucanase, exoglucanase (saccharifying cellulases), and some strains are able to produce important quantities of  $\beta$ -glucosidase. A number of fungi were isolated abroad and screened for cellulolytic potential. In this study, the kinetics of cellulase production from an indigenous strain of *T. viride* CMIT35 is reported. Product formation parameters of different types of cellulases indicate that the studied strain of *T. viride* is capable of producing important levels of cellulases when grown on Mandels medium with wheat bran as carbon source. Furthermore, it was observed that production of endoglucanase reaches its maximum during exponential phase of growth, while exoglucanase during the stationary phase. Enzyme production by solid-state fermentation was also investigated and found to be more efficient than liquid state fermentation. High production of cellulase was noted at the following parameters for liquid cultures: 4% wheat bran, 5% inoculum, 180 r.p.m. agitation, pH 5; and 60% humidity in the case of solid state fermentation.

**Keywords:** cellulase, culture parameters, *Trichoderma viride*

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**Teodor Vintila, Daniela Vintila, Dragos Nica, Monica Dragomirescu**

New Inoculants Containing Lactic Bacteria Applied in Forage Ensiling

341

**Abstract**

In a first study, the capacity of lactic bacteria to accumulate biomass in different culture media and temperatures was tested and the biosynthesis parameters were established. In the second study, the strains producing the highest quantity of biomass and determining the most rapid pH drop in culture medium were conditioned in solid supports. The obtained solid products containing lactic bacteria were used to inoculate different types of forages. Ensilage was carried out in laboratory silos made from O<sub>2</sub>-impermeable plastic flasks, vacuumed using a vacuum pump. The experiment was 2 x 2 factorial with two types of forage (alfalfa and sorghum), each of them inoculated and not inoculated with lactic bacteria. The evolution of lactic bacteria, pH value, and the concentration in volatile acids was verified. In the third experiment, lactic bacteria were used to inoculate silages in farm conditions. The obtained results recommend the tested strain for the improvement of preserving conditions and nutritive value in ensiled forages.

**Keywords:** inoculants, lactic bacteria, silage.

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FUNDAMENTAL SCIENCES IN ANIMAL HUSBANDRY

BIOCHEMISTRY, BIOPHYSICS, MATHEMATICS, INFORMATICS

Adrian Băneş, Manuela-Dora Orboi, Alin Monea, Mirela Monea

Study regarding the knowledge on IT&C

346

**Abstract**

The present paper is presenting some statistics relating to knowledge in the field of information technology and communication. Data presented were taken following the processing of 63 questionnaires. Questionnaires have tried to include a higher sphere on IT & C knowledge of the persons interviewed, from what is known as a simple user of programs considered usual, passing over aspects of knowledge minimum hardware and ending with the e-commerce. The study revealed a basic knowledge that allow writing, technical, calculations, surf the Internet and transmitting/receiving e-mails. In other areas (accounting, databases, CAD etc.), only those who work day by day in that domain, have knowledge about the software. The situation is the same at hardware chapter, where the vast majority of persons interviewed are not interested in this type of knowledge, even though in most cases would save time and money. The situation is worse in rural areas, depriving here very often even the knowledge base. However, compared to previous years, there is a knowledge increase and a bigger interest for IT at rural level.

**Keywords:** IT&C, statistics.

Adrian Băneş

Data about the Knowledge and Information Society in Romania

350

**Abstract**

The concept of knowledge society is used worldwide today and is an abbreviation of the term knowledge-based society. The knowledge society is more than the Information Society, encompassing a fact on it. In the present paper are presented some data regarding the status of Internet connections in Romania, and the disparities with other countries from EU. The conclusions are that in the last year, information society in Romania has experienced a steady growth, managed to overcome some EU countries, although in most cases we are below average.

**Keywords:** information society, IT&C, knowledge

Otilia Bizerea-Spiridon, Gabriela Preda, Beatrice Vlad-Oros, Maria Vintilă

Studies Regarding the Membranous Support of a Glucose Biosensor Based on Gox

354

**Abstract**

To obtain glucose biosensors based on glucose oxidase (GOx), the enzyme can be immobilized on the sensitive surface of a glass electrode by different techniques: deposition on membranous support (cellophane or other macromolecular material) or entrapment in a matrix. Deposition on membranous support also involves cross-linking with glutaraldehyde or entrapment in silica gel, following the sol-gel procedure.

The aim of this preliminary work was to study the influence of cellophane replacement with a PVA based membranous support on the glucose biosensor performance. The data obtained at pH measurements of buffer solutions with cellophane and PVA membranous supports respectively, show that the PVA based membrane assures superior performances of the biosensor for low glucose concentrations determination (about  $10^{-4}$  M). These results allow the transition to an improved immobilization technique, namely the enzyme entrapment in membranous material.

**Keywords:** glucose oxidase, glucose biosensor, potentiometric, glass electrode, PVA membrane, glutaraldehyde.

Ileana Brudiu

Confidence Levels in Statistical Analyses. Analysis of Variances. Case Study

358

**Abstract**

Applying a statistical test to check statistical assumptions offers a positive or negative response regarding the veracity of the issued hypothesis. In case of variance analysis it's necessary to apply a post hoc test to determine differences within the group. Statistical estimation using confidence levels provides more information than a statistical test, it shows the high degree of uncertainty resulting from small samples and builds conclusions in terms of "marginally significant" or "almost significant (p being close to 0,05)". The case study shows how the statistical estimation completes the application form the analysis of variance test and Tukey test.

**Keywords:** Analysis of variance, Tukey test, statistical estimation, confidence intervals, graphic representation

**Cosmin Nitu, Radu Burlacu, Livia David**

Principles of Mathematical Modeling Applied to Animal Science

**362**

**Abstract**

One of the characteristics by which we can estimate the stage of development of a certain discipline is its degree of mathematization. Thus, Galileo Galilei said that „The great book of nature can be read only by the one who knows the language in which this book was written and this language is the mathematics”. We understand by this the extent of interdisciplinary use of the mathematical ideas and techniques. It is obvious, from the viewpoint of the respective discipline, that a high degree of mathematization does not show a high intrinsic value. Situations exist in which important mathematical developments did not lead to progress in a certain discipline, such as the endowment with sophisticated equipment's did not result implicitly in notable results. Truly important is the effective contribution and not the sophistication or elegance of the used mathematical instrument. A relatively simple mathematical idea can have an unexpected effect if used with skill. On the other hand, very elegant mathematical considerations may be of no use for the actual problems of that particular discipline.

