

BIOLOGICAL VALUE OF PUNY FRUITS RELATED TO THEIR ANTIRADICAL ACTIVITY

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*All analysed species of puny fruits (red currant (*Ribes rubrum* L.) variant Jonkheer van Tets, white currant (*Ribes vulgare* L.) variant Blanka, black currant (*Ribes nigrum* L.) variant Eva, blueberry (*Vaccinium myrtillis*) variant Berkeley, elderberry (*Sambucus nigra* L.) variant Sambo, hawthorn (*Crataegus oxyacantha*), mulberry (*Morus nigra* L.) genotypes M152 and M047) are natural sources of anthocyan pigments and vitamin C with a high antiradical activity. Due to the fact that the highest antiradical activity is not accompanied by the highest content of anthocyan and vitamin C in puny fruits, we suppose that the antiradical activity of plant materials is also connected with the presence of other compounds with antioxidant and antiradical activity. From our results follows that all studied puny fruits with a high antiradical activity increase the antioxidant value of human nutrition and also its prophylactic and medicinal effect.*

Key words: antioxidants, free radicals, anthocyan, vitamin C, antiradical activity, puny fruits.

GENETIC SEX DETERMINATION IN HEAVY BREED CHICKEN EMBRYOS USING AN UNCONVENTIONAL METHOD

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We have used a non-invasive method to predetermine the sex of chicken embryos that relies on the bio electromagnetic field generated by the embryonic cells. To validate this method in poultry, on the basis of sexual dimorphism, the genetic sex of 120 chicken eggs of heavy breed. One group consisted of 60 eggs with determined genetic sex ZZ (cock, abbr. M). The other group consisted of 60 eggs with determined genetic sex ZY (hen, abbr. F). After hatching, the chicks were identified and the genetic sex was checked repeatedly using the pendulum. The phenotypic sex of the birds was assessed after 60 days at the time the sexual dimorphism was visible. From the 60 eggs sexed and incubated for each group, a hatching rate of 90%, for the group M and 91,66% for the group F was obtained. The genetic sex of individuals determined at the age of one day showed that all individuals of the group M were cocks (ZZ) and all individuals of the group F were hens (ZW). The phenotypic sex determination performed 60 days later showed that of 54 individuals of the group M, 41 were cocks (77,36%). In the group F from 55 individuals 42 were hens (77,78%). The prediction rate for the group M (77,36%) was relatively comparable with that for the group F (77,78%). This method is non-invasive, relatively rapid, simple and inexpensive with application in effective breeding regimes of poultry production.

Key words: sex determination, eggs, embryos, chicken

THE INFLUENCE OF K-CASEIN ALLELES ON MILK PRODUCTION AND QUALITY IN A HOLSTEIN-FRISIAN COW POPULATION

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Milk production and its composition are determined by quantitative loci, which under the influence of some environmental factors are producing an allelic variability, meaning a genetic polymorphism of the gene. K-casein is a milk protein whose genetic polymorphism can serve as molecular marker for milk production, composition and industrial processing suitability. The allelic variants for k-casein A and B are the most common and the most important of them. The experiments were conducted on 24 Holstein-Friesian milking cows from a private farm in Giroc. The milk production on a normal lactation is 8444 milk kg/305 days, with a fat percent of 3.9 and a protein percent of 3.3. The cows were divided in three groups AA, AB and BB in function of the genotyped obtained after the allelic variants determination. The DNA isolation was made from hair roots and blood, the cow population studied is not in genetic equilibrium fore k-casein gene, the frequency of allele A is 0.43 and the frequency of B allele is 0.58. The highest genotype frequency was 0.5 for CSN3-AB genotype, the BB genotype had 0.33 frequency, and the lowest frequency was 0.17 for AA genotype. The mean daily milk production from cows with BB genotype for k-casein is significant ($p < 5\%$) higher compared to the allelic variant AA. The fat percent is significant higher at the allelic variant AA compared to the other allelic variants (AB and BB) of the k-casein gene. Between the fat percent of the three genotypes variants of K-casein (AA, AB and BB) there are no significant differences.

Key words: *k-casein, genetic polymorphism, milk, milk fat, milk protein*

INFLUENCE OF THE SEASONAL VARIATION ON THE BLASTOCYST YIELD OF C57BL/6NCrI MOUSE STRAIN

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Routine generation of chimeras relies on the production of large numbers of blastocysts in a constant and reproducible manner and on the quality of the targeted ES (embryonal stem) cells used for microinjection. We have focussed this work on the production of large numbers of blastocysts by superovulation, in standardized conditions. The efficiency of superovulation in mice is affected by several factors. These factors depend on the animal, on the environment and on the operator. The effect of seasonal variation as environmental impact was assessed. For this purpose 360 prepubescent C57BL6/NCrI females were superovulated with 5 IU of PMSG (Pregnant Mare's Serum Gonadotropin) and 5 IU hCG (Human Chorionic Gonadotropin) and mated with fertile C57BL/6NCrI males. The distribution of the experiments over the seasons was as following: 8 experiments were performed in spring, 12 in summer, 12 in autumn and 4 in winter. The influence of the seasonal variation on the efficiency of superovulation in two age categories (23 day old and 26 day old females) was compared. The results show that the overall vaginal plug positive rate (VP+%) of the 23 day old females (90%) is higher in comparison to that of the 26 day old females (86,4%), whereas the blastocyst rate (B%) of 26 day old females (45,4%) is higher compared to the 23 day old females (41%). The influence of the seasonal variation on the yield of embryos and the rate of blastocysts is relatively constant in each season. These results suggest that housing of the mice in our artificial conditions and the hormonal induction of superovulation lead to a reproducible number of blastocysts over the seasonal variation of the year.

Key words: C57Bl/6NCrI, superovulation, blastocysts, seasonal variation, chimeras

GENETICS AND MOLECULAR BIOLOGY AND PIG MEAT QUALITY IMPROVEMENT

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The main goals in pig breeding have for many years been to improve growth rate, feed conversion and carcass composition. There have been less efforts to improve meat quality parameters (WHC, pH, tenderness, colour etc.) but the main contribution has been a reduction of stress susceptibility and PSE meat. Unfortunately, the quantitative genetic approach has yielded few clues regarding the fundamental genetic changes that accompanied the selection of animal for superior carcass attributes. While mapping efforts are making significant major effects on carcass and his quality composition DNA test would be available to detect some positive or negative alleles. There are clear breed effects on meat quality, which in some cases are fully related to the presence of a single gene with major effect (RYR1, MYF4, H-FABP, LEPR, IGF2). Molecular biology methods provides excellent opportunities to improve meat quality in selection schemes within breeds and lines. Selection on major genes will not only increase average levels of quality but also decrease variability (ei increase uniformity). The aim of this paper is to discuss there genetic and non-genetic opportunities.

Key words: meat quality, pigs, marker genes, selection

EFFECT OF CZB CULTURE MEDIA ON IN VITRO DEVELOPMENT OF CLONED MOUSE EMBRYOS

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The effect of simple and sequential embryo culture media on the preimplantation development of mouse nuclear transfer (NT) embryos reconstructed with cumulus cell nuclei using a mechanical NT technique was studied. Blastocyst formation rate was evaluated using CZB medium. Nonmanipulated and sham-manipulated parthenogenetic embryos served as controls for, respectively, the medium and the handling technique. Rates of blastocyst formation for medium and handling control embryos were similar in CZB (50% and 53%). Development of NT embryos was significantly impaired from the two-cell stage onwards, reaching the blastocyst stage at a rate of 4% in CZB. These data demonstrate not only that NT embryos are more sensitive to in vitro culture conditions than parthenogenetic control embryos but also that selection of culture media can influence the preimplantation development of NT embryos.

Key words: mice, cloning, embryo development, culture media

EXAMINATION OF THE GERM CELL CHIMERA FORMING POTENTIAL OF MOUSE EMBRYONIC STEM CELLS

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The aim of this study was to examine the factors, which influence the chimera forming potential of mouse embryonic stem cells (ES cells). In our work, we examine the chimera producing ability of R1 and R1/E mouse ES cell lines. We found that the passage number affects chimera-forming capability of the ES cells. With the increasing of the passage number, it could be getting less chimera animal, and only the R1/E ES cell line derived cells could contribute to the germ cells. At first, we compared the marker of pluripotency using immunostaining and RT PCR, but we could not find any difference between the R1 and R1/E cell in this way. At chromosome analysis, we found, that the number of aneuploid cells, in R1 ES cell line, dramatically increased after 10 passages. We thought that the reason is that during the cell division Y chromosome could not arrange correctly between the two newly derived progeny cells. To prove our conception, we made X and Y-chromosome FISH analyses. We found, that the aneuploid R1 and R1/E ES cells contain only one X and one Y chromosome, so not the loss of Y chromosome cause the problem at the germ cell formation. At last, we made the karyotype analysis of R1 and R1/E ES cells at different passages. The karyotype analysis demonstrated that in the case of R1 ES cell line, the 41 and 42-chromosome containing cells hold trisomy. With the increasing of the passages number, the number of trisomy containing aneuploid cells increased. The aneuploid ES cells can contribute to the different tissues of chimera animals, but cannot form viable germ cells.

Key words: Es cells, chimera, FISH, karyotype

Cj1411c GENE OF *CAMPYLOBACTER JEJUNI* 11168 ENCODES FOR A CYTOCHROME P450 INVOLVED IN BACTERIAL CAPSULE SUGAR METABOLISM

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After isolation in 1970s, Campylobacter jejuni become the most commonly recognized cause of bacterial gastroenteritis in man. In animals is frequently found in bovines on ovines. Publishing of the genome sequence of Campylobacter jejuni 11168 (Parkhill, 2000) revealed the presence of only one cytochrome P450 in an operon involved in sugar and cell surface biosynthesis. The gene name is Cj1411c, is 1359 bp long and encodes 453 aa. The sequence is strictly conserved in Campylobacter jejuni RM221. Similarities with two cytochrome P450s, one form Silicobacter sp. and one form Poloromonas sp., were identified. These two enzymes are known to be involved in ascorbate and aldarate metabolism. The recombinant construct allowed the expression of active P450 enzyme with a 450 nm peak when binds CO. The protein was purified in proportion of ~ 70 %. By deleting the P450 gene from the Campylobacter jejuni 11168 genome clear changes in cell morphology were identified cells becoming wider and shorter. The capsular sugar profile of the NCI strain reveals the presence of arabinose which was not found in the wild type strain. The arabinose was identified by both High Performance Liquid Chromatography (HPLC) and Nuclear Magnetic Resonance (NMR).

Key words: P450, carbohydrate metabolism, *Campylobacter jejuni* 11168

THE OVARIAN RESPONSE TO THE SUPEROVULATORY TREATMENT IN CATTLE UNDER FORAGING CONDITIONS FROM S.C.D.P. JUCU FARM, CLUJ COUNTY

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Recently, the embryo-transfer has won very much in popularity, although the process itself doesn't represent a novelty. The main stage in an embryo-transfer programme is represented by the superovulatory treatment. The success of this stage means the obtaining of a large number of oocytes, and theoretical, a large number of embryos, which justify at list from the economical point of view the realization of an embryo-transfer programme. In this context, the present study has followed the ovarian response to the superovulatory treatment. For the realization of this purpose there were made superovulatory treatments with PMSG (pregnant mare serum gonadotrophin) in a dairy cattle group from Bălțată Românească breed. The animals were kept in tight system maintenance at the S.C.D.P. Jucu farm. The alimentation of the animals was performed with a ration based on volume fodder and concentrates. In these conditions we've obtained an average of 19 CL (corpus lutea) per animal.

Key words: alimentation, ovary, corpus lutea, superovulation, cattle

INCREASING FOOD CHAIN SECURITY FOR SCRAPIE BY MARKER ASSISTED SELECTION IN SHEEP POPULATIONS

CREȘTEREA SECURITĂȚII LANȚULUI ALIMENTAR PENTRU SCRAPIE PRIN SELECȚIA ASISTATĂ DE MARKERI MOLECULARI ÎN POPULAȚIILE DE OVINE

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Romania, by its genetic found made up of over 7.4 millions sheep and 1.8 millions young sheep exported in EU countries, represents an important mark in both European and World sheep breeding sector, in last years marked by many ESST centers. The apparition of this disease and its high risk of danger for reared effective constraint EEC countries to interfere by law regulations concerning scrapie control and stopping disease spreading. In our country, controls identified the presence of scrapie in livestock. The international reference laboratories post mortem certified the presence of disease. Immunohistochemical detection of PrP^{Sc} is a standard diagnostic method for sheep scrapie. By immunohistochemistry (IHC), PrP^{Sc} is detected in lymphoid tissues during preclinical and clinical disease. After genotypization at PrnP locus, the marker assisted selection is compulsory, and flocks include only genotypes with high disease resistance.

Key words: scrapie, ESST, PrnP, Prp^{SC}, Marker Assisted Selection

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Key words: scrapie, ESST, PrnP, Prp^{SC}, Marker Assisted Selection

BIOCHEMICAL AND HISTOLOGICAL EFFECTS OF DELTAMETHRIN EXPOSURE ON THE GILLS OF *CARASSIUS AURATUS GIBELIO* (*Pisces Cyprinidae*)

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*This study investigated the alterations in the activities of several antioxidant enzymes in the gills of the freshwater fish *Carassius auratus gibelio* exposed to deltamethrin. To get this goal, groups of 10 individuals were exposed for one, two, three, seven and fourteen days to sublethal concentration of deltamethrin (2 µg/L). Another group was used as control. The activities of catalase, glutathione peroxidase and glutathione reductase were significantly decreased, while the glutathione-S-transferase was up-regulated. All fish, exposed to 2µg/L deltamethrin revealed gills morphological alterations after 48h of exposure which were accentuated after 14 days. In the gills hyperemia, fusion of secondary lamellae, epithelial layer rupture and chloride cells proliferation were observed. These results suggest that an immediate adaptive response to the oxidative stress appeared, demonstrating alterations in the antioxidant defense mechanism in the gills of deltamethrin intoxicated fish.*

Key words: *deltamethrin, gill, enzymatic antioxidant system, oxidative stress*

THE USE OF THE SPECIFIC ANTI-SALMONELLA POLYCLONAL ANTIBODIES ISOLATED FROM HEN EGGS, IN SALMONELLOSIS PROPHYLAXIS

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The administration of increased doses of antibodies in groups experimentally infected with Salmonella gallinarum, in order to record the efficiency of their administration in salmonellosis prophylaxis was the aim of our research. When a low infection dose, 1×10^7 CFU Salmonella gallinarum, was used the administration of IgY polyclonal antibodies as immunoglobulin extract, or even yolk administration had a protective effect against germs invasion. This effect was not recorded when a 10 folds higher dose was administered (1×10^8 CFU). The prophylactic effect of the administration of polyclonal antibodies is demonstrated.

Key words: IgY, immuno-prophylaxis, Salmonella gallinarum

**THE USE OF THE ANTI-SALMONELLA SPECIFIC
POLYCLONAL ANTIBODIES ISOLATED FROM HEN EGGS
FOR INIBITING THE GROWING OF THE SALMONELLA
GENUS BACTERIA**

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The anti-Salmonella specific antibodies could be used in food and feedstuffs for the control of the salmonellosis, with large applications. The emphasize of the "in vitro" effect of the specific anti-Salmonella antibodies on the development of Salmonella gallinarum culture was the aim of our paper. The use of the specific anti-Salmonella antibodies reduces the bacterial development. Due to the agglutination on the antibodies from the culture media, the bacteria have lower mobility and low opportunity to reach the nutrients. It determines the inhibition or reducing the bacteria multiplication. The addition of the specific antibodies inhibates the development of the salmonella and reduces the risk of salmonellosis, if they are used as food or feed additives.

Key words: IgY, inhibition of bacteria multiplication, *Salmonella gallinarum*

THE KINETICS OF THE REACTIONS CATALYZED BY AN ENZYMATIC PREPARATION PRODUCED BY A *BACILLUS LICHENIFORMIS* STRAIN

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Robust immobilization techniques that preserve the activity of biomolecules have many potential applications. In recent years, a number of new bioimmobilisation methods in sol-gel-derived materials were reported. The interactions between the biomolecule and the inorganic material determine the degree to which the biomolecule retains its native properties. The newer technological developments in the field of immobilized biocatalysts can offer the possibility of a wider and more economical exploitation of biocatalysts in biological applications, food and feed industry, medicine, and in the development of bioprocess monitoring devices, like the biosensors.

*The aim of this study was to obtain immobilized enzymatic preparations by methods which affect enzyme conformations and kinetic parameters as less as possible. We immobilized the enzymatic preparation with protease activity produced by a *Bacillus licheniformis* B 40 local strain by physical bonding on ceramics and entrapment into sol-gel-derived glasses obtained from tetraethyl orthosilicate (TEOS), deposited in thin layer on a ceramic support (entrapment/deposition). Both physically adsorbed and entrapped/deposited enzymes follow Michaelis-Menten kinetics, similar with the soluble enzyme. In the case of immobilized enzymes, the apparent Michaelis constant, K_m , was greater than that of the native one, as it was expected. The kinetic parameters indicate that the enzymatic preparations adsorbed on ceramic support and entrapped/deposited show less affinity for the substrate, K_m being 1.3 and 2.1 times higher than that of the native enzyme, respectively. The maximum velocity increased also by 3.5 and 7.9 times respectively, compared with the free counterpart (according to Lineweaver-Burk linearization).*

Key Words: proteases, *Bacillus licheniformis*, immobilization, inorganic materials, sol-gel, kinetic parameters.

ESTIMATION OF THE DEVELOPMENT STANDARD OF NEURAL TUBE IN EMBRYOS FROM TRANSYLVANIAN NAKED NECK AND PLYMOUTH ROCK HEN BREEDS, DURING EARLY EMBRYOGENESIS

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In Romania, the Transylvanian Naked Neck hen breed is considered to be an “endangered” population, reason for which we consider that a special attention should have been given until now. Plymouth Rock breed was imported for the first time to Romania from the Studler Company, France in 1969. This paper is aiming to perform a profound analysis of the development patterns of the neural tube in the two breeds, by measurements carried out at 30, 40, 50, and 60 hours of incubation. Observations show that the closure of the neural canal and its transformation into a tube follows an undulatory pattern, of which positive and negative curls are diametrically opposed in the two breeds, while the development speed during the whole studied period have a relative similar value between the two breeds. We estimate that the two breeds have a good combinative capacity, which recommend the utilization of these genetic materials to obtain hybrids for producing “peasant-type” chicken meat, very well-appreciated by the Europeans between the two World Wars.

Key words: embryos, Transylvanian Naked Neck, Plymouth Rock

DIAGNOSTICATION OF HYPERKALEMIC PERIODIC PARALYSIS IN HORSES

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Hyperkalemic periodic paralysis (HYPP) is a muscle disease which has been first reported in 1985 in the USA, in a group of 4 horses with episodic weakness associated with intermittent serum hyperkalemia. The condition is caused by a mutation in the gene of the alpha-subunit responsible of sodium and potassium regulation pump in muscle inherited as a dominant autosomal trait. This mutation generates the production of an abnormal protein which alters the structure and function of the sodium channel. Because the mutation destroys the recognition site for the restriction endonuclease TaqI, the development of a PCR-RFLP method for HYPP diagnostics was possible. Our objective was to identify the normal homozygous, heterozygous carriers and affected homozygous horses for HYPP trait, using this method. Results suggest that the genetic test will be useful in identifying horses heterozygous for the HYPP trait and foals with HYPP.

Key words: horse, HYPP, PCR-RFLP, diagnostics.

GENETIC POLYMORPHISM AT THE K-CASEIN LOCUS IN A DAIRY HERD OF ROMANIAN SPOTTED AND BROWN OF MARAMURES BREEDS

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Caseins are a family of milk proteins that exist in several molecular forms and are the main proteins present in the bovine milk. Genetic variation of these proteins has been associated with the quality and quantity of cheese derived from milk.

This study was focused on possibilities to evaluate the frequency of the K-casein B allele in dairy herds from the Research and Development Station for Bovine Raising Arad in order to have breeding programs that target an increase in the frequency of the B allele in the dairy cattle population.

In order to differentiate the favorable genotype for superior composition and higher cheese yield, we used simple DNA extraction method from fresh blood and techniques based on DNA analysis, which include polymerase chain reaction and restriction fragment length polymorphisms (PCR-RFLP) methods. Employing these techniques we were able to determine the k-casein genotype of all individuals in a given population under selection, regardless of sex, age or physiological stage.

As a result, it is now possible to include information on milk protein genotypes into marker assisted selection programs and consequently improve response to selection.

Key words: K-casein gene, PCR-RFLP, K-casein B allele

MICROBIOLOGICAL STUDIES REQUIRED FOR A SCIENTIFIC MANAGEMENT OF THE NATURAL MINERAL WATER SOURCES

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This paper presents some of the results obtained concerning the discovery, characterization, screening and management of some still unknown or not yet fully characterized natural sources of mineral waters, in order to render them economically profitable and to contribute to the public health development. Following some empiric, local observations upon the qualities they have in the treatment of different maladies, a set of physical, hydrological, chemical and microbiological analyses was established, in order to substantiate scientifically their therapeutic potential. Moreover, the authors have selected some areas situated in the neighborhood of the old (some of them already closed) salt mines.

Key words: microbiological properties, mineral water springs

EXPERIMENTAL TRIES TO ESTABLISH THE PREIMPLANTATIONAL MAMMALIAN EMBRYOS VIABILITY THROUGHOUT STAINING

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Presently there are more methods to assess embryo quality but, still the widely used remains the morphological criteria method. In this experiment were tested two staining methods for embryos and oocytes. The embryos were recovered from mouse female at 72 hours after mating. The recovered embryos were first evaluated after morphological criteria and then by Trypan blue exclusion and Neutral red staining. Using Trypan blue exclusion were evaluated 30 embryos from which 19 (63.3) were classified as viable and 11 (36.7) were classified as nonviable. By Neutral red staining were evaluated 37 embryos from which 24 (64.8) were considered viable and 13 (35.2) were considered nonviable. The oocytes recovered were also evaluated using the two methods: using Trypan blue exclusion were stained 10 oocytes from which 9 remained uncolored and were considered viable and 1 was stained in blue and was considered nonviable and using Neutral red 13 oocytes were stained from which 9 were evaluated as viable and 4 as nonviable.

Key words: embryos viability, Trypan blue exclusion, Neutral red staining

METODELE GENETICII MOLECULARE CA INSTRUMENTE PENTRU AMELIORAREA OVINELOR

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Autorii au prezentat pe scurt proiectele lor de cercetare din ultimii 10 ani în domeniul geneticii moleculare la oaie. S-au realizat investigații asupra receptorului de melatonină 1a (Mel_{1A}) ca genă candidat care influențează sezonalitatea reproducției la oaie. Cercetările s-au efectuat pe trei rase, și anume Awassi, Merinos prolific maghiar și Țigaie. La aceste rase s-au determinat pozițiile mutațiilor genelor în funcție de secvența de referință a GeneBank nr. U14109. În total, la cele trei rase s-au identificat un număr de 16 polimorfisme nucleotidice singulare (SNP). Exonul II a genei $Mel1A$ este puternic polimorfic. Șase din SNP identificați produc modificări ale aminoacizilor din proteina care poate fi cauza modificărilor funcției și/sau construcției receptorului de melatonină. Studiul se va continua pentru a investiga cele trei rase pentru mutațiile funcționale, construirea de haplotipuri și asocierile dintre haplotipuri și activitatea ovariană extrasezon. O altă abordare o reprezintă studiul de caz a programului maghiar de ameliorare folosind berbeci importanți din rasa Booroola. În Europa, Ungaria a fost prima țară care a importat berbeci și oi din rasa Merinos Booroola, pe baza cărora s-a format o nouă rasă Merinos Prolific Maghiar, recunoscută în 1992. În concluzia studiilor de până acum, rezultatele au arătat că rata ridicată de ovulație la castă rasă este produsă de mutația receptorului genei $BMPR-1B$. Eficiența programului de ameliorare de crește frecvența alelei Fec^B în această populație de ovine a fost întârziată de aplicarea anterioară a metodelor improprie de clasificare genotipică. Un proiect mai amplu al echipei de cercetători este acela de a estima diferențele genetice dintre variatele tipuri de oi Țigaie și Țurcană din Estul, Centrul și Sudul Europei. În prezent, în cadrul institutului se derulează următoarele proiecte de cercetare: cartografierea locilor însușirilor cantitative pentru producția de lapte din cromozomul 6 la rasa Awassi; polimorfismul genelor proteinei din lapte la rasa Țigaie; determinarea genotipurilor Callipyge la populația Suffolk Maghiar; încrucișarea raselor de ovine de lână pentru a produce ovine pentru păr.

Cuvinte cheie: metode genetice moleculare, ovine, ameliorare genetică.

ALKALINE PHOSPHATASE ACTIVITY AS A MARKER OF DOG SEMEN FREEZABILITY

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The investigation was performed to evaluate the dog semen freezability and its quality after thawing allowing its use for artificial insemination (AI). On the basis of sperm motility, concentration and alkaline phosphatase (AP) activity in semen plasma it was possible to establish that AP activity corresponds with the basic factor of semen examination. Significant statistical differences occurred between the quality of ejaculates which were qualified or disqualified to deep freezing and AI. These results show that AP activity in raw dog semen plasma can be used as a marker for the dog semen qualification for deep freezing and AI with 95% probability of the prognosis of the results.

Key words: dog semen, freezability, AP.

THE RESULTS OF BITCH ARTIFICIAL INSEMINATION AFTER THE USE OF TESTED FROZEN SEMEN

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Many problems in dog reproduction concern both dog male, its behaviour and semen quality as well as the bitch which are connected with physiological factors as a time oestrus cycle, anatomical structure of reproductive organs, sexual behaviour and ovulation moment. The results of bitches' artificial insemination (AI) with the use of frozen semen are lower in comparison to raw semen. In connection with this the research work was performed with an idea of explanation of the problem connected to low effect of the use of dog frozen semen for AI. It was found that it is possible to receive more satisfactory results (about 75% of pregnancy rate) when dog semen is testified on the base of sperm concentration and motility and alkaline phosphatase activity (AP). On the other side it is necessary to perform bitches examination based on cytological and hormonal testes which allows establishing the pernicious time for AI.

Key words: bitch, semen quality, artificial insemination.