**Keywords:** mathematical modelling, animal science, animal performance.

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**Rodica Căpriță, Adrian Căpriță, Calin Julean**

Non-Starch Polysaccharides Biochemistry

**368**

**Abstract**

Polysaccharides are macromolecules of monosaccharides linked by glycosidic bonds. Non-starch polysaccharides (NSP) are principally non- $\alpha$ -glucan polysaccharides of the plant cell wall. They are a heterogeneous group of polysaccharides with varying degrees of water solubility, size, and structure. The water insoluble fiber fraction include cellulose, galactomannans, xylans, xyloglucans, and lignin, while the water-soluble fibers are the pectins, arabinogalactans, arabinoxylans, and  $\beta$ -(1,3)(1,4)-D-glucans ( $\beta$ -glucans). Knowledge of the chemical structure of NSP has permitted the development of enzyme technology to overcome their antinutritional effects. The physiological effects of NSP on the digestion and absorption of nutrients in human and monogastric animals have been attributed to their physicochemical properties: hydration properties, viscosity, cation exchange capacity and organic compound absorptive properties. This paper reviews and presents information on NSPs chemistry, physicochemical properties and physiological effects on the nutrient entrapment.

**Keywords:** non-starch polysaccharides, glucans, arabinoxylans, viscosity

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**Rodica Căpriță, Adrian Căpriță, Iuliana Crețescu**

Protein Solubility as Quality Index for Processed Soybean

**375**

**Abstract**

Protein quality of soybean meal (SBM) is linked to both the reduction of antinutritional factors (ANFs), and the optimization of protein digestibility. Both insufficient- and over-heating result in poor quality SBM. Inadequate heating fails to completely destroy the ANFs, which may have a detrimental impact on animal performance, while excessive heating reduces the availability of lysine via the Maillard reaction and possibly, to a lesser extent, of other amino acids. The objective of our study was to compare some biochemical laboratory procedures for assessing quality of SBM: urease index (UI), protein dispersibility index (PDI), KOH protein solubility (PS), and nitrogen solubility index (NSI). The experimental data reveal that UI is not useful to determine excessive heat treatment since additional heating has no effect on the urease index. KOH protein solubility remains high, during initial heat treatment. In marked contrast, the PDI and NSI decreased incrementally from 78% to 20% and from 97% to 60%, respectively, when heating 0 to 30 minutes. Combining the PDI test with the urease test could be useful to monitor soybean quality. SBM containing low UI (0.3 or below) and high PDI (40 to 45%) may indicate that the sample is definitely high quality because it has been adequately heat processed, but not overprocessed.

**Keywords:** soybean meal, urease index, protein dispersibility index, protein solubility, nitrogen solubility index

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**Rodica Chereji, Rodica Căpriță, Iuliana Crețescu**

The Influence of Supplement Xylanase on the Rheology of Dough Concerning its Consistographical Parameters

379

**Abstract**

In this study we determined the influence of xylanase supplementation on dough rheology concerning its consistograph parameters: maximum pressure (Pr max), (mb) and water absorption (Wa), %. The consistograph analyses were conducted at constant hydration and consistency of 500UF. Determinations were made on 4 types of flour and optimal enzyme dosages were determined. Then we added the optimal enzyme dose for each type of flour as follows: F1, F2, F3, F4: P1-8100U.FXU/100kg flour, P2-16200U.FXU/100kg flour, P3-24300U.FXU/100kg flour. Fungal xylanase used in these concentrations led to the improvement of bread quality properties: finer texture of the crumb, extending freshness of bread, improving the colour and flavour, improving the slicing ability.

**Keywords:** bread, xylanase, quality parameter.

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**Iuliana Crețescu, Rodica Căpriță, Dan Drinceanu, Constantin Mateescu, Rodica Chereji**

Yea-Sacc<sup>1026</sup> Influence on Some Biophysical and Digestive Parameters of the Ruminant Fluid

383

**Abstract**

In ruminants, digestive use of the fodder depends mostly on the ruminal fermentative processes. Cereals are the main energy source of the diet of animals subjected to fattening, and only a small part of their rations starch is digested by the enzymes produced by these ruminants. Optimize digestion of such diets requires the knowledge of all processes involved. Ruminal function manipulation may be done using microorganism cultures. In this study we used a *Saccharomyces cerevisiae* yeast culture, Yea Sacc<sup>1026</sup> strain from Alltech Company in order to study its effect on some biophysical parameters of the ruminal fluid of a ram fed with different proportions of barley. The highest increase of the pH was noted when adding yeast in a ration with 40% barley proportion. The experimental data reveal that yeast has tensioactive properties. We observed a decrease in the surface tension when adding Yea-Sacc<sup>1026</sup>, from  $60.94 \cdot 10^{-3}$  N/m (M) to  $53.48 \cdot 10^{-3}$  N/m (R<sub>2</sub>).

**Keywords:** sheep, yeast, rumen.

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**Iuliana Crețescu, Liliana Carpinisan, Dan Drinceanu, Rodica Căpriță, Gabi Dumitrescu, Liliana Petculescu, Mihaela Petcu, Mihaela Badilita**

The Influence of Some Nutritional Factors and of Some Biophysical Parameters on the Ruminal Fluid Infusorians

386

**Abstract**

The microflora and the microfauna that inhabit the stomach compartments, develop under conditions of physiological constants closely related, under the control of regulating mechanisms such as: the thermoregulator system, anaerobiosis condition, nutrient substrate, ionic composition, (pH) buffer system. Any change in these constants leads to a decrease or increase of microorganisms. The experiment had in view to study the influence of Yea Sacc<sup>1026</sup> yeast on ruminal infusorians, on some biophysical parameters and the correlations between them. In all experimental variants, the protozoa density was higher than in the control sample and the amount of small protozoa, like Entodinium, with over 95% of the total protozoa. It was ascertained that for all experimental variations there are very small fluctuations between viability values and depending on the time of harvest, the medium viability values was close. When yeast was present in the feed ration, the density of protozoa has a moderate influence on the pH of ruminal fluid (R = 0.7056).

**Keywords:** rumen, sheep, protozoa, yeast

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**Liviu Al. Mărghitaș, Otilia Bobiș, Melinda Tofalvi**

The Effect of Plant Supplements on the Development of Artificially Weaken Bee Families

402

**Abstract**

In this study, infusions from nettle, thyme and *Echinacea*, fresh juice of onion and garlic, and Protofil (alcoholic extract of different plants enriched with vitamins and mineral elements), were used in supplementary feeding of artificially weaken bee families. Correlation between total phenolic content, total flavonoid content and antioxidant activity of the supplements used in honeybee feeding and uncapped, capped and total brood surface of experimental groups were established. The highest content of biologically active compounds exhibit nettle infusion, which present the most effective growth in field experiments.

**Keywords:** bee families, biological evolution, plant supplements, feeding.

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**Cristina Manuela Mihai, Liviu Al. Mărghitaș, Otilia Bobiș, Dan Dezmirean, Mircea Tămaș**

Estimation of Flavonoid Content in Propolis by Two Different Colorimetric Methods

407

**Abstract**

Propolis is a natural product with very important properties and its chemical composition was investigated by many researchers. In the present study the polyphenols and flavonoid content was investigated for 10 Romanian propolis samples. Extracts were obtained by using ethanol of different concentrations. The investigation was done spectrophotometrically. Flavonoids content was determined using chrysin as internal standard and zirconium oxychloride as reagent. The second method uses aluminium chloride and 2,4-dinitrophenylhydrazine and as internal standards galangin and pinocembrin.

**Keywords:** flavonoids, propolis, spectrophotometric methods.

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**Ileana Nichita, Adrian Marcu**

The Fungal Microbiota Isolated from Cats and Dogs

411

**Abstract**

The possible involvement of saprobe fungi in dermatomycoses, as well as the incidence of dermatophytes in dogs and cats with skin lesions was studied. During a period of one year 54 dogs and 47 cats were included in this study. Of the 101 samples, 34 resulted in positive cultures for dermatophytes. Dermatophyte fungi pure cultures were obtained from 12 samples. A simultaneous growth of dermatophytes plus saprobe fungi was observed in 22 of the samples. Of the remaining 67 samples, no fungal growth was observed in 15 samples and others samples only the saprobe fungi was presented. *M. canis* as the main dermatophyte detected in this study. The following genera of saprobe fungi were also isolated: *Alternaria sp* (0.99%), *Rhizopus sp* (2.97%), *Trichoderma*.

**Keywords:** dermatophytes, saprobe fungi, cat, dog

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**Ileana Nichita, Adela Marcu, Monica Seres, Emil Tirziu, Daniela Mot, Radu Valentin Gros**

Evaluation of Fungi Presence in the Air of Two Broiler Houses with Different Ventilation Systems

415

**Abstract**

The aim of this study was to evaluate the presence of fungi in two distinct types of broiler houses. The research compared two types of air ventilation: conventional and positive tunnel ventilation. Two different techniques were applied simultaneously for the air borne microorganisms (mesophilic bacteria and fungi) trapping: air aspiration using the air collector SAS 100TM and sedimentation method. High concentrations of fungal spores were detected in the conventional ventilated poultry house. Species of *Aspergillus fumigatus*, *Aspergillus flavus*, *Penicillium crysogenum*, *Cladosporium cladosporioides*, *Scopulariopsis*, prevailed in both poultry houses. The majority of the identified fungal species are characterized as allergenic and an exposure to their spores may provoke adverse health effects.

**Keywords:** fungi, air, broiler houses.

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**Lucica Nistor, Camelia Hodoşan, Gratiela Bahaciu, Daniela Ianiţhi, Marius Maftei, Florenţa Vilău, Ioana Duşescu**  
Quality Control of Canned Peas

419

**Abstract**

Vegetables are food of vegetable origin which has an important place in human nutrition because of their complex chemical composition. With the discovery of causes that cause alteration of food (the vital action of microorganisms), the problem of food conservation began to be substantiated in terms scientific, in that way that the present conservation means not only to avoid microbial spoilage of food, but also keeping most of the nutritional and organoleptic properties of the product under conservation. The paper is structured in six chapters that have followed all the stages of pea to preserve the finished product-peas canned, and changes occurring in the process of preservation by analyzing four different kinds of peas. In this paper work is has been showed fat content determination, determination of sodium chloride and microbiological control of canned peas.

**Keywords:** organoleptic, keeping, and microbiological

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**Lucica Nistor , Camelia Hodoşan, Gratiela Bahaciu, Daniela Ianiţchi, Marius Maftei, Florenţa Vilău, Ioana Duşescu**  
Changes Arising from Conservation Peas

422

**Abstract**

It was established that the amount of canned food products depends on the one hand the amount of raw material and on the other processing conditions. To ensure a high food value of canned products, in establishing the technological process should take termolability account both the solubility and valuable substances that some vitamins, minerals, carbohydrates and nitrogenous substances. If the solubility of the substances determined, in particular, losses during the preliminary operations of washing, scalding, cooling, causes losses both during termolability cooked, and during sterilization. The vitamins, which recorded the largest losses during the technological process, are vitamin C followed by B1 and B2 lesser extent. These vitamins, in addition to being water soluble, are thermo labile, but termolability depends largely on conditions of heating. Thus, vitamin C is destroyed in the presence of air even at a temperature of 50 ° C, but in the absence of air and acid, its resistance to heat action is much greater, mentioned that the acidic environment increases and the strength of vitamin B1. In some cases, a short heating can contribute to keeping the vitamins in the product by removing air from the tissue and inactivation of enzymes that catalyzes the oxidation of vitamin C (ascorbinase).

**Keywords:** carbohydrates, keeping, enzymes

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**Letitia Stana, Alexandra Trif, Loredana Gabriela Stana, Snejana Petrovici, Corina Gravila**  
Comparative Study of the Potassium Dichromate Effect on the Osmotic Resistance of Rat Erythrocyte Membrane

425

**Abstract**

The aim of the experiment was to highlight the toxicity of the CrVI, administered during three generations, on the haemoglobin and on the osmotic resistance of the erythrocyte membrane in female rats. The determinations have been carried out on rat blood collected from female rats that reached sexual maturity, from F<sub>0</sub>, F<sub>1</sub>, F<sub>2</sub> generation, exposed to LOAEL, of CrVI, as potassium dichromate, in drinking water (3 months). F<sub>1</sub> and F<sub>2</sub> were obtained from female rats from generation F<sub>0</sub> and respectively F<sub>1</sub> exposed for 3 months to chromium dose, mated with male rats exposed to the same dose for three months, before mating. The results of the experiment indicated a high significant decrease of haemoglobin, (p<0,01) under the control lot and under physiologic limits, in the three generations. The decrease of hemoglobin, registered also high significant differences (p<0,01) as well between generation F<sub>0</sub> and respectively generation F<sub>1</sub> and F<sub>2</sub>. The chromium toxicity impact on erythrocyte membrane was shown by the progressive decrease of osmotic resistance even from the first generation and by the increase of the haemolysis degree in hypotonic solutions. The exposure to LOAEL CrVI during three generations produces toxic effects on erythrocytes inducing hemolytic effect.