THE ISOLATION, ANALYSIS AND TESTING OF SEA BUCKTHORN CAROTENOIDS ON MURINE MACROPHAGE CULTURES

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*Our aim was to characterize a sea buckthorn (*Hippophae rhamnoides*) fruit carotenoidic extract and evaluate its influence on macrophage phagocytic response given that carotenoids function as antioxidants. Carotenoids were isolated, saponified and analysed using HPLC before and after saponification. Murine peritoneal macrophages were cultured in medium containing carotenoidic extract. Carotenoid influence on phagocytosis was assessed by calculating the phagocytic index (PI %) and mean phagocytosis (MP). The positive significant differences ($p < 0,05$) picture carotenoid ability to enhance cell phagocytic activity.*

Key words: antioxidants, carotenoids, macrophages, sea buckthorn fruits

THE INFLUENCE OF THE PUERPERAL AFFECTIONS ON INSEMINATION INDEX AND UTERINE REPOSE IN COWS

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The observations were made, through a year, at SD Timisoara on cows from Holstein-Friesian and Fleckvieh breed. The puerperal period was observed, the incidence of the endometrites was recorded and there were calculated two reproduction parameters: the Insemination Index (Ig) and the Uterine Repose duration (UR) (Open days). The Insemination Index (service/conception) (Ig) represents the mean number of artificial inseminations performed in order to obtain a pregnancy. Uterine Repose represents the time interval, in days, from calving until the fecund insemination. The Uterine Repose has two components: Voluntary Waiting Period (VWP) (time interval from calving until the introduction of the female to reproduction) and Service Period (SP) (time interval from the end of the VWP until the fecund insemination). There were noticed that the incidence of the uterine infections were significant higher ($p < 0.05$) at cows from Holstein-Friesian breed (63.3%), compared to the cows from Fleckvieh breed (41.3%). The Insemination Index was significant lower ($p < 0.05$) at cows without uterine infections (1.9), compared to the cows with uterine infections (2.5). The mean duration of the Uterine Repose was significant lower ($p < 0.05$) at healthy cows (114.7 days), compared with cows with uterine infections after calving (182.2 days). It seems that the cows from Fleckvieh breed are more resistant to the exploitation conditions for milk production than compared with cows from Holstein-Friesian breed.

Key words: cow, Insemination Index, Uterine Repose

RELATIONSHIP BETWEEN SOME ENZYMES ACTIVITY, SPERM MORPHOLOGY AND STALLION SEMEN QUALITY

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The sperm morphology is one of the factors determining semen quality besides sperm motility and concentration. An important role in this aspect plays some enzymes which are estimated in raw semen plasma. The examination of numerous populations of stallions of different breeds and age performed by Kosiniak-Kamysz et al. (2005) showed that significant differences occurred between stallion semen quality concerning both macro- and microscopic examination and some enzymes activity. It was found that aspartate aminotransferase (AspAT), lactate dehydrogenase (LDH) and alkaline phosphatase (AP) activity and total protein amount (TP) in raw seminal plasma decreased when the percent of sperms with cytoplasmic droplets increased. The increase of these enzymes activity is observed with the increase of the number of loose heads. These observations showed that many examined factors of the semen and semen plasma decided on its quality and on this reason that these factors need to be applied for seminological diagnosis.

Key words: stallion, semen plasma, sperm morphology, enzymes activity, biochemical components

STUDIES CONCERNING THE OBTAINMENT OF ASTAXANTHIN, AN IMPORTANT NATURAL PIGMENT USED IN COSMETIC, FOOD AND PHARMACEUTICAL INDUSTRIES

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Carotenoid pigments (CP) are natural compounds which impart to the tissues where they occur, a yellow, orange, red and even blue color. They are precursors of vitamins A, B₁₂, D₃ and can not be biosynthesized by any animal taxonomic group including man. In plants they avoid chlorophyll bleaching and destruction of some biological active substances like citocroms, peroxidases, catalase, flavonoidic pigments, vitamins B₁₂, E, K etc./1/. They are used in cosmetics, in aquaculture, poultry farming, in food industry as antioxidants and natural colorants for drinks and dairy products, as fodder additives for color, organoleptic and biological qualities improvement. Due to the restrictive use in food industry or as fodder additives of the synthetically obtained CP, though they are less expensive, the biotechnologies based on carotenogenic yeasts, in particular for astaxanthin production, are now reconsidered even if the bioprocesses are more costly. New sources identification and economic efficiency and feasibility of CP obtainment processes are a constant challenge, especially since recent studies pointed out CP role in medicine for prevention and treatment of some chronic maladies like cancer, arteriosclerosis, cataract, cardiovascular diseases, immunodeficiency's syndromes, brain dysfunctions, etc./2-4/. with a great occurrence in human population. This paper presents a technological model at laboratory scale for the red-violaceous pigment Astaxanthin (3,3-dehydroxy- β , β -caroten-4,4-dione) obtainment with the Sporobolomycetous yeast Xanthophyllomyces dendrorhous DSMZ 5626 [ICCF 338]. The yeast was screened for genetic purity and media and cultivating conditions were studied. The pigment was extracted and separated chromatographically from the alkaline treated wet biomass, for cell wall disruption. The separated Astaxanthin was diluted with sunflower oil up to a content of 50 μ g/ml. The product can be conditioned as soft capsules, or as it is as food supplement for human and veterinary use.

Key words : Xanthophyllomyces dendrorhous, Carotenoids, Astaxanthin,

GENETIC CHARACTERIZATION OF ROMANIAN CATTLE BREEDS USING BIOCHEMICAL MARKERS

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The paper presents a genetic characterization of cattle breeds in Romania based on biochemical markers in the blood and the milk. The surveyed breeds are: Romanian Black Spotted Cattle (BNR), Romanian Spotted Cattle (BR), Romanian Brown (B) and Romanian Steppe, and the markers identified are represented by some proteins, serum transferrin (Tf), serum albumins (Al), hemoglobin (Hb) respectively-from the blood and beta-lactoglobulin (β Lg)-from the milk. In order to determine the genotypes in the studied populations electrophoresis was used in three different variations, depending on the type of the protein, and the migration substrates used were starch and polyacrylamide. The identified genetic structures in the individuals from the surveyed breeds allowed their genetic characterization based on gene and genotype frequencies, as well as using these data in establishing the identity and paternity of the individuals in the surveyed breeds.

Key Words: cattle, biochemical markers, paternity

THE USE OF HORMONAL METHODS ON GILTS REPRODUCTIVE CYCLES

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The main purpose of the current research was to conduct the reproductive cycle on gilts, using hormonal methods to induce estrus in non-cycling and late pubertal gilts and to group in a short period of time the breedings and, in the same time, to induct farrowings. The gilts that have made the object of this experiment were distribute in two equal lots and they were treated with PG 600 (400 I.U. PMSG and 200 I.U. hCG) to induce estrus in two consecutive weeks. The main reproductive objectives that we have observed were the percentage of gilts that came into heat, the time range when the gilts showed signs of estrus and the gestation rate after pregnancy check at 28 and 56 days from breeding. The percentage of the gilts that were in heat after PG 600 was 67 %. The majority (44.8 %) of gilts were in heat after 72-96 hours from PG 600. The gestation rate at 28 days after insemination was 64.6 % and at 56 days after insemination was 53.0%.

Key words: gilts, PG 600, estrus, gestation rate.

THE EFFECT OF A NEW SALICYLIC ACID SYNTHESIS COMPOUNDS ADMINISTRATION ON SERUM TRANSAMINASIS

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The chemical synthesis product is the amide of chlorine salicylic acid and sulphanilamide (5ClSA-SA). This research had as objective the effect of this product from salicylic acid class as a potential medicine on the serum transaminasis activity. 5ClSA-SA has been administrated intraperitoneal to Wistar rats for 7 days consecutively determining ALT and AST transaminasis activities after 5 and 7 days. Serum transaminases had high values compared to the control sample (220% AST and 237% ALT).

This synthesis product can lead to stress that induces increasing of plasmatic enzymes activity, transaminasis being one of those.

Key words: rats, blood, transaminasis, salicylic acid compounds.

COMPARATIVE STUDY ON THE INFLUENCE OF SOME SALICYLIC ACID DERIVATIVES AND SULPHANILAMIDE ADMINISTRATION ON SERUM TRANSAMINASIS

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The experiment has been done to estimate the impact of 5ClSA-SA a new synthesis product (the amide of chlorine salicylic acid with sulphanilamide) comparing to salicylamide and sulphanilamide, basis substances for its synthesis. These three substances have been administrated intraperitoneal to Wistar rats. After the fifth and the seventh administrations have been determined the activities of ALT and AST plasmatic enzymes. ALT and AST transaminasis have increased in all experimental batches, the highest values being recorded for 5ClSA-SA batch. Some xenobiotics thru the actions induced by the generated free radicals can demonstrate their toxic effect. The increasing of ALT activity has shown the hepatic toxicity. The increasing of AST can be induced by a possible hemolytic effect of studied substance.

Key words: *rats, chlorine salicylic compounds, transaminasis*

GLOBAL RESISTANCE MODIFICATION ON RATS CONSECUTIVELY TO $Al_2(SO_4)_3$ ADDITION FOR TWO GENERATION

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Some of the major modifications on membranes produced by the oxygen reactive species are membranal structure and functions modifications, lipids peroxydation, membranal protein alterations and transportation disturbances thru membranes. A series of xenobiotics like oxidant pollutants, lead, aluminium and others directly or indirectly are producing thru metabolization free radicals which interact with cells components and alterate their functions. The purpose of this paper was to relieve the impact of aluminium cumulative addition onto globular resistance on rats. Has been administrated three levels of aluminium (200ppb, 400 ppb și 1000 ppb) as $Al_2(SO_4)_3$ ad libidum in water. Was followed their toxicity impact on the globular resistance for two generations. The results indicate a decrease of globular resistance directly correlated with the aluminium addition.

Key words: rats, globular resistance, aluminium

MODELS FOR MOUSE CHIMERA PRODUCTION: AGGREGATION OF ES CELLS WITH CLEAVAGE STAGE EMBRYOS

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In a mutant ES cells ↔ wild-type embryo chimera, ES cells behave more like epiblast cells. They can contribute to the primitive ectoderm layers, which give rise to all the embryonic tissues and some extraembryonic tissues (Beddington and Robertson, 1989), but not to trophoctoderm or primitive endoderm. Using transgenic ES cell lines, aggregated with cleavage stage host embryo, ES cells can integrate randomly in the embryo proper. If they will be take part in the formation of ICM (inner cell mass), it will be possible to obtain germline chimera animals. To generate ES cells ↔ cleavage stage host embryo chimeras, we used (CD-1) mice as donors of host embryos as well as recipients of manipulated embryos. For chimera production, we used fluorescent-labeled ES cell line (CD1/EGFP), because in this case we can follow the fate of ES cells during the embryonic development. We produced the chimers using “aggregation chimera technique”. 8 cells stage zona pellucida free, mouse embryos were aggregated in an aggregation plates, with a clump of ES cells (10 – 15 cells. The chimera embryos were cultivated for 24 hours in the incubator (at 37 °C, 5% CO₂ in air). The chimera blastocysts resulted after cultivation, were transferred to the uterus of the 2.5-dpc pseudo pregnant females.

Key words: Es cells, diploid, pseudo pregnant, aggregation

STUDIES REGARDING THE CRIOPROTECTIVE PROPRIETIES OF THE VITRIFICATION MEDIA, WITH GLYCEROL, SUCROSE AND FICOLL 70 USED IN EMBRYO CRYOPRESERVATION

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The aim of our paper was to make a series of experiments in order to determine the concentration at which three cryoprotectants (glycerol, sucrose and Ficoll 70) singly and in pairs would vitrify on plunging into liquid nitrogen and remain vitreous when thawed in water bath. As penetrating cryoprotector we used glycerol (MW=92.09, Farmachim) and as un-penetrating cryoprotectors we used sucrose (MW=342.3, Sigma S7903) and Ficoll 70 (MW= 60,000-80,000, Sigma F4375). For glycerol there were tested concentrations from 1M to 6.5M, with concentrations step of 0.5M. For the non penetrating cryoprotectors there were tested concentrations of 5%, 10%, 15% and 20%. There were a total number of 116 solutions tested. The solution vitrification ability on freezing was tested by plunging directly into liquid nitrogen at -196°C. There were tested three thawing temperatures 20°C, 25°C and 37°C. The concentration at which glycerol solution passed into vitreous state was 5M, but at thawing none of them remained vitreous at thawing. When pairs of cryoprotectors were tested 44 solutions vitrified at freezing (23 for glycerol-sucrose, 21 for glycerol-Ficoll 70) and 11 of them remained vitreous at thawing. The glycerol-Ficoll 70 pair give the best results on thawing (7 solution remained vitreous on warming) at 37°C.

Key words: *crioprotectors, vitrification, glycerol, sucrose, Ficoll 70*

RESEARCHES REGARDING THE MAIN REPRODUCTION INDICATORS DETERMINATED IN SOWS, STAND GESTATION PEN TIPE

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Current researches were carried out with the goal to quantize the loss from the weaning to early gestation at the sows housed in open pen gestation. In this trial we tested two pen types, different not only by size, but also by feeders' emplacement. The main reproduction indicators that we calculated until the 28 gestation day were the proportion of sows in heat after weaning, the weaning to estrus interval and the gestation rates. The weaning to estrus interval was about 4 to 7 days, most sows were in heat in the day 5 and 6 days after weaning. The percent of heat detection after weaning was 71.42% for the small pens and 70.71% for the big pens (differences statistically non significant, chi test value was 0.983). The gestation rate at 28 days after insemination was 91.62% for the small pens and 94.72% for the large pens (chi test value 0,959, statistically non significant differences). The overpopulation for heat induction and after that chipping animals together in those pens, show that the loss are up to 40.47%, between weaning – day 28 of gestation.

Key words: sows, weaning to estrus interval, heat rates, gestation rates, pen size

IDENTIFICATION OF BETA-LACTOGLOBULIN AND KAPPA-CASEIN GENOTYPES IN CATTLE

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Beta-lactoglobulin (b-Lg) and kappa-casein (k-Cn) are two of the most important proteins in the mammals' milk synthesized by the epithelial cells of the mammary glands. They play a crucial role in the milk quality and coagulation process (production of cheese and butter). The PCR-RFLP test was performed to distinguish the different alleles in a population of Romanian Black Spotted cattle, a dairy breed. Genetic polymorphism was detected by digestion with the endonucleases Hae III (b-Lg) and Hinf I (k-Cn), followed by electrophoresis in agarose high resolution gel stained with ethidium bromide. Fifty DNA samples from Romanian Black Spotted breed were analyzed for A and B variants. This simple PCR-RFLP test makes feasible the inclusion of b-Lg and k-Cn genotypes in breeding plans and cattle selection.