**Keywords:** CrVI, rat, erythrocyte membrane, osmotic resistance.

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Răzvan Ștefan, Niculae Mihaela, Marina Spinu, Silvana Popescu

Antibacterial effect of ZnO-B<sub>2</sub>O<sub>3</sub> Matrix Doped with Silver Ions on Gram Positive Bacteria Cultures

429

**Abstract**

In this work, vitreous oxidic structures from the  $x\text{Ag}_2\text{O} \cdot (100-x)[45\text{ZnO}55\text{B}_2\text{O}_3]$  system were prepared, with a high content of silver oxide  $0 \leq x \leq 7$  mol%. The start substances were mixed in appropriate proportions and melted at 1230 °C, then undercooled at room temperature. The samples were obtained in the form of disks with a width between 2 and 5 mm by pressure between two stainless steel plates.

The capacity of interaction with bacterial culture was investigated in agar environment through the method of dilution for gram positive bacteria *Staphylococcus aureus* and *Streptococcus spp.* in order to use them for medical purposes.

The most intense effect was registered in the case of *Staphylococcus aureus*, and the samples which do not contain silver, turned out efficient against both investigated strains.

**Keywords :** glass, antibacterial, gram positive

Răzvan Ștefan, Marina Spinu, Silvana Popescu, Georgeta Taralunga

Vitreous System Ag<sub>2</sub>O -ZnO-B<sub>2</sub>O<sub>3</sub> Action Against Gram Negative Bacteria

433

**Abstract**

In this work the ability of the system  $x\text{Ag}_2\text{O} \cdot (100-x)[45\text{ZnO}55\text{B}_2\text{O}_3]$  oxide glasses to inhibit the growth of bacteria *Escherichia coli*, *Pseudomonas* and *Salmonella* was investigated. Using the diffusimetric method there were measured the diameters of inhibition, in order to classify the sensitivity of gram negative bacteria to oxide compounds containing silver, for their use as filters.

Vitreous samples were processed as powders with grain between 45 and 75 μm and less than 45 μm for a large of contact area with the microorganisms and to make possible the study of biological effect of grain addition. Action of the investigated oxide system against the gram negative bacteria is strictly related to the presence of silver oxide in glass composition.

**Keywords:** antibacterial, chemical durability, glass

Igor Stojanov, Nada Plavša, Dragica Stojanović, Radomir Ratajac, Jasna Prodanov Radulović, Ivan Pušić, Miloš Kapetanov

Sesceptibility of *Aeromonas Hydrophila* Isolates to Antimicrobial Drugs

437

**Abstract**

*Aeromonas hydrophila* is a microorganism widely distributed in nature: in water, soil, food. It is also part of the normal bacterial flora of many animals. As an opportune microorganism it is a secondary biological agent that contributes to the occurrence of a fish disease and its deterioration. Frequently, its presence is an indication of bad zoohygiene and zootechnical conditions in fish ponds. Reduced quality and quantity of feed, mechanical injuries, parasitosis, seasonal oscillation in temperature present some of the factors that produce favorable conditions for bacterial proliferation of aeromonas in fish ponds, so clinical symptoms of the disease occur. *Aeromonas* is almost always present in clinical isolates and may be unjustly accused for bad health of fish. Antibiotic therapy is applied even when the clinical findings are clear, what certainly effects the susceptibility to chemotherapeutics. The subject of our work was bacteriological examination of the material obtained from the carps with the observed skin changes and the carps without these changes. Also, antimicrobial susceptibility of *Aeromonas hydrophila* was tested. The aim of this research was to determined the presence of *Aeromonas hydrophila* in the carp ponds and to test antibiotic susceptibility. The material consisted of the samples from the fish ponds where the carps were with and without changed skin. The method the isolation of *Aeromonas hydrophila* was used. The diffusion disk technique was used for testing antibiotic susceptibility. The isolates were tested for their susceptibility to Florephenikol, Flumequine, Olaqindox and Oxitetracycline. The obtained results point that antimicrobial susceptibility was the same regardless of the origin of the samples, i.e. the resistance was the same for both groups of samples (the strains isolated from the fish with skin changes and the strains from fish without changes on skin). The strains were highly resistant: 35% were resistant to flumequine and 40% to Oxitetracycline.

**Keywords:** *Aeromonas hydrophila*, fish, antimicrobial drugs

**Emil Tirziu, Ileana Nichita, Ciceronis Cumpanasoiu, Radu Valentin Gros, Monica Seres**  
Listeria monocytogenes- Monographic Study

**441**

**Abstract**

*Listeria monocytogenes* is a ubiquitous bacteria with a remarkable resistance in discordant condition which produce listeriosis, an infectious disease that affects multiple domestic and wild animals' species, but also humans.

Receptive to listeriosis are the majority of domestic or wild mammals and birds, in the last years being registered an increase of receptivity in humans.

The concept of listeriosis in human pathology, a disease caused by eating or drinking contaminated food and water, appeared for the first time in 1981, during an outbreak in Canada with seven cases in adults and 34 cases of maternal-fetal listeriosis. The alimentary origin of human listeriosis can be easily explained if considered some general characteristics of the bacteria. Thus, resistance in various conditions, especially at lower temperatures, justifies its dissemination and food contamination, particularly when is conserved by refrigeration.

Also, *L. monocytogenes* has a significant presence in alimentary products. Some studies showed that 4% of the milk products, 29% of the meat products, 5% of the vegetable products and 26% of the products obtained from fishes and shell fishes are positive for *L. monocytogenes*, which allows us to say that battle against these bacteria is a war against microbial contamination.

**Keywords:** bacteria, epidemiology, incidence, *Listeria monocytogenes*

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**MORPHOLOGY AND PHYSIOLOGY**

**Carmen Berghes, Monica Parvu, Mircea Cucoanes, Daniel Cuca**

Clarifications Regarding the Topographical Location of the Vascular, Lymphatic and Nervous Formations from the Thorax Aperture in Dog

**447**

**Abstract**

Our studies are intended to bring some clarification on the topographic situation of lymphatic vascular and nerve formations in the thoracic aperture to the dog. Data from the literature are less relevant because the other factions by surprise earlier in the mediastinum without to make a correlation between them [6, 7, 8]. The study was performed on 20 corpses of dog different breeds, ages and gender. Vascular formations were injected with a mixture prepare the laboratory of anatomy of the discipline. Photographic paper presents several models dissected setting with as much precision topographic situation of the anatomical formations and has a highly application in human medicine, bringing clarification on topography thoracic duct lymph in the large vessels transport underlying heart. Lymphatic ducts is attached the entire length of the front right mediastinal aorta. That is opening in cranial vena cava without having a secundar channel.

**Keywords:** *mediastinum, lymphatic duct, cranial vena cava, caudal cervical ganglion*

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**Carmen Berghes, Monica Parvu, Mircea Cucoanes, Daniel Cuca**

Anatomic Considerations on the Middle Ear in Dog

**450**

**Abstract**

Purpose of this study is to explain some aspects of middle ear anatomy in dog. The study was conducted on five dog skulls (different ages) from common, large size dogs. The skulls were processed by maceration and submitted to a treatment of mechanical cleaning with perhydrol. The temporal bone was collected first; the external wall was opened carefully to study the tympanic cavity. The ossicles were collected separately and subsequently described. From research carried promontory appears as an elongated projection that separates the oval window and round window. Vestibular window is oval or slightly ovoid shape of a hole, located dorso-medially to the promontory, which communicates with the middle ear vestibule. Cochlearia window appears as a round or circular hole located caudo-lateral to the promontory . it is blocked by a membrane called the tympanum secondary, cavity separating the ramp of the snail. In the ventro-oral cavity openings ductus faringo tympanicum. The osicules sound represented by hammer, anvil and stirrup are articulated with each other and form a chain as a link between the eardrum and vestibular window. Bones are driven by two muscles: the tensor muscle and muscle stirrup eardrum is very thin. osicules ear are relatively large and resemble those of humans. Lenticular bone is the lenticular process of the long arm of anville.

**Key words:** ear, hammer, anvil, ladder muscle

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<b>Flavia Bochiș, Ileana Brudiu</b> Studies in the Relationship Between Some Morphological Characters and Jumping Parameters in Sport Horses (Part I - Vertical Fence)	<b>453</b>
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**Abstract**

The multilinear regression model introduced the variables control and estimated the contribution of every independent variable in the explication of the dependent variable variance, in a standard situation, when all independent had constant values. The taken into study independent variables were 12 morphological characters. The dependent value was represented by the entire length of the jump over the vertical fence and the bar-limbs distance in the same obstacle. The obtained value, for the multiple determination coefficients, nearby 1.00, in most of the cases in the high performance levels (B and C) showed the efficiency of the model and a good selection for the included factors. The obtained result focusing on the ensemble reports, in fact a result which can lead us to think that this kind of modeling can be applied freely to the horse height.

**Keywords:** sport horses, morphological characters, vertical fence

<b>Liliana Cărpinișan, Diana Brezovan, Adrian Mărginean, Alina Ghișe, Rodica Zehan</b> The Degenerative Joint Disease – Morphological Aspects in the Wild Boar	<b>460</b>
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**Abstract**

The aim of the study was to outline some data about the morphology of the pathological wild boar articular cartilage. The study was carried out on articular cartilage samples from wild boar femoral head and condyles, 1 - 10 years old. The samples were processed and stained by usual histological techniques. The samples examination revealed different stages of articular cartilage injury and various morphological aspects that suggest the degenerative joint disease (DJD) occurrence. The chondrocyte clones, the extracellular matrix alteration, the cartilage fissures, the cartilage erosions and the subchondral bone exposure were the observed morphopathological aspects. These aspects are the specific pathological lesions for DJD, as described in the specialized literature for other species.

**Keywords:** degenerative joint disease, morphology, wild boar

<b>Liliana Cărpinișan, Mihaela Doina Petcu, Snejana Petrovici, Codruța Chiș, Alina Ghișe, Rodica Zehan</b> The Influence of Deuterium Depleted Water on the Hematocrit and the Leukocyte Formula in Rats Intoxicated With Chromium	<b>464</b>
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**Abstract**

The aim of this study was to emphasize the influence of the deuterium-depleted water in the chromium ( $K_2Cr_2O_7$ ) single dose intoxication. The haematocrit and the leukocyte formula were determined, following the chrome intoxication in rats divided into 8 batches comprising 6 individuals each. The blood samples were collected directly from the heart (intracardiac puncture) under narcosis. The data were processed statistically by means of the Kruskal-Wallis and Mann-Whitney tests, MINITAB 15 and SPSS17 Software. The haematocrit was improved and the non-specific defence realised by the neutrophils was stimulated constantly after the deuterium depleted water administration.

**Keywords:** chrome, deuterium depleted water, haematocrit, leukocyte formula, rats

<b>Romeo Teodor Cristina, Ivo Schmerold, Eugenia Dumitrescu, Cristian Lăzărescu, Snejana Petrovici, Alina Netotea</b> Study of Doxycycline Efficacy in Broilers' Colibacillosis	<b>469</b>
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**Abstract**

The aim of study is a therapeutic assessment of doxycycline's hyclate efficacy, a wide spectrum antibiotic (efficient in majority of bacterial Gram-positive and Gram-negative infections and mycoplasmas, frequently isolated in poultry) in a colisepticemia outbreak in a 3,000 chicken farm. Disease started at the broiler's age of 20 days and mortality rate reached 32.5%. The behaviour to antibiotics of isolated bacterial strains was tested and antibiogram (Sanofi) was used, doxycycline revealing a very good antibiotic activity. The treatments (with the dose of  $10 \text{ mg} \times \text{kg.b.w.}^{-1}$ ) were done individually for five days, clinical evolution being observed until day ten of the experiment. Analyzing evolutions after treatments it was observed that the mortality diminished progressively from 14.2% in the first day, to 8.3% - 5.9% - 2.5% - 1.7% and respectively 0.8% in the sixth treatments day, in days seven, eight, nine, and ten of the study not being registered any mortality cases. In our opinion the favorable clinical evolution was recorded after the third treatment day, at the end of experiment from 120 remaining live 80 chickens (representing 66.7%) proving the fact that doxycycline was efficient, confirmed also by the average daily weight gain for the remaining live chickens.