Key words: *kappa-casein, beta-lactoglobulin, genetic polymorphism, PCR-RFLP test*

CONDITIONING MICROBIAL PRODUCTS CONTAINING NITROGEN FIXING BACTERIA WITH DIFFERENT SOLID EXCIPIENTS

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The stability in real time of two strains of Rhizobium (Rhizobium meliloti and Rhizobium japonicum) mixed with different excipients was evaluated during a 6-months period. The excipients studied were: peat, peat and calcium carbonate, zeolite, and ceramic. Liquid cultures and excipients mixtures were dried (12-14% humidity), sealed in plastic bags and preserved at +4°C. The cells were activated periodically by suspending aliquots from dry products in 0.9% saline solution. The viability of Rhizobium cells was evaluated by cultivation of diluted suspensions in YMA plates. The number of viable cells is decreasing during drying in all cases, increase in the first month of storage, and remains constant or decrease very slowly during storage for all obtained dry products containing rhizobia mixed with solid dry excipients. The highest number of viable cells at the end of the experiment was obtained in ceramic with Rhizobium japonicum (8×10^5 cells/gram), and the lowest number of viable cells was obtained in zeolite with Rhizobium meliloti ($1,1 \times 10^3$ cells/gram).

Key words: *Rhizobium, excipient, peat, calcium carbonate, zeolite, ceramic, inoculants.*

STABILITY IN REAL TIME OF SOME CRYOPRESERVED MICROBIAL STRAINS WITH REFERENCE TO GENETICALLY MODIFIED MICROORGANISMS

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The aim of this work is to analyze the viability of microorganisms from Collection of Industrial Microorganisms from Faculty of Animal Science and Biotechnology – Timisoara, during freezing and thawing as part of cryopreservation technique. The stability in real time of 19 strains cryopreserved in 16% glycerol was evaluated during a 6-months period. The strains studied were: Escherichia coli, Lactobacillus acidophilus, Rhizobium meliloti, Saccharomyces cerevisiae, Aspergillus oryzae, Aspergillus niger, Trichoderma viride, Bacillus globigii, Bacillus licheniformis, and 9 strains of Bacillus subtilis. The strains cryopreserved at -20°C and -70°C were activated using the fast thawing protocol. A better cell recovery was achieved with the -70°C protocol reaching an average viability for E. coli of 86,3%, comparing with 78,6% in -20°C protocol. The cell recovery percentages for the other strains were: 92,4% for L. acidophilus, 93,9% for A.niger, 89% for A. oryzae, 86,7% for T. viride, 94,2% for R. meliloti, 82,1% for S. cerevisiae, 89,9% for B. licheniformis. Regarding the viability of genetically modified microorganisms, the values shows a good recovering after freezing and thawing, even after 180 days of cryopreservation. With the -20°C protocol lower viability was observed due probably to the formation of eutectic mixtures and re-crystalization processes.

Key words: *cryopreservation, microorganisms, GMM, freezing*

CONDITIONING MICROBIAL PRODUCTS CONTAINING LACTIC BACTERIA WITH ORGANIC AND INORGANIC SUPPORTS FOR USE IN ANIMAL FEEDING

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*The stability in real time of three strains of lactic bacteria (*Lactobacillus acidophilus*, *Lactobacillus plantarum*, *Enterococcus faecium*) mixed with different excipients was evaluated during a 6-months period. The excipients studied were: zeolite, calcium carbonate, perlite ceramic, wheat bran and Carboxymethyl cellulose (CMC). A part of liquid cultures and excipients mixtures were dried (12-14% humidity) and other part were sealed in plastic bags with over 70% humidity and preserved at +4°C. The cells were activated periodically by suspending aliquots from wet and dry products in 0.9% saline solution. The viability of lactic bacteria was evaluated by cultivation of diluted suspensions in MRS plates. The number of viable lactic cells is decreasing very slowly, or remains constant in calcium carbonate, ceramics and CMC dry products for all strains. In the case of zeolite, the viability of *Lb. acidophilus* and *Lb. plantarum* decrease to 0 in the first month, and the viability of *Ec. faecium* decrease 20 times in 6 months. As for wet products, the number of viable cells is increasing in the first 30 days for calcium carbonate and in the first 60 days for wheat bran. The numbers of viable cells decrease in both wet products, reaching values close to the viability in fresh products after 6 months of storage at +4°C.*

Key words: *lactic bacteria, excipient, : zeolite, calcium carbonate, perlite ceramic, wheat bran, carboxymethyl cellulose, wet and dry inoculants.*

STUDY REGARDING EFFICIENCY OF INDUCED GENETIC TRANSFORMATION IN *BACILLUS LICHENIFORMIS* WITH PLASMID DNA

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*A strain of Bacillus licheniformis was subject to genetic transformation with plasmid vectors (pLC1 and pNC61), using electroporation technique, protoplast transformation and bivalent cations (CaCl₂) mediated transformation. In the case of transformation by **electroporation** of Bacillus licheniformis B40, the highest number of transformed colonies (3) were obtained only after a 1,79 KV electric shock, for 2,2 milliseconds. Using this transformation technique we have obtained six kanamycin resistant transformants. The frequency of Bacillus licheniformis B40 **protoplasts** transformation using pLC1 and pNC61 plasmid vectors is approximately 10% (TF = 10%). As a result of pLC1 plasmid integration in Bacillus licheniformis protoplasts, six kanamycin resistant transformants were obtained. The pNC61 plasmid, which confers trimethoprim resistance, does not integrate in receiver cells by protoplast transformation. The direct genetic transformation in the presence of **bivalent cations** (CaCl₂), mediated by pLC1 and pNC61 plasmid vectors, produce a low transformation frequency. Using this technique, we have obtained three trimethoprim resistant colonies and four kanamycin resistant colonies. The chemical way of transformation is the only technique, which realizes the integration of pNC61 in B. licheniformis B40 cells.*

Key words: *genetic transformation, Bacillus licheniformis, electroporation, protoplast, pLC1, pNC61.*

PREPARATION AND CHARACTERIZATION OF MICROBIAL GLUCOAMYLASE IMMOBILIZED IN METHYLTRIOXYSILANE/TETRAETHOXYSILANE SOL-GEL MATRICES

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Immobilization of biocatalysts helps in their economic reuse and stabilizes the enzymes structure, thereby allowing their applications even under harsh environmental conditions of pH, temperature and organic solvents. The supports and the immobilization method are important for the immobilization efficiency. Amylases held the maximum market share of enzyme sales with their major applications ranging from food, fermentation, textile and paper industries. The aim of this work was to implement a simple and efficient method for the entrapment of microbial glucoamylase in a silica matrix, by the sol-gel method, using different alkoxy silanes as gel precursors. The performance of the enzyme immobilized on silica supports was investigated and compared with that of the free one. The immobilization conditions were varied, and their effect on the performance of the immobilized enzyme was analyzed with reference to their biochemical and kinetical properties.

Key Words: glucoamylase, inorganic materials, sol-gel immobilization, kinetic parameters.

INFLUENCE OF AGRICULTURAL POLLUTANTS ON THE GREENHOUSE EFFECT

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The general heating of our planet has become a proved fact today, and its consequences are observed in more climatic disturbances which affect almost the whole Earth. At the base of this climatic process there is the excessive development of the greenhouse effect.

The greenhouse effect is a natural physical phenomenon which has gradually developed with the geophysical and biological evolution of the Earth, and its consequence is the thermal constancy of $+15^{\circ}\text{C}$ as medium global temperature.

The main physical factories which contribute at the realization of greenhouse effect are CO_2 , watery vapors, NO_x and CH_4 . Naturally, the greenhouse gases have the perfectly global self-regulation cycles.

This capacity of self-regulation seems to be troubled by the huge amounts of polluted gaseous thrown in the air by different and usual human activities. In this sense, the agriculture has an important role and the main pollution sources are the rice plantations, inorganic fertilizations and animal farms.

Key words: *general heating, greenhouse effect, agricultural pollutants*

PILLARED ZEOLITES AMENDMENTS INFLUENCE FROM POLLUTED SOIL ON HEAVY METALS BIOACCUMULATION IN TOMATOES

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Due to anthropic activities, the presence of metals in polluted soils has effects on plants development and metals bioaccumulation into trophic levels. In this paper, were followed experiments regarding the tomatoes development into polluted soils with 43.4 – 58.4 mg Cd/kg d.s. and 500- 633 mg Pb/kg d.s. Nickel, zinc and copper content in soils are in the range of diffuse pollution values. Comparatively, an experiment was realized with polluted soils and amended with pillared zeolites. Pillared zeolites change metals distribution in soil fractions and their solubility. Tomato plants grew onto polluted soils, but did not present fruits.

Tomatoes from polluted and amended soils presented fruits and metals in tissues ($Zn > Cu > Ni$). Zinc concentration was five times greater then Ni. Fruits do not accumulate cadmium and lead.

Key words: *polluted soils, heavy metals, bioaccumulation, pillared zeolites*

COMPARATIVE TECHNOLOGICAL STUDY UPON THE WINTER PEA AND HUNGARIAN VETCH CROP UNDER THE CONDITIONS OF BANAT'S FIELD AREA

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The autumn forage leguminous species studied (winter pea and Hungarian vetch) may be considered as the most efficient crops in terms of technology and of their positive agro-ecologic effects as well, under the conditions of the Banat's field area. Autumn mashes, when seeded in association with the species Triticale, lead to yields of over 7 t/ha D.M., when the pea is seeded in the period 10-20 September and the Hungarian vetch during 20-30 September, because the Hungarian vetch is more resistant to the low temperatures during winter. Under such conditions, the optimal fertilization dose is $N_{50}P_{50}K_{50}$.

Key words: winter pea, Hungarian vetch, seeding period, fertilization

STUDY UPON THE COMPETITIVE EFFECT OF SOME GENOTYPES OF WINTER PEA AND HUNGARIAN VETCH, CULTIVATED IN ASSOCIATION WITH TRITICALE

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Successive to the studies concerning the competitive effect of winter pea and Hungarian vetch, we have noticed that this one, together with plant development stage and the stress caused by their density lead to a irregular distribution of the substances assimilated within the vegetative organs, and consequently to biomass achievement, at this level. So, in the case of the winter pea, the amounts of biomass within leaves decreases from 40% in pure crop to 21% in associated crop; in the case of stems, the situation is conversed (39% in the case of associated crops compared to 29% in pure crop). Root biomass represents 38% in plants within associated crops and 29% in pure crops. The situation is similar for the Hungarian vetch. Consequently, Triticale plants benefit positively of the advantages provided by the crop associated with the two leguminous species, becoming, for them, a competitive factor, depending on density per land unit.

Key words: winter pea, Hungarian vetch, competitive effect, Triticale

FORAGE QUALITY ASSESSMENTS OF RED CLOVER (*TRIFOLIUM PRATENSE* L.) THROUGH NEAR INFRARED SPECTROSCOPY

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*This paper provides measurements of the chemical composition of the red clover (*Trifolium pratense* L.) and hybrid ryegrass (*Lolium hybridum* Hausskn) forage through NIRS measurements in different development stages of the first crop production cycle during the first year of growth in Târgoviște Plain. The overall aim of this work was to perform a detailed analysis of red clover, as a component of a grass-clover mixture. Red clover soled crop (three diploids and three tetraploid cultivars), and hybrid ryegrass intercropping 50-50% were used in order to define the stability and sustainability boundaries of a reliable intensive system. Experimental trials were performed in Târgoviște Plain (Dobra), Romania (2004-2006). Hays were harvested at pre-bloom – F1, at early bloom – F2, and mid-bloom F3 of red clover. Relative feed value (RFV) decreased with the development stages both in clover and hybrid ryegrass. In Târgoviște plain, red clover has accumulated 280.6 kg crude protein/ha in pre bloom and 697.7 kg/ha in mid bloom. The mineral elements content showed 1.41-1.93% calcium, 1.2-2.2% potassium and 0.29-1.41% phosphorous according to the phenological stages.*

Key words: red clover hays, Near Infrared Reflectance Spectroscopy, feed value, chemical composition

GEOSPATIAL TECHNOLOGY: A MODERN APPROACH TO SUSTAINABLE DAIRY PRODUCTION SYSTEM

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This paper briefly presents several applications of the geospatial technology as a method to maximize the efficiency of the dairy farm management. The experiment was carried out at Neagrași dairy farm in Târgoviște Plain. A functional farm production and mapping program for detailed farm management information system with several modules: mapping, forage stock, feed forecaster, individual cattle database, fuel consume for field operations and farm inputs database was developed for handheld computers with GPS navigation. Such portable information tools might help the decision making process, the development of agro-types or in the exploration of land use options to support the policy makers at eco-regional level, the management staff at farm level and various other applications in dairy farms.

Key words: dairy farm, precision farming, digital mapping, Pocket PC, GPS

**PERSIAN CLOVER (*TRIFOLIUM RESUPINATUM* L.)
CONTRIBUTION TO THE INCREASE OF THE YIELDS OF
THE TEMPORARY PASTURES COMPRISING ALFALFA
AND ORCHARD GRASS**

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In order to make efficient the temporary pasture consisted of alfalfa and orchard grass, we propose the introduction of the Persian clover, which leads, within the first year of vegetation, to dry matter yield bigger with 44.3% than in the case of the variant without Persian clover. Persian clover also participates to the achievement of a higher profit compared to the variants consisted only of the basic mixture comprising gramineae and perennial leguminous species.