**Keywords:** broiler chickens, colibacillosis, doxycycline, efficacy

<b>Romeo Teodor Cristina, Ivo Schmerold, Eugenia Dumitrescu, Diana Brezovan, Snejana Petrovici, Sorin Paidac</b> Safety Study of Doxycycline in Broiler Chickens	<b>474</b>
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**Abstract**

*Doxycycline* is a structural isomer who meets the European reference standard (Ph.Eur. III 1997:0272) and respect EU Regulations for M.R.L. The good solubility permits high tissular absorption and distribution after administration in drinking water. The aim was to ascertain the clinical effects and tolerance consecutive to risen doses administration, as a part of safety study for this antibiotic in poultry in the respect of current drug testing methodology. The safety study revealed: good local and general tolerance to therapeutic doses ( $10 \text{ mg} \times \text{kgb.w.}^{-1}$ ) and to x2 dose, diarrhoea in lots which received x3 and x5 the therapeutic dose. Comparatively with the Control lot, haemoleucogram doesn't suffer evident changes the registered values being between the references limits (exception of leucocitary formula). Also it was found an increased creatinin concentration consecutively to x3 and x5 greater doses administration and marked increasing of ASAT level and limited for ALAT's, comparatively to control lot in the case of E<sub>4</sub> lot, but light to reference values. Macro and microscopy revealed for the liver samples: hepatomegaly, diffuse hepatic degenerescence, nuclear heterochromatinization, vacuolar degenerescence; renal changes in nephrons and renal corpuscles, light splenomegaly, caecal sacs distension and brown-yellowish gaseous content to lots E<sub>3</sub> and E<sub>4</sub>.

**Keywords:** *doxycycline, tolerance, broiler chicken, safety study*

<b>Gabi Dumitrescu, Liliana Petculescu Ciochina, Sorin Voia, Dorel Dronca, Liliana Boca</b> Evaluation of Octylphenol Effect on Development and Survival on Zebra Fish ( <i>Danio Rerio</i> ) During Different Ontogenic Period	<b>479</b>
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**Abstract**

This paper is part of a complex study of our research collective that studies the toxic effect of the ethinylestradiolum, and some of the polyethoxylated alkylphenols on the growth and reproduction of the Zebra fish (*Danio rerio*) and of the common Carp (*Cyprinus carpio*). Our study aim was to evaluate the effect of octylphenol on growth and survival of zebra fish, from 21-115 days, and within 21-75 days of life. For this purpose, for each period under study, fishes were divided into three groups of 30 individuals, named: Lot 1 - Control, respectively lots 2 and 3, at which the administrated octylphenol concentrations were of  $60 \mu\text{g L}^{-1}$ , respectively  $100 \mu\text{g L}^{-1}$ . Fishes of the six groups were raised in 30-liters aquariums (30 fish / aquarium). The growth was measured by weighing and biometric measurements (total length, standard length, the length of the head, maximal height, minimal height and the mass of the body), while the surviving rate was established at the end of every period and at the end of the experiment, when we were able to calculate the total number of dead fish. Biometric study of the analysis performed in 75 days, 115 days respectively shows that octylphenol has negative influence on body development, and survival both, the highest percentage of mortality (46,66%) was registered at  $100 \mu\text{gL}^{-1}$  concentration, between 21 -75 days.

**Keywords:** *Danio rerio, octylphenol, development, survival*

<b>Gabi Dumitrescu, Liliana Petculescu Ciochină, Sorin Voia, Dorel Dronca, Liliana Boca</b> Histological Changes Induced in Gonads, Liver and Kidney of Zebra Fish ( <i>Danio Rerio</i> ) Under the Effect Octylphenol (OP)	<b>484</b>
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**Abstract**

World-wide researches during the last years are focused upon the negative effects caused by the natural chemical compounds and anthropogenic compounds, already being demonstrated that a great part of them change the endocrine control over reproduction at different species. The issue studied by our team is concerned with the histological changes that appear within liver, kidney and gonadal development at the zebra fish (*Danio rerio*), exposed to octylphenol from 21-115 days, and within 21-75 days of life. In order to achieve the histological preparations, for each period under study, fishes were divided into three groups of 30 individuals, namely: Lot 1 - Control, respectively lots 2 and 3, at which the administrated octylphenol concentrations were of  $60 \mu\text{g L}^{-1}$ , respectively  $100 \mu\text{g L}^{-1}$ . Fishes of the six groups were raised in 30-liters aquariums (30 fish / aquarium). Fragments of liver, kidney and gonads were processed histologically, colored with the Mallory trichromic staining method and examined with the optical microscope. Histopathological study revealed changes in the three organs, namely this fine granulation hepatocytes, peritubular edema and vascular ectasia in renal parenchyma and their differentiation in the gonads to sex predominantly female, issues that demonstrate the estrogenic effect of the octylphenol. Those microscopical aspects observed in the kidney and liver of the specimens exposed to action of octylphenol, suggest that the octylphenol is bind to the estrogenic receptors on the membrane of hepatic cells, inducing vitellogenin synthesis.

**Key words:** *zebra fish, kidney, liver, gonads, histology, octylphenol*

**Emilia Maria Furdui, Liviu Al. Mărghitaș, Daniel Dezmarean, Cristina Manuela Mihai, Otilia Bobiș, Ioan Pașca**

Comparative Study of Biological Characteristics of Larvae, Crude and Dried Cocoon in 7 Races of Silkworm *Bombyx mori* L., Raised in Transylvania Area

490

**Abstract**

7 monovoltine races of Romanian silkworm *Bombyx mori* L. were bred in specific Transylvania conditions, assuring the same microclimate conditions, being fed with the same mulberry leaves (Ukraina 107). The results obtained showed a high homogeneity, the differences were due to the variability and genotype characteristic for each individual of every race. Results and standard deviations are within the race standard. The study permitted a hierarchy of the races, following the biological characteristics, microclimate conditions, quantity, quality and breeding technology.

**Keywords:** cocoons, races, silkworm, silk encartment

**Alina Ghișe, Lucia Olariu, Liliana Cărpinișan, Rodica Zehan**

The Evolution of the Eggshell

494

**Abstract**

10 hybrid ISA Brown hens, 50 weeks old, hold single in cages and fed with combined granulated forage, were monitored for a period of 3 weeks to establish the body weight, the egg laying time, the laying interval and the length of clutches for each hen. During this time the eggs were harvested and the eggs weight, eggshells weight, the calcium, phosphorus and magnesium eggshell content were determined. When 53 weeks old, the hens were divided into 4 groups depending on the time elapsed from the last oviposition for each hen and they were slaughtered. The eggs in different stages of development were sampled and the egg weight, the eggshell weight, the calcium, phosphorus and magnesium eggshell content were determined. Depending on the egg stage formation: at 10-12 hours postoviposition the eggshell mean weight was 2.15 g, i.e. 40.49%, the mean calcium content of the eggshells was 0.37 g calcium, representing 18.97% of the calcium content of the whole eggshell. At 22-23 hours after oviposition the eggshell weight was 6.13 g, representing 98.39% of the completely formed eggshell, the calcium content of the eggshells was 2.23 g (mean value), which represents 97.38% of the whole egg mineral shell.