Key words: temporary pasture, *Trifolium resupinatum*, dry matter, profitability degree

PRODUCTIVE IMPACT OF THE GREEN FORAGE SUPPLY USAGE AT THE DAIRY FARMS

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This paper presents the importance of the crop structure as a tool to maximize efficiency in the conceiving of the green forage supply scheme in a dairy farm. Several aspects are necessary to consider for proper green forage utilization by the cattle, as follows: climatic conditions, proper field operations for each crop, optimal harvest date, and farm technical and economical resources. With a high degree of succulence, green forage and derived products (silage, haylage), present advantages as compared to hay, having superior indices of nutritive value and palatability. A green forage supply scheme was applied on an area of 188 ha taking into account dairy cattle biological traits. Crop structure was as follows: forage maize, Sudan grass, Italian ryegrass, new lucern and old lucerne, and orchardgrass. Insuring the required superior green forage for the dairy cattle according to forage rations, represents one of the main techniques to maximize milk production and to minimize milk production cost.

Keywords: green forage supply, dairy cattle, forage rations.

THE INFLUENCE OF SOWING REPORT BETWEEN ALFALFA AND BERSEEM CLOVER IN ADDITION WITH ORCHARD GRASS ON GREEN MATTER YIELD

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It is well known that in its first year of vegetation, alfalfa has a slower growth rate and that this is an inconvenient in obtaining economic productions of green matter. Another negative aspect comes from the fact that because of the slow growth rate, alfalfa cannot cover the land efficiently; therefore it cannot compete with weeds, which can diminish the yield even more. Starting from these statements, we tested the possibility of cultivating alfalfa under a protective plant – Alexandrine clover – in addition with orchard grass (knowing the fact that Alexandrine clover ensures the highest yields at 1st and 2nd cut) in order to increase hay production in the 1st year of cultivation of alfalfa.

Key words: alfalfa , Alexandrine clover, orchard grass, green matter.

RESEARCHES REGARDING THE EFFECT OF SOME BIOLOGICALLY ACTIVE PRODUCTS UPON THE GERMINATION CAPACITIES OF SMOOTH BROME SEEDS

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The carrying out of uniform forage crops represents an important technological loop for all agricultural species. The uniformity of these crops is caused especially by seed germination capacity, respectively by plant emergence capacity, depending upon the climatic and technological conditions. With regards to the researches carried out in this direction, we present here the influence exerted by some biologically-active products, used through extra-root application during plant vegetation period, upon seeds submitted to germination. The observations performed on smooth brome seeds have led to the conclusion that the per cent of germinated seeds ranges from 82%, in the untreated control variant, to 87.67% in the variant treated with the product Stimupro.

Key words: biologically active products, germination, smooth brome

RESEARCHES REGARDING THE EFFECT OF SOME BIOLOGICALLY ACTIVE PRODUCTS UPON THE GERMINATION CAPACITIES OF ORCHARDGRASS SEEDS

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The carrying out of uniform forage crops represents an important technological loop for all agricultural species. The uniformity of these crops is caused especially by seed germination capacity, respectively by plant emergence capacity, depending upon the climatic and technological conditions. With regards to the researches carried out in this direction, we present here the influence exerted by some biologically-active products, used through extra-root application during plant vegetation period, upon seeds submitted to germination. The observations performed on orchardgrass seeds showed that the percentage of germinated seeds ranges from 95.7% in the untreated control variant, to 99.3% in the treated variants. Concerning the birdsfoot trefoil seeds, we may notice an increase of the germination energy from 84.7% in the untreated control variant to 93.7% in the variants submitted to treatments with biostimulant substances.

Key words: biologically-active products, germination, orchardgrass

THE INTRASPECIFIC COMPETITION EFFECTS ON GRASS PRODUCTIVITY OF *DACTYLIS GLOMERATA* L. AND *LOLIUM PERENNE* L.

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To study the intraspecific competition and its influence on these species, Dactylis glomerata and Lolium perene were cropped in pure culture and mixtures. Research was carried out at ICDP Brasov, on a chernozem soil, well supplied in NPK minerals. Dressing was uniform for both crops and it consists in 100 kg N/ha applied integrally in spring, 50 kg P₂O₅/ha and 50 kg K₂O/ha applied at the crop establishment.

To asses the competition between these species it was determined the number of tillers, dynamic of tiller formation, morphological structure of tillers, specific weight, dynamic of DM accumulation during the first growth and vegetation period. It showed the existence of higher intraspecific competition for an only variety. Variety mixtures contribute at the better utilization of nutrition surface and improvement of photosynthetic efficiency, which influences the biomass production.

Key words: *intraspecific competition, Dactylis glomerata, Lolium perene DM yield, morphological structure.*

THE EXAMINATION OF HERBS QUALITY FROM GRAZING AND MEADOW HERBAGE IN HIGHER ALTITUDES

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Quality of chosen herbal species from meadow and grazing herbage were evaluated. Dry matter, crude protein, ash, fat and fiber were analyzed. Herbage sampling was realized on three pastures of cattle with higher altitudes. Samples were compared with meadow herbage. Grass and herbage are the most natural and optimal feedstuff for cattle. Grazing management should notably regulate the pasture composition, i.e. support dominance of soft stoloniserous strains of grasses and decrease occurrence of weed and less value strain of gramineous grasses.

Key words: herbs, grazing, pasture, meadow

QUANTITATIVE MORPHOMETRY ANALYSIS OF THE RAT EPIDIDYMIS AFTER A PERORAL ADMINISTRATION OF NICKEL

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The aim of the study was to evaluate the changes of rat epididymis after a long term intake of nickel chloride using morphometry methods. The nickel was administered in a daily dose of 100 mg.l⁻¹ NiCl₂ in drinking water to male rats during 3 months. The males were housed individually in a plastic cages. Ten males served as an untreated control group without nickel treatment. At the end of the experimental period (3 months), the animals from nickel-treated group and control group were killed and the samples of the epididymes were taken for morphometry evaluation. Three months after nickel treatment, no significant decrease in interstitial tissue volume from 61.23 ± 15.29 % to 59.44 ± 16.91 % in the epididymis of Ni- treated rats was observed. The tubule epithelium in nickel-treated group increased insignificantly to 25.97 ± 11.75 % and the tubule lumen volume to 14.58 ± 7.21 % in comparison with the control group (24.17 ± 11.08 % and 14.52 ± 8.40 %, respectively). The diameter of the epididymal tubule significantly (P<0.0001) increased from 168.31 ± 53.96 % to 218.85 ± 96.97 %. A significant (P<0.0001) decrease in the epithelium height from 33.55 ± 9.90 % to 28.18 ± 9.75 % was also noted. The findings show the slight effect of peroral nickel on the epididymal structures indicating the possibility of the male fertility depression caused by nickel.

Key words: epididymis, nickel, rat, morphometry, structure

THE STRUCTURE OF LONG BONES' DIAPHYSIS COMPACTA IN LEPORIDAE, OBSERVED IN POLARIZING MICROSCOPE

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The study of limb long bones of two Leporidae species was done on dried bone preparations, obtained by polishing and then examined in usual polarized microscopy and also in circular variant using a potassic mica filter of $\frac{1}{4} \lambda$. In diaphysis and metaphysis compacta were identified three basic histoarchitectural types: osteonal type in diaphysis, interstitial type in proximate metaphysis and circumferential type, specific for distal metaphysis. The micrometric measurements effected to diaphysis level put into evidence more fragile bony structure in domestic rabbit as consequence of life in captivity, without excessive locomotory requirements, comparatively to more strong bony structure present in wild rabbit.

Key words: wild and domestic rabbit, long bones, histoarchitecture, micrometric measurements

STUDIES REGARDING THE IDENTIFICATION OF SOME HISTO-MORPHOLOGICAL PARAMETERS THAT COULD BE USED AS MARKERS FOR BONE MINERALIZATION APPRECIATION IN PIGS – SCIENTIFIC SUPPORT IN OSTEOPOROSIS STUDY

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The modern approach of the post-menopause osteoporosis etiology relies on the unbalance between the processes of bone resorption and formation, caused by the lack of estrogen hormones which determine different combined forms of increasing/decreasing the osseous cell activity, osteoblasts and osteoclasts by type. With regards to this, some histomorphometric analyses are carried out in order to determine the mineralized bone and osteoid relative quantity, and also the activity of cells having a formation function (osteoblasts) or a resorption of the osseous tissue (osteoclasts). American Society for Bone and Mineral Research recommend the evaluation of the following histomorphometric parameters: the volume of the osseous trabeculae (BV/TV, % - the percentage of the osseous tissue in a certain volume. Schematically, it represents the report full/empty within the bone); osteoid area (OS/BS, % - the percentage of the surface of the bone formed on a certain bone area); osteoblast area (Ob. S/BS, % - the percentage of the spongy bone trabecular and span areas with morphologically-active osteoblasts); osteoid volume (OV/BV, % - the osteoid percentage within a certain bone volume); osteoid width (O. Th, m, - the average width of the osteoid tape, which represents the support for calcification); osteoclast area (Oc. S/BS, % - the percentage of the trabecular areas with resorption gaps occupied by one or many osteoclasts, considering the fact that calcium deficiency causes the increase of osteoclast number and stimulates their activity); mineralization rate through apposition (MAR, m/day), calculated in divisions per average distance between two fluorescent tagging (it results from calceine accumulation at the mineralization front level). This double tagging has been accomplished through calceine i.m. injection at intervals of 6 days, 48 hours before sample taking. The researches presented in this paper work belong to the subcontract CEEX no. 110-2, partner no. 2, within the contract CEEX 110 entitled "Experimental model for the study upon the bio-availability of some nutritional factors (Ca, B, phytosterols) and their influence upon bone mineralization in pigs, a scientific support in the study upon osteoporosis".

Key words: osteoporosis, mineralization, osteoblasts, osteoclasts, osteoid, histomorphometry

EVALUATION THE TOXIC EFFECT OF DON MYCOTOXIN ON THE HISTOLOGICAL STRUCTURE OF THE PIG GUT

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Deoxynivalenol is a mycotoxin produced by fungi of the Fusarium genus , wich are abundant in various cereal crops and processed grains. In order to highlight the morpho-physiological changes caused by the mycotoxin DON upon various tissue types, we have taken samples from duodenum from 9 piglets belonging to three experimental groups: group I – control, group II (experimental I – 0.5 ppm DON) and group III (experimental II – 1.5 ppm DON). The microscopic analysis carried out upon sections of small intestine taken from the individuals from group II shows desquamation processes in the villositar epithelium, present on large areas. Dystrophic processes are also present at glandular level, where we may notice processes of epithelial degeneration accompanied by the expansion of the periglandular areas. Within the villositar and interglandular chorion, we may observe a process of lymph-histocitary hyperplasia and numerous processes of trans-epithelial leukopedesis. At group III, at villosity level, there are frequent desquamation processes on some mucous denudation areas, too (the epithelium together with the subjacent chorion). The dystrophic processes occur in the glandular epithelium, too, which is separated from the basal membrane.

Key words: *Deoxynivalenol, Fusarium, duodenum, microscopic analysis.*

HISTOLOGICAL STRUCTURE OF *MUSCULUS LONGISSIMUS DORSI* IN PIGS WITH THE SAME RYANODINE RECEPTOR GENOTYPE (CC) IN RELATION TO MEAT QUALITY INDICATORS

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The aim of this study was to investigate the histological structure of pig longissimus muscle in relation to indicators of meat quality. A total number of 16 pigs about 101.28 kg average live weight of the same CC RYR -1 genotype were used. Animals were raised on Fattening and Carcass Value Experimental Station (FCVES) of SUA in Nitra on equal conditions, fed with standard nutrition fortified with vitamin-mineral mixture and slaughtered on experimental abattoir of FCVES. Samples from musculus longissimus dorsi (MLD) for histological evaluation were taken within 30 minutes after slaughter, immediately frozen in liquid nitrogen and stored at temperature -20°C. On experimental abattoir of FCVES feeding indicators, and indicators of meat quality and carcass value were observed. Samples were histochemically processed and single types of muscle fibers were differentiated according to reaction on SDH on the basis of method by Vacek (1974). Microscopic system Nikon, digital camera Pixelink and software for image analyse LUCIA for morphometric analysis of MLD structure were used. Histological evaluation of MLD showed highest abundance of white and lowest abundance of intermediate muscle fibers, and highest variability in red muscle fibers. Concerning to the average muscle fiber diameter, the highest values in white and the lowest values in red muscle fibers were obtained. Negative correlations between white muscle fiber content and pH_1 in MLD and thigh and pH_{24} in thigh were obtained. Pearson's correlation coefficients showed positive correlation of white and red muscle fiber diameter to pH_1 and pH_{24} in thigh. Concerning to free water content negative correlations of intermediate and white muscle fiber diameter were found.

Key words: pig, MLD, muscle fibers, meat quality

HISTOLOGICAL STRUCTURE OF *MUSCULUS LONGISSIMUS DORSI* IN PIGS WITH THE SAME RYANODINE RECEPTOR GENOTYPE (CC) IN RELATION TO FEEDING INDICATORS

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The aim of this study was to investigate the histological structure of pig longissimus muscle in relation to feeding indicators. A total number of 16 pigs about 101.28 kg average live weight with CC RYR -1 genotype were used. Animals were raised on Fattening and Carcass Value Experimental Station (FCVES) of SUA in Nitra on equal conditions, fed with standard nutrition fortified with vitamin-mineral mixture and slaughtered on experimental abattoir of FCVES. Samples from musculus longissimus dorsi (MLD) for histological evaluation were taken within 30 minutes after slaughter, immediately frozen in liquid nitrogen and stored at temperature -20 °C. On FCVES feeding indicators were observed. Samples were histochemically processed and single types of muscle fibers were differentiated according to reaction on SDH on the basis of method by Vacek (1974). Microscopic system Nikon, digital camera Pixelink and software for image analyse LUCIA for morphometric analysis of MLD structure were used. Histological analysis of MLD showed, highest abundance of white and lowest abundance of intermediate muscle fibers. Concerning to connective and fat tissue the highest values of connective tissue abundance were obtained. In relation to the average muscle fiber diameter in longissimus muscle, the highest values of white muscle fiber diameter and the lowest values of red muscle fiber diameter were obtained. Correlation analysis of MLD structure and feeding indicators showed significant negative correlations between intermediate fiber abundance and live weight at birth. Concerning to the daily gain it was shown positive moderate significant correlation to red muscle fiber abundance and tissue. In relation to number of feeding days we found significant moderate correlations to white and red muscle fiber abundance. Correlation coefficients between muscle fiber diameter and live weight, daily gain, number of feeding days and food intake/kg gain were found predominantly weak, and non significant.

Key words: pig, MLD, muscle fibres, feeding indicators

CHANGES INDUCED BY THE ADDED FAT IN THE BROILERS' FODDER ON THE SERIQUE LEVELS OF THE GALL PIGMENTS

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The purpose of this paper was to investigate the effect of the added fat in the chicken feed ration on the liver and gallbladder function, by dosage of the serique levels of the gall pigments (direct, indirect and total billirubine), corroborated with previous dosages of particular enzymes who's sanguine concentration represents the expression of the liver and gallbladder health state (GPT, GOT, GGT and alkaline phosphataze).

As biologic material 60 boilers were used (ISA Hubbard hybrids), beginning with the age of 21 days, split in four homogenous groups, 15 for each experimental variant. These groups were differentiated by fat content in the distributed feed: control group C with no added fat, experimental group E1 receiving supplemental 4% fat in their fodder, experimental group E2 receiving supplemental 6% fat, experimental group E3 receiving supplemental 8% fat in their fodder.

The p value obtained from the Mann-Whitney U test does not indicate significant differences between the group C and the group E1 for none of the three types of billirubine ($p=0.9$ for TB, $p=0.5$ for DB and respectively $p=0.9$ for IB). Between the groups C and E2 we record significant differences for TB ($p=0.02$) and IB ($p=0.02$), and between the groups C and E3 we have distinct significant differences for TB ($p=0.001$) and IB ($p=0.002$). Significant differences are indicated by the p value also between the experimental groups E1 and E2 for BT ($p=0.04$) and for IB ($p=0.03$), and between the groups E1 and E3 the differences between these two types of billirubine are distinctively significant ($p=0.006$). The results of the analysis indicates values which still fit between the normal limits, despite the significant differences between the different experimental groups regarding the billirubine evolution without indicating the existence of liver and gall bladder malady caused by the energetic supplementation of the unique fodder distributed to the broilers.

Key words: broilers, fats, gall pigments, serique enzymes

EFFECT OF PARTURITION ON WHITE BLOOD CELLS COUNT (WBC) AND T CELLS SUBSETS IN SELENIUM SUPPLEMENTED NEWBORN LAMBS

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The aim of the work was assessed the influence of parturition at the dynamics of leukocytes and T cells subsets in a selenium supplemented newborn lambs. The experiment was conducted on nineteen sucking newborn lambs of the Sumava sheep breed. After parturition blood samples were taken from lambs on day 10, 30 and 60. The WBC in blood smear was detected by microscopically analysis (norm no. 84 3206), and the CD4⁺ and CD8⁺ T cells subsets in blood were detected by flow cytometry. The WBC was in physiological norm. The highest WBC was founded on 30th day of the experiment. In the dynamics of the CD4⁺ a CD8⁺ T cells subsets were founded statistically significant differences: In the CD4⁺ subset between 10th and 30th day of the experiment ($P < 0.001$) and between 30th and 60th day of the experiment ($P < 0.01$), and in the CD8⁺ subset between 10th and 30th day of the experiment ($P < 0.001$). Excepted in 30th day of the experiment were counts of the CD4⁺ and CD8⁺ T cells subsets inside the physiological norm.

Key words: blood; FACS; T cells; CD;

THE INFLUENCE OF HYPERTHERMIA ON IODINE- THYROID SUPPLY OF WHITE RATS' ORGANISM DEPENDING ON IODINE-FLUORINE SUPPLY

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The influence of hyperthermia on iodine-thyroid reserves of organism in white rats under full-fledged ration and slightly-iodine diet has been investigated. It has been established that the short-term hyperthermia (7-20 min.) practically does not produce hormone response of the thyroid gland though the extrathyroid intertissue redistribution of iodine reserves has been observed but a 50-minute action suppresses hormone products of T_4 , it happening more substantially under slightly iodine-fluorine diet, stimulating its inactivation in rT_3 with lowering the level of highly active T_3 , the exhaustion of iodine supply of the majority of tissues due to increasing the intensity of the excretion of iodine with urine, being especially dangerous as to deiodination for animals under slightly iodine-fluorine diet.

Key words: hyperthermia, thyroid gland hormone, iodine reserve, full-fledged ration, slightly-iodine-fluorine diet.

THE INFLUENCE OF IODINIZED OIL ON THE FUNCTION OF HYPHYPHYSIS-THYROID SYSTEM AND THE CONTENTS OF MIDDLE MOLECULE PEPTIDES IN HEALTHY PEOPLE DEPENDING ON IODINE SUPPLY OF THE BODY

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The influence of iodinated oil (IO) on the function of hypophysis-thyroid system and the content of middle molecule peptides (MMP) in the blood serum in people of two groups living of biogeochemical zones with different levels of iodine deficiency expression has been investigated. Taking the iodinated oil during 14 days in the dose of 200 µg of iodine daily by the inhabitants of the Tissa-Danube lowland with less expressed iodine deficiency than in highlands, increases iodine dependence of the human body, decreases TSH content and the risk of goitre development, increases the excretion of iodine with urine and after a month's taking it the median ioduria is achieved that corresponds to complete iodine sufficiency. Taking the IO by people constantly living in the Carpathians favours the increase of T₃, T₄ hormone production, decreases TSH concentration to the norm in people living in better iodine ecological conditions, normalizes MMP production formation in tissues to the level of the inhabitants of lowlands and stimulates the increase of iodine with the urine.

Key words: function of hypophysis-thyroid system, thyroid hormone, iodine deficit, middle molecule peptides, iodinated oil.

THE STRUCTURE AND FINE STRUCTURE OF TELENCEPHALIC WHITE MATTER IN *GALLUS DOMESTICUS* SPECIES

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In Gallus domesticus species, the cerebral emispheres are constituted by the grey and white matter. The white matter is located into emispheres' center, integrating in its mass a number of nervous nuclei, while the grey matter, placed to the periphery and into the center of telencephalon, composes the cerebral cortex and telencephalic nervous nuclei. Histologically, the white matter is constituted by nervous mielinic prolongations (projection, association and commissural fibres), glial cells and blood vessels (including muscular arteriols) originated from the leptomeningeal space. This data, based on our experiment, are illustrated by the most suggestive aspects, chosen to be presented in this paper work.

Key words: *Gallus domesticus* species, telencephalic white matter, histological structure

EFFECT OF HEAT TREATMENT ON SOYBEAN PROTEIN SOLUBILITY

EFECTUL TRATAMENTULUI TERMIC ASUPRA SOLUBILITĂȚII PROTEINEI DIN SOIA

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The use of soybean products in animal feeds is limited due to the presence of anti-nutritional factors (ANF). Proper heat processing is required to destroy ANF naturally present in raw soybeans and to remove solvent remaining from the oil extraction process. Over and under toasting of soybean causes lower nutritional value. Excessive heat treatment causes Maillard reaction which affects the availability of lysine in particular and produces changes to the chemical structure of proteins resulting in a decrease of the nutritive value. The objective of this study was to evaluate the effect of heating time on the protein solubility. The investigation of the heating time on protein solubility in soybean meal (SBM) revealed a negative correlation ($r = -0.9596$). Since the urease index is suitable only for detecting under processed SBM, the protein solubility is an important index for monitoring SBM quality.

Key words: protein solubility, soybean meal, urease index

THE INFLUENCE OF GRAZING HERBAGE ON CHOSEN PARAMETRES OF MILK QUALITY

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*Yield, botanic composition and chemical analyses of grazing herbage were observed in four localities with different altitude. The altitude was for first place at 600-650 m, second place at 700-750 m, third place at 700-800 m and the fourth place at 400-700 m. Grazing herbage is the most natural and optimal feedstuff for all kinds and categories of cattle. Grazing should notably regulate the pasture composition, i.e. support dominance of soft stolonate strain of grasses and decrease occurrence of weeds and less value strain of graminoids and herbs. Grazing was found to be 20-30% less of species then in hewed herbage. Grazing in the earlier growth period supported the development of lower stolonate graminoids and *Trifolium repens* at the expense of high-grown graminoids and other herbs. Selective character of grazing was at the time the animals had at disposal larger area then forage usage. Part of herbage evaluation was also observation milk and meat quality on farms. Owing to grazing there were some changes in protein content and protein fraction. At the grazing the part of alfa-lacto-albumin has increased.*

Key words: pasture, botanic composition, milk

USE OF DIETARY CAMELINA (*CAMELINA SATIVA*) SEEDS DURING THE FINISHING PERIOD; EFFECTS ON BROILER PERFORMANCE AND ON THE ORGANOLEPTIC TRAITS OF BROILER MEAT

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The study quantified the effects of Camelina seeds and buckthorn meal on broiler carcass production and quality. Camelina seeds and buckthorn meal were incorporated in the compound feeds for finishing broilers as natural source of vitamins (beta- carotene, vitamins C, B1, B2, E, F, calcium, phosphorus, magnesium, potassium, sodium, and iron). The experiment was conducted on 600 Hybro PN broilers during the age period 7 – 42 days. The broilers were assigned to 3 groups, a control group © and two experimental groups (E1 and E2), each with 200 broilers (3 groups × 3 replicates × 100 broilers). Three (phase-feeding) compound feeds formulations were used. The control diet consisted mainly of corn, full fat soybean, soybean meal and corn gluten. Camelina seeds (10%) replaced full fat soybean in the experimental groups, while additionally, in E2 the classical premix with synthetic vitamins and minerals was replaced by buckthorn meal. The partial results show that the use of Camelina seeds reduced significantly ($P<0.05$) the final live weight, but the liveability percentage was not influenced by the type of dietary compound feed throughout the experimental period. Carcass fat decreased by 61.44% and 30.72% in the experimental groups compared to the control group. Total proteins increased in average by 3-10% concomitantly with the increase of the water content, fat decreased in average by 1.5-4%, the energy value also decreased proportionally with the fat in the experimental groups compared to the control group. Water retention capacity increased by 1% in E2.

Key words: Camelina sativa, Hippophae rhamnoides, broilers, gain, feed conversion ratio, carcass yield, sensory and physico- chemical analysis of meat

**RESEARCH CONCERNING THE PRODUCTIVE EFFECT
OF HIGH PROPORTIONS OF BARLEY IN FORAGE DIETS,
AS WELL AS THE YEAST *SACCHAROMYCES CEREVISIAE*
*YEA-SACC*¹⁰²⁶ STRAIN**

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*In a previous study it has been shown, that adding Yea-Sacc¹⁰²⁶ in diets with high percentage of voluminous forage, improves the digestibility of organic substance from 78.93% to 92.05% after 48 hours of fermentation [1]. The highest coefficient of digestion for the organic substance with or without yeast has been obtained with a barley proportion of 40%: 86.87% after 48 hours of fermentation without yeast and 89.95% with yeast. The rate of digestion was rapidly influenced by adding Yea-Sacc¹⁰²⁶ in forage diets and has an impact on the fodder consume and is therefore a method of improving the performance of the animals. This study has observed the productive parameters (body weight, daily medium growth), as well as the effect of yeast *Saccharomyces cerevisiae*, Yea-Sacc¹⁰²⁶ strain, on them. In the first 12 days of the experiment, the daily medium growth was 250 g/day for the control lot and 263 g/day at the experimental lot. During the entire period of the experiment, the daily medium growth was significantly higher ($p < 0.02$) at the experimental lot EL, 196 g/day, in comparison with the control lot WL, 170 g/day. The variance is 7.86% at the EL lot and 16.38% at the WL lot.*

Key words: sheep, productive parameters, yeast, rumen.

THE INFLUENCE OF THE EXPERIMENTAL NUTRITIONAL FACTORS ON THE RUMEN HISTOLOGICAL STRUCTURES

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*The researches were conducted to monitor the influence of the *Saccharomyces cerevisiae* yeast, Yea-Sacc¹⁰²⁶ strain, on the morphological structure of the small intestine in young sheep, fed with forage diets comprising alfalfa hay and 40% barley, and also in the case of using 40% barley in a granulose diet with 0.5% yeast Yea-Sacc¹⁰²⁶ (EL_c). The histological studies were done after classic histological techniques. At the control lot (WL) the great papillae with multiple ramifications on their length were analyzed. Their average height was 1436.87 μ . The cornified layer of the epithelium is more reduced and the basal membrane is extremely folded, suggesting a large absorption capacity and surface. The mucous that lines the ventral ruminal bag is presenting predominantly great conic papillae, the middle and small papillae being very rare. The cornification process of the ruminal dorsal bag at the experimental lot (EL) is obvious on the lateral sides and on the tip of the papilla at the inter-papillary epithelium. The corion is represented by the lax connective tissue formed from fine and condensed collagen fibers. At the dorsal ruminal bag of the EL_c lot the great and middle papillae are predominant, the small papillae are wider, some presenting obvious ramifications.*

Key words: sheep, morphological structure, rumen, yeast, barley

THE EGG – FUNCTIONAL FOOD.COMPARATIVE STUDY ON VARIOUS NUTRITIONAL SOLUTIONS TO ENRICH THE EGG POLYUNSATURATED FATTY ACIDS. II YOLK FATTY ACIDS PROFILE RESULTING FROM THE DIETARY USE OF SAFFLOWER OIL AND FLAX SEEDS

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The paper presents the results obtained in a study on the comparative evaluation of the effect of a diet with safflower oil and flax seeds compared to a control soybean oil diet given to layers on the bioproductive effects, egg characteristics and yolk fatty acids profile. The trial involved 32 Lowman Brown layers during the age period 23-28 weeks (1 week of accommodation and 4 experimental weeks). The layers, assigned to 2 groups (16 layers/group, 4 layers/cage) received diets based on corn, wheat and soybean meal. The diets differed by the source of fatty acids: soybean oil for the control group (SO); safflower oil and flax seeds for SSO+FS. The diets were supplemented with 250 ppm vitamin E. Twelve eggs per group were collected randomly 10 and 30 days, respectively, after the beginning of the experiment. The paper presents comparative data on the: average egg weight, egg component (egg shell, yolk, egg white) weight, intensity of yolk colour (Hoffman – La Roche colour range), yolk protein, fat yolk pH (measured one week after collection, the eggs being kept at 5⁰C) and yolk fatty acids. All data show that the profile of yolk unsaturated fatty acids can be handled quite easily by the nature of the dietary fats, their level of inclusion and their dietary ratio.

Key words: safflower oil, flax seeds, soybean oil, egg, polyunsaturated fatty acids

THE EFFECT OF A NEW SALICYLATE SYNTHESIS PRODUCT ON BLOOD GSH VALUES IN RATS

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GSH (γ -glutamylcysteinylglycine) is a sulfhydryl (-SH) antioxidant, antitoxin and enzyme cofactor which is an important component of the cellular detoxification of reactive oxygen species (ROS). Being water soluble it is found mainly in the cytosol and other aqueous phases of the living system and thus constitute one of the most important intracellular antioxidants (10,7,9). GSH plays a role in removing various toxic chemicals and drugs from the body. As a result glutathione levels in the body are reduced by exposure to heavy metals and the chemicals used in chemotherapy (6). Sulfanilamide was the first sulfonamide discovered in this class of antimicrobial agents and its structure is considered to contain the minimum pharmacophore. They prevent or limit bacterial multiplication. Salicylic acid (2-hydroxybenzoic acid), is the basic substance of the salicylates which are non-steroidal anti-inflammatory drugs (NSAIDs). Salicylic acid and methyl salicylate (ester) (methyl 2-hydroxybenzoate) are the main therapeutically used substances of this group. This study was carried out to investigate the effect of a new synthesis product in comparison with the effect of sulfanilamide on GSH values in intraperitoneally injected Wistar rats.

Key words: GSH, salicylic acid, sulphanilamide, rats.

GLUTATHIONE DYNAMICS IN RATS BLOOD AS A CONSEQUENCE OF ALUMINIUM ADMINISTRATION DURING TWO GENERATIONS

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Glutathione (GSH) is a tripeptide found in almost all mammalian cells. One of the residues of the tripeptide, cysteine, contains a sulfhydryl (-SH) group, the important reaction center of GSH which is H⁺ donor. The two free radicals GS[•] become dimerized by a disulfide bridge to form oxidized glutathione (GSSG). A dynamic balance is between GSH synthesis, its recycling form GSSG and its utilization (10). In this way glutathione maintains a reducing intracellular environment and protects cells from oxidative damage. GSH, as a small antioxidant molecule, contributes in cell signaling and acts as a coenzyme. Under condition of oxidative stress, GSH is consumed in scavenging free radicals and removing reactive oxygen species (ROS). Thus, GSH levels decrease and GSSG levels increase (11). This study was carried out to investigate the effect of Al₂(SO₄)₃ on the blood glutathione.

Key words: GSH, aluminum, rats.

STUDIES CONCERNING NUTRITIONAL METHODS TO IMPROVE PIG MEAT QUALITY

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The purpose of the investigation was to determine the qualitative influence of the compound feed given during the fattening-finishing stage to Large White pigs. The experiment used 36 pigs assigned to three groups (C, E1 and E2) which differed by the dietary quality indices: C, E1 with 16.33% CP and 3202 kcal ME, during the first stage and 15.19% CP and 3100 kcal ME during the second stage; and E2 with 15.05% CP and 2940 kcal ME during the first stage and 14.06% CP and 2908 kcal ME during the second stage. Groups C and R2 had free access to the feed, while group R1 received 75% of the amount given to C. These nutritional methods improved significantly meat quality in groups R1 and R2: 53.51% and 53.61% carcass muscle percentage for groups R1 and R2 (EUROP class U) compared to just 49.14% for group C (EUROP class R).

Keywords: fattening-finishing pigs, meat quality, carcass, nutrition

EFFECT OF ZINC SOURCE AND SUPPLEMENTATION LEVEL ON PRODUCTIVE INDICES IN BROILER CHICKENS

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In this experiment we have studied the effect of zinc provided from concentrated chelated glasses and inorganic substance (ZnO) on nutritive and bioproductive indices in broiler chickens. The experiment was carried out on 120 broiler chickens divided into four experimental groups (CL, EL1, EL2 and EL3), with 30 broiler chickens in each experimental lot. The used hybrid was Ross 308. Zinc was provided by concentrated phosphatic glass with zinc (G 300) at following levels: at CL, 20 mg Zn, at EL1, 10 mg Zn, at EL2 40 mg Zn. At EL3 20 mg Zn was provided by inorganic substance (Zn O). Zinc assurance by G 300, at 20 mg/kg combined feed, determined superior bioproductive indices comparative with zinc assurance by Zn O at the same level.

Key words: chelated zinc, inorganic zinc, broilers, bioproductive indices

THE INFLUENCE OF ADDITIVES FOR QUALITATIVE PARAMETERS OF SILAGE FEEDS

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We observed the influence of silage additives for choice qualitative parameters at clover-grass silages in working conditions. We evaluated total classification and categorization to quality classes according to fermentative process. It has been found out positive effect of the silage additives for fermentative class and for total silage quality of silages. This positive effect has been more considerable at the classification to the fermentative classes at clover-grass silages. The high content of crude fibre decreased fermentative results and total silage quality at test clover-grass silages. The greatest (deterioration) influence for classification to total quality class has crude fibre content. It is seen from correlation coefficient at clover-grass silages $r = 0.75$ ($P < 0.05$). The weak dependence $r = 0.37$ ($P < 0.05$) was detected between fermentative class and acetic acid content. It was detected large dependence between fermentative class and butyric acid content $r = 0.73$ ($P < 0.05$). The silages with additives had better degree of proteolysis and higher value of lactic acid. The additive improved fermentative quality. The result of better fermentative process was reduction of crude fibre values with maintenance of energy content.

Key words: clover-grass silages, qualitative parameters, silage additive

**THE DIGESTIVE UTILIZATION OF LYSINE FROM
PROTEIC RAW MATERIALS WITH SUPPLEMENTARY
ADDITION OF L-LYSINE MARKED WITH RADIOACTIVE
ISOTOPE ³H**

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The aim of that study was to evaluate the influence of supplementary addition with L-lysine to protein raw materials used in the compound feed on the retention rate and apparent digestibility of lysine, as well as the utilization in the organism of their amino acid. The results indicate that the lysine utilization in the organism is negatively influenced when the ratio between methionine and lysine is reduced (0,19%), indicating that in the compound feed the ratio between the two essential amino acids must be equilibrated (0.34-0.37%), which determines a lysine deposit in higher quantities in muscles and liver. The apparent digestibility of lysine from the sunflower meal (80.46%) was improved by supplementation with L-lysine, analogous to soybean meal (81.82%).

Key words: lysine, digestibility, retention rate

ALTERATIONS INDUCED BY LOW LEVELS OF DEOXYNIVALENOL IN WEANED PIGLETS

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Deoxynivalenol (DON) is a mycotoxin produced by different species of Fusarium genus that may contaminate feed and food. In the present study we investigated the effect of low levels of DON on the modulation of performance, hemodynamic parameters, cellular and humoral immune response in weaned pigs. Histological alterations in different organ tissues were also analyzed. Our results showed that a short in vivo exposure (14 days) of weanling piglets to 0; 0.5; 1.5 mg/day of DON significantly induced a dose dependent increase of cellular immune response (lymphocytes proliferation and leucocytes numbers). The 0.5 and 1.5 mg/day of DON modulated also the humoral immune response by increasing the immunoglobulin A synthesis with 7.32 % and 37.98 % and by decreasing that of immunoglobulin G with 11.15 % and 36.87 %, respectively when compared with the control. DON produced also alterations in the hemodynamic parameters of intoxicated piglets; the activity of lactate dehydrogenase significantly increased while the activity of L-glutamate, alkaline phosphatase, urea and creatinine significantly decreased. Both doses of the toxin induced microscopic alterations of the internal organ structure. By contrast, ingestion of the contaminated material had no effect on the performance (weight gain, feed consumption, and feed efficiency), organ weights, and total serum concentration of cholesterol, calcium, sodium and potassium. Taken together these results suggest that even when present at low level DON can affect blood parameters, humoral and cellular immune response in weaned piglets with a significant importance for the swine health.

Key words: *Fusarium*, deoxynivalenol, weaned pig, immune response, biochemical parameters, histological modifications.

THE INFLUENCE OF SUPPLEMENTATION WITH SELENIUM AND IODINE OF COMPOUND FEED FOR LAYERS

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The absence of iodine is a frequent disease present at a lot of people, that's why the nutrition researchers straighten their attention to obtain alimentary products enriched with these elements. At layers, in catalyze of thyroid hormone forming, selenium is very important. On account of its implication in thyroid function, the researchers considered that the selenium insufficiency can aggravate the effect of iodine absence, and the corresponding level of selenium can help to protect against some neurological effects of iodine absence. This study analyzed the possibility of stabilization some conclusive levels of iodine and selenium, which covered the layers necessary in this microelements and it determined the achievement of enriched eggs in iodine and selenium, which can provide in a big proportion daily human necessary.

Key words: eggs enriched with selenium and iodine

THE EFFECT OF COPPER IN DIFFERENT FORMS AND LEVELS OF SUPPLEMENTATION IN FEED FOR YOUNG PIGS OVER SOME PRODUCTIVE INDICES

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For this experiment were used 75 crossbreeds pigs Large White x Landrace, starting at the age of two months to eight months. The 75 pigs were divided in five equal groups: group C-6 mg Cu; group E₁₁-250 mg Cu; group E₁₂-250 mg Cu under chelated form of soluble phosphatic glass; group E₂₁-250 mg Cu; group E₂₂-125 mg Cu under the form of sulphate. The supplement of copper in the feed of young pigs has determined a significant raise in growth level with 8,5 – 11 % in cases of supplementation with 125 mg Cu. The best results in the case of growing levels have been obtained in the portions in which we have used chelated copper. Specific consumption was with 5 % lower than that in which we supplement copper.

Key words: young pigs, copper, growth levels, specific consumption

THE EFFECT OF COPPER UNDER DIFFERENT FORMS AND LEVELS OF SUPPLEMENT IN THE FOOD OF YOUNG PIGS OVER THE ACCUMULATION OF COPPER AND IRON IN TISSUES AND ORGANS

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For this experiment were used 75 crossbreeds pigs Large White x Landrace, starting at the age of two months to eight months. The 75 pigs were divided in five equal groups: group C-6 mg Cu; group E₁₁-250 mg Cu; group E₁₂-250 mg Cu under chelated form of soluble phosphatic glass; group E₂₁-250 mg Cu; group E₂₂-125 mg Cu under the form of sulphate. At the end of the experiment there were gathered tests from the liver, the spleen and from the muscles to determine the concentration of copper and iron. The supplementation of copper in the food of the young pigs has determined a massive accumulations of copper in the liver and minor accumulations in the spleen and muscles. The supplementation of copper under chelated form has determined less accumulations in contrast with the cases in which it was used copper under form of sulphate. The concentration of iron in the liver, spleen and muscles wasn't significant modified by the supplements with copper.

Key words: young pigs, copper, iron, liver, spleen, muscles

RESEARCHES ON THE PRODUCTIVE EFFECT OF A LIPID ABSORPTION IMPROVER, USED IN BROILERS FEEDING

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According to the researches results, the chickens within the experimental groups performed better values for the live weight gain and for the feed conversion rate, as compared to those in the control group. Economically speaking, the revenue was 2,30-7,35% higher in the E2 group, which yield the best production parameters (highest live weight and lowest FCR), than those obtained by the chickens in the other studied groups. The best performances, considering all the parameters, were observed in E2 group, which received a concentration of 500 g feed additive (LB)/tone of mixed fodder, in order to improve the lipids absorption rate in chickens gut.

Keywords: broiler, nutrition, fodder additives

CORPORAL WEIGHT DEPENDENCE AT BROILERS USING ENERGY-PROTEIN RATIO AND LYSINE

DEPENDENȚA MASEI CORPORALE A PUILOR DE CARNE FUNȚIE DE RAPORTUL ENERGO-PROTEIC ȘI LIZINĂ

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In the first part of the paper a mathematical model regarding the evolution of corporal weight at broilers using energy-protein ratio is being determined

$G = 12,05 \cdot \frac{P^{1,02}}{E^{0,18}}$. Considering lysine's contribution in broilers' food the

mathematical model determined is $G = 1,27 \cdot \frac{P^{2,43}}{E^{0,52} L^{1,08}}$. From the model we observe that lysine influences the energy-protein ratio and corporal weight at broilers.

Key words: energy-protein ratio, lysine, mathematical model

Introduction

In this paper we elaborate a mathematical model $G = f(E/P)$ and another model $G = f(E/P, L)$ that presents the corporal mass evolution (G) function of energy (E), proteine (P), lysine (L) at broilers. This paper presents also the absolute errors study given by these models.

Materials and methods

The determined mathematical models based on NRC 1994 data regarding the broilers corporal mass evolution (G) function of proteine (P), energy (E) and lysine (L) consumptions.

The model $G = f(E/P)$ has been deducted to assure the best ratio energy proteine, while the model $G = f(E/P, L)$ shows how lysine influences the energy/proteine ratio at broilers corporal mass same weekly evolution. To deduce these models we used the Matlab program and mathematical methods, programming and economics.