**Keywords:** laying hen, eggshell, calcium, phosphorus, magnesium

**Marioara Nicula, Marian Bura, Eliza Simiz, Ioan Banatean-Dunea, Silvia Patruica, Adela Marcu, Mihai Lunca, Zoltan Szelei**

Researches Concerning Reference Values Assessment of Serum Biochemical Parameters in some Fish Species from *Acipenseridae*, *Cyprinidae*, *Esocidae* and *Salmonidae* Family

498

**Abstract**

The purpose of this work was to assess reference values of serum biochemical indices (enzymes, metabolites and minerals) in some representative fish species belonging to *Acipenseridae*, *Cyprinidae*, *Esocidae* and *Salmonidae* family in order to establish a baseline data which will serve to monitoring nutritional-metabolic balance and healthy condition of these species from aquatic biocenosis or intensive exploitations. Serum samples were analyzed for glucose, total proteins, albumine, urea nitrogen, creatinine, uric acid, triglycerides, cholesterol, ALT, AST, GGT, alkaline phosphatase, amylase, total bilirubin, Ca, P, Mg, Fe, using a FullyVet automated chemical analyser. The obtained results were compared with those from other papers regarding serum biochemical profile of fresh water fish species. Serum biochemical reference intervals were as follows: glucose, 28.41±0.80–64.00±1.41 mgdL<sup>-1</sup>; total proteins, 2.78±0.21–4.05±0.20 gdL<sup>-1</sup>; albumine, 0.67±0.12–1.59±0.11 gdL<sup>-1</sup>; urea nitrogen, 12.16±0.78–18.30±0.27 mgdL<sup>-1</sup>; creatinine, 0.06±0.01–0.27±0.00 mgdL<sup>-1</sup>; uric acid, 1.00±0.00–1.66±0.09 mgdL<sup>-1</sup>; triglycerides, 46.00±1.29–351.3±12.3 mgdL<sup>-1</sup>; cholesterol, 123.00±2.12–198.00±0.91±mgdL<sup>-1</sup>; ALT, 15.00±0.91–32.00±1.29 IU L<sup>-1</sup>; AST, 30.00±0.91–92.00±1.47 IU L<sup>-1</sup>; GGT, 4.00±0.00–6.33±0.46 IU L<sup>-1</sup>; alkaline phosphatase, 60.33±1.20–109.50±3.05 IU L<sup>-1</sup>; amylase, 28.08±0.93 – 36.00±0.91 IU L<sup>-1</sup>; total bilirubin, 0.00±0.00–0.03±0.00 mgdL<sup>-1</sup>; Ca, 7.63±0.40–12.36±0.50 mgdL<sup>-1</sup>; P, 11.83±0.35–30.48±0.26 mgdL<sup>-1</sup>; Mg, 1.80±0.14–3.88±0.21mgdL<sup>-1</sup>; Fe, 57.60±3.48–120.00±1.08 μgdL<sup>-1</sup>. The wide intra- and interspecific variability of our data requires subsequent studies of the endo- and exogenous factors (living condition, season, age, gender, origin, breeding system, physiological and nutritional status, genetic of each individual, etc.) that can induce variations of the propound parameter.

**Keywords:** *Acipenseridae*, *Cyprinidae*, *Esocidae*, *Salmonidae* family, biochemical serum parameters

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**Roxana Popescu, Doina Verdes, Marioara Nicoleta Filimon, Laura Smaranda Gotia**  
Protective Effect of Silybin in Rats Liver Toxicity

506

**Abstract**

Silybin is a flavonoid extracted from the herb *Armurariu* (*Silybum marianum*) and has the potential efficacy in the treatment of liver disease. The aims of this study were to investigate the effect of alcohol and CCl<sub>4</sub> on liver histology and the capacity of silybin to ameliorate the hepatotoxicity. Thirty adult male Wistar rats were used in the study. Liver toxicity was induced by dietary alcohol administration and CCl<sub>4</sub> intra-peritoneal injection. The protective effect of silybin was investigated by co-administration of silybin with these toxic agents. Hepatocellular and extracellular matrix integrity was determined by histopathological and immunohistochemical study. Hematoxylin-Eosin and trichrome stains sections were studied in each case. For immunohistochemistry we used monoclonal anti-collagen IV primary antibody. Light microscopic evaluation of liver tissues shows that control and silybin treated groups has normal liver structure. In the toxicity groups, HE and trichromic staining showed hepatocellular necrosis, inflammatory infiltrate and proliferating collagen fibers. Immunoreaction of collagen IV was variable. In the control group, we found negative expression. Collagen IV displays positive immunoreaction in hepatotoxicity groups, at the level of the areas rich in inflammatory infiltrate and with degenerative aspect. After this study, we can conclude that silybin, in rats, has protective effects.

**Keywords:** silybin, hepatotoxicity, alcohol, CCl<sub>4</sub>

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**Olga Rada, Horea Sărăndan, Liliana Vasile, Diana Argherie**  
Blood Sugar Values and Intestine Mucosa Integrity in Suckling Pigs in Relation to their Nutritional Status

511

**Abstract**

The experiment included 106 healthy piglets aged 1-14 days and 38 piglets suffering from diarrhoea, aged 1-7 days. The blood sugar was measured with the help of Accu-chek Go (Roche Diagnostics GMBH, Germany) halfway between two sucklings.

Segments with duodenum, jejunum and ileum were harvested from the diarrhoea suffering piglets and coloured HE preparations were examined under a stereoscopic magnifying glass and the microscope.

With healthy piglets, the average blood sugar was of 61.55±10.2 mg %, and after a 12 hour life the blood sugar increased to 96.5±15.50 mg %, with piglets aged 1-7 days, the average blood sugar was of 93.08±3.67 mg %. In piglets suffering from diarrhoea, during their first 12 hours of life, the blood sugar decreased by 22 %, and between 1 and 7 days it decreased by 18.55 % compared to healthy piglets of the same age (p<0,05 for days 2, 3 and 5).

Morphologically, in piglets suffering from diarrhoea, the examination of the small intestine mucosa resulted in: areas of mucosa denudation with villi disappearance, central edema of villi of the jejunum, vascular lesion resulting in the formation of edema in villi and in lamina propria.