Results and discussions

Because broilers adjust their food consumption mainly after energetical concentration of the combined fodder, an equilibrium between energy and proteins should be maintained.

$$(1) G_1 = 12,05 \cdot \frac{P^{1,02}}{E^{0,18}}$$

Considering lysine's influence we obtained the model

$$(2) G_2 = 1,27 \cdot \frac{P^{2,43}}{E^{0,52} L^{1,08}}$$

Table 1 presents G_1 , G_2 corporal mass values offered by the models (1) and (2) and weekly absolute errors. These errors vary between 0% to 4,8% proving that the determined models show with a good precision corporal mass evolution indicated by NRC.

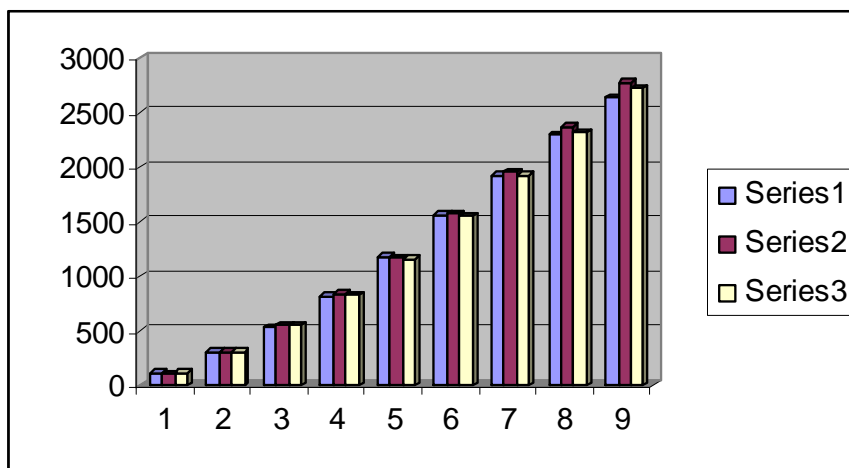
Table 1

The comparative study of G , G_1 , G_2 values and absolute errors

Week	Corporal mass (G) g	Energy Kcal/Kg	Protein P (g)	Lysine g	G_1	G_2	ε_1		ε_2	
							g	%	g	%
1	125	367.5	26.45	1.38	117	119	8	5	6	4.8
2	310	1167.5	83.95	4.38	310	310	0	0	0	0
3	537	2360	169.625	8.85	559.6	555.7	22.6	4	18.7	3.4
4	825	4015	278.125	14.275	842.2	836.5	17.2	2	11.5	1.4
5	1180	6232.5	416.625	21.2	1175.1	1159.1	4.9	0.4	20.9	1.7
6	1560	9030	594.625	30.1	1580	1553.8	50	3.2	23.8	1.5
7	1922.5	12287.5	775.075	38.62	1956	1925.9	36.5	1.9	3.4	0.2
8	2290	15775	971.275	47.925	2367	2317.7	77	3.3	27.7	1.2
9	2638	19502.2	1180.975	57.825	2769.7	2725.3	131.7	5	87.3	3.3
								2.7		1.9

The diagrams of the determined models are presented in figure 1

Figure 1

Diagram G, G₁, G₂

Conclusions

- 1) The mathematical models (1) and (2) determined with a good precision ($\varepsilon_{1m} = 2,7\%$, $\varepsilon_{2m} = 1,9\%$) broilers weekly corporal mass values
- 2) Model (2) shows (1) influence when we use lysine.

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DEPENDENȚA MASEI CORPORALE A PUILOR DE CARNE FUNȚIE DE RAPORTUL ENERGO-PROTEIC ȘI LIZINĂ

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** ADR Timiș

În prima parte a lucrării se determină un model matematic privind evoluția masei corporale a puilor de carne în funcție de raportul energo-proteic

$G = 12,05 \cdot \frac{P^{1,02}}{E^{0,18}}$. Luând în considerare și aportul lizinei în hrana puilor de carne

modelul matematic găsit este $G = 1,27 \cdot \frac{P^{2,43}}{E^{0,52} L^{1,08}}$. Din model se observă că lizina

influențează raportul energo-proteic cât și masa corporală a puilor de carne.

Cuvinte cheie: raport energo-proteic, lizină, model matematic

CORPORAL WEIGHT DEPENDENCE AT BROILERS USING ENERGY-PROTEIN RATIO AND METIONINE+CYSTINE

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In the first part of the paper a mathematical model regarding the evolution of corporal weight at broilers using energy-protein ratio is being determined

$G = 12,05 \cdot \frac{P^{1,02}}{E^{0,18}}$. *Considering metionine+cystine contribution in broilers' food*

the mathematical model determined is $G = 5,97 \cdot \frac{P^{1,57}}{E^{0,35} M^{0,41}}$. *From the model we observe that metionine+cystine influences the energy-protein ratio and corporal weight at broilers.*

Key words: energy-protein ratio, metionină+cistină, mathematical model

RESEARCH CONCERNING THE INFLUENCE OF SOME PROBIOTICS (Bio-Mos) AND ORGANIC MINERALS (Sel-Plex) ON PRODUCTION PERFORMANCES IN BROILER CHICKENS

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The research was performed on 135 broiler chickens, COBB 500 hybrid divided in 3 groups with 45 chickens/group during 42 days. The group 2 (E) received 0.02% organic selenium (Sel-Plex) in combined forage. The group 3 (E) received the pre-biotic Bio-Mos in following proportions: 0.2% (phase I); 0.1% (phase II) and 0.05% (phase III). The chickens from all 3 experimental groups were weighted in the beginning of the experiment, weekly during the experiment, and in the end of the experiment. The following parameters were recorded: the evolution of the body weight, average daily gain, average daily consumption, specific consumption, commercial yield and meat share in different carcass qualities. The use of the organic selenium (Sel-Plex) in group 2 (E) and pre-biotic (Bio- Mos) in group 3 determined the increase of the body weight at delivery (42 days of age) by 7.14% in group L2 (E) and 7.26% in group L3 (E). The average daily gain increased by 7.25% and 7.38%. The specific consumption decreased by 4.24% in both experimental groups, compared to group L1-(M). The increase of the commercial yield by 1.48% in group L2 (E) compared to control and high quality meat share (Ist quality + IInd quality) in the same group by 1.39% compared to group 1 (M).

The results confirm the favorable influence of the organic selenium (Sel-Plex) and pre-biotic (Bio-Mos) on main production and consumption indices and main slaughter indices in broiler chickens.

Key words: *prebiotic, Bio-Mos, organic selenium, feeding, broiler chickens*

OMEGA-3 FATTY ACIDS AND LOCAL ANIMAL HUSBANDRY: TASKS AND POSSIBILITIES FOR THE HUMAN HEALTHY NUTRITION

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The positive nutritional effects of PUFA in the human diet nowadays are well-known. The presence of PUFA in food of animal origin is first of all influenced by the feeding. The animal feeds rich in omega-3 PUFA are considered as basic feeds, such as meadow, grass, hay, green forage, grains etc. In the newly accessed EU countries the traditional breeding methods are typical (housing, lairage, pasture). This tendency is reflected also in the composition of local breeds: the so called indigenous, traditional breeds are characteristic. The development and expansion of local breeding methods is of crucial importance for the viable region, the protection (many times the restoration) of environment and for the above mentioned human nutritional advantages. With modern control methods of origin, with adherence of food-safety rules, the local commercialization of the traditional foods can be solved, as many positive examples show in different countries. The need for diverse, tasteful and safe products of special quality is also increasing. Our aim is to support and favour the local, traditional breeding for direct commercialization with ensuring the proper conditions, financial support and legislation.

Key Words: Traditional animal breeds, extensive animal rearing, n-3 fatty acids, PUFA

THE EFFECT OF DIET SUPPLEMENTATION WITH TWO LEVELS OF MANNANOLIGOSACCHARIDE ON THE PERFORMANCE OF GROWING RABBITS

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The present study has been conducted to compare the effects of two levels of mannanoligosaccharide on the performance of rabbits. A total of 54 rabbits have been randomly divided into 3 treatment groups (equal in number and with insignificant different live weight). All the 54 rabbits have been weaned at 35 days of age and kept in wire fattening cages: 6 rabbits/cage, and 18 per group. They have been observed for seven weeks. Rabbits of the control group were fed with a basal diet. Rabbits of the 2 experimental groups were fed the same diet supplemented with Bio Mos 0.1% respectively 0.2%.

Key words: rabbits, mannanoligosaccharide, growth performance.

THE EFFECT OF DIETARY MANNANOLOGOSACCHARIDE IN COMPARASION WITH THAT OF YEA SACC ON THE PERFORMANCE OF GROWING RABBITS

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Enteric diseases frequently occur in rabbit around weaning leading to extensive use of antibiotic in rabbit breeding. In this context, breeders and consumers ask for alternative strategies that should improve the health of animals. The aim of this study was to determine the efficacy of a natural alternative consisting of mannanoligosaccharides (Bio-Mos) and a live yeast culture (Yea Sacc) on rabbit's growth and post-weaning performance. A total of 60 rabbits have been randomly divided into 4 treatment groups. All the 60 rabbits have been weaned at 35 days of age and kept in wire fattening cages: 6 rabbits/cage, and 18 per group. They have been observed for seven weeks. Rabbits of the control group were fed a basal diet. Rabbits of the 3rd experimental group were feed the same diet as the control group supplemented with 1) Bio Mos 0.1%, 2) Yea Sacc 0.1%, 3) Bio Mos 0.1% + Yea Sacc 0.1%.

Key words: rabbits, live yeast culture, mannanoligosaccharide, growth.

THE STUDY OF THE ECONOMIC EFFICIENCY IN AMINO-ACIDS SUPPLEMENTATION OF THE LAYING HEN'S FODDER

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The experiment has been carried out on 69 Tetra SL hens, 27-36 weeks old, distributed into 3 groups consisted of 23 hens. They were fed with fodder recipes with different protein levels (17, 16 and respectively 15%). These recipes have been supplemented with DL-methionine and L-lysine up to the level of 0.80% lysine and 0.38% methionine. Fish flour has participated in a proportion of 3% in group 1, 1.5% in group 2 and it was absent from the fodder structure used in group 3. The reduction of crude protein with 1-2p% compared to the available commercial products, but with an amino acid supplementation, has led to the improvement of the economic criteria regarding egg production, generating savings of 7.7% in the group with 16% CP and of 12.8% in the group with 15% CP. The egg mass has not been affected significantly ($p>0.05$), the best yield being achieved from the hens fed with a 16%CP recipe.

Key words: laying hens, protein level, amino acids, economic efficiency

THE APPLICATION OF POLYNOMIAL REGRESSIONS IN THE PERFORMING EVALUATION OF LAYING HENS FED WITH FODDERS USING AMINO ACIDS SUPPLEMENTATION

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The experiment has been carried out in the Poultry Department from the Didactic Station of Banat's University of Agricultural Sciences and Veterinary Medicine Timisoara, on 100 laying hens, 32-39 weeks old - the hybrid Shaver 579. We have distributed the hens in 4 groups, with fodder recipes including two protein levels (16.2% and respectively 15.2%) and different amino acid contents. As regarding the egg production weight, we have remarked group 4 (1.25 kg); this group was fed a combined feed with 15.20% crude protein, 0.82% lysine and 0.42% methionine. Simple correlations analysis and third degree polynomial regressions have led to the conclusion that there is a strong positive correlation between the obtained egg weight and the lysine or methionine intake. The highest correlation coefficient characterizes the experimental group 3 (0.882, $p=0.004$). The regression curves recorded for group 4 prove that the egg mass increases in the same time with ingestion up to the level of 19.83 g protein, 1069 mg lysine and 547 mg methionine, and then it does not react anymore concomitantly with the increase of the lysine or methionine ingestion.

Key words: laying hens, protein level, amino acids, polynomial regressions

INFLUENCE OF SLOW RELEASE UREA ON RUMEN PH DYNAMICS IN DAIRY COWS

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The experiments were carried out at a private dairy farm on a Holstein-Friesian cow fitted with rumen fistula. Previously and during the experiment the cow was fed with a diet consisted of: gramineae hay and concentrate mixture (maize, triticale and sunflower meal). Concentrate mixture was fed twice a day at milking time (8:00 in the morning and 17:00 in the evening). Complementary nutritional factors (slow-release urea, sugar, live yeasts, and premix) were administered once a day during the morning feeding by mixing with the concentrate diet. The rumen pH was established under the influence of nutritional factors in five experimental periods. When the basal diet was administered (period I), the pH value varied between 5.78 and 6.51. Feeding slow-release urea decreased the rumen fluid acidity in all next four experimental periods (II, III, IV, V). The lowest pH value was measured in period V and the highest in period III, 6.10 respectively 6.71. The lowest pH variation was measured in the third experimental period (basal diet + slow-release urea + sugar) and was 0.41 pH units (6.30 -6. 71).

Key words: rumen fluid, pH, slow-release urea

THE INFLUENCE OF ZINC DIETARY INTAKE ON POULTRY MEAT QUALITY

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The goal of this study was to evaluate the influence of various sources and different levels of zinc on poultry meat quality. In this experiment were used 120 broilers, divided in four experimental lots. Zinc was ensured by two sources (the phosphate glass fritte and Zn oxide) and at three levels: 10, 20 and 40 mg / kg fodder. The inorganic chelated are obtained by complexing trace elements from inorganic salts with fodder polyphosphates. The rated outputs were higher when Zn was ensured with phosphate glass fritte. There is differences for Zn level in fodder, too. The lowest rated output are been noticed for the lowest Zn level. The medium and lower levels of zinc are improved CRW both for the pectoral muscles and for the pulp muscles. The source of Zn can improve the values of CRW. For the contents of zinc in liver, pulp muscles and pectoral muscles there are differences both for the source and for the levels