**Keywords:** blood sugar, diarrhoea, suckling pigs.

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**Horea Sărăndan, Dorica Botău, Iosif Ianculov, Florina Radu, Olga Rada, Doru Morar, Mihai Sărăndan, Maria Șerb, Adela Anghel**  
The Hypoglycemic Effect of *Momordica Charantia* Linn in Normal and Alloxan Induced Diabetic Rabbits

516

**Abstract**

The present experiment was intended to test the hypoglycemic effect of an alcoholic extract of roots or of the fruit seeds from "in vitro" regenerated *Momordica charantia* Linn. plants grown at USAMVB Timisoara. Diabetes was induced to domestic rabbits by administrating alloxan in dose of 80 mg/ kg body weight.

In diabetic rabbits the glycemia decreased by 15.93% ten hours after the administration of the alcoholic extract in dose of 2 ml/kg body weight; the seeds of *Momordica charantia* Linn. reduced glycemia by 27.42% when administered in dose of 1.5 g/kg body weight. In alloxan recuperated rabbits, 5 hours after administration of the seeds, glycemia dropped 19.26%.

The "in vitro" regenerated plants of *Momordica charantia* Linn. keep their hypoglycemic effects.

**Keywords:** alloxan, diabetes, glycemia, *Momordica*, rabbit.

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Miloslav Soch, Pavla Vydrova, Jan Broucek, Mihal Uhrincat, Jana Stastna,  
Peter Kisac, Bohuslav Cermak

519

Effect of Selected Factors on Hematological and Trace Blood Traits of Cows

**Abstract**

The objective of the present study was to evaluate the influence of altitude, season of year, management system, and breed on hematological markers and micromineral concentrations in cows. The highest haemoglobin concentration was at the altitude 550 m (128.48 g.L<sup>-1</sup>) (P<0.001). The lower levels of haemoglobin and haematocrit (102.27 g.L<sup>-1</sup> and 0.28 L.L<sup>-1</sup>) in the spring 2006. Differences among breeds were significant (P<0.001). The highest count of leucocytes was found in Spring 2006 and the lowest in Spring 2005 (9.94 G.L<sup>-1</sup> and 6.15 G.L<sup>-1</sup>). Differences among Breeds were also significant (P<0.01). The percentage of lymphocytes and neutrophils differed (P<0.001) in Factors Altitude and Breed, the content of monocytes differed significantly in the factors Altitude and Season of Year only (P<0.05, P<0.001). The lowest percentage of eosinophiles was found at the altitude 550 m (4.45 %) and the highest at the altitude 910 m (14.34) (P<0.001). The highest value of phagocytose index was recorded at the altitude 550 m (21.34 %) and the lowest value at the altitude 910 m (14.73 %) (P<0.001). The highest copper and zinc concentrations were found at the altitude 550 m (13.42 µmol.l<sup>-1</sup> and 18.18 µmol.l<sup>-1</sup>) and the lowest at the altitude 910 m (copper 10.17 µmol.l<sup>-1</sup>; P<0.001) and 675 m above sea (zinc 12.77 µmol.l<sup>-1</sup>; P<0.001). Similarly, the highest values of copper and zinc were recorded at the Fall 2005 (14.63 µmol.l<sup>-1</sup> and 16.31 µmol.l<sup>-1</sup>). The lower concentration of the copper (7.54 µmol.l<sup>-1</sup>) was found at the Spring of 2005. The highest values were found in Holstein breed (13.73 µmol.L<sup>-1</sup> and 17.55 µmol.L<sup>-1</sup>) (P<0.001). We found higher concentrations in non-ecological system in both parameters (13.25 µmol.L<sup>-1</sup> and 16.25 µmol.L<sup>-1</sup> vs. 9.81 µmol.L<sup>-1</sup> and 14.65 µmol.L<sup>-1</sup>).

**Keywords:** copper, hematology, sheep, zinc.

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Miloslav Soch, Pavla Srejberova, Jan Broucek, Peter Kisac, Jana Stastna,  
Mihal Uhrincat, Bohuslav Cermak

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Evaluation of Hematological Parameters and Trace Elements in the Blood of Sheep

**Abstract**

The ewes were kept at three farms. Blood samples were divided according to factors of Altitude (550 m, 800 m, 950 m), Season (spring, autumn), Breed (Charolais, Merinolandschaf, Sumavian sheep), and System (ecological, non-ecological). The lowest haemoglobin concentration was detected at altitude 550 m (66.95 g.L<sup>-1</sup>) and the highest at the altitude of 950 m (115.54 g.L<sup>-1</sup>) (P<0.001). The highest content of haemoglobin was recorded in Sumavian sheep (115.54 g.L<sup>-1</sup>) (P<0.001) and in the ecological system (115.65 vs. 85.80 g.L<sup>-1</sup>, P<0.001; 0.39 vs. 0.36 L.L<sup>-1</sup>, P<0.05). The highest number of leucocytes was at the altitude of 950 m (9.44 G. L<sup>-1</sup>) (P<0.001) and in the spring season (8.97 G. L<sup>-1</sup> vs. 6.47 G. L<sup>-1</sup>), and in the ecological system (9.57 G. L<sup>-1</sup> vs. 7.13 G. L<sup>-1</sup>) (P<0.001). The highest percentages of eosinophiles were found at the altitude of 550 m (9.26) (P<0.05) and in the Merinolandschaf breed (9.89) (P<0.01). The highest copper concentration was found at the altitude 550 m and the lowest at the altitude 800 m (17.07 µmol.l<sup>-1</sup> vs. 13.58 µmol.l<sup>-1</sup>) (P<0.001). Zinc levels at altitudes 800 m and 950 m were higher than at altitude 550 m (17.53 µmol.l<sup>-1</sup>, 17.93 µmol.l<sup>-1</sup> vs. 14.77 µmol.l<sup>-1</sup>) (P<0.001). Zinc concentration was lower in the spring than autumn (15.08 µmol.l<sup>-1</sup> vs. 17.00 µmol.l<sup>-1</sup>) (P<0.01). The ecological system contained lower levels of copper (14.49 µmol.l<sup>-1</sup> vs. 16.14 µmol.l<sup>-1</sup>) (P<0.01) and higher levels of zinc (17.81 µmol.l<sup>-1</sup> vs. 15.22 µmol.l<sup>-1</sup>) (P<0.01).

**Keywords:** copper, hematology, sheep, zinc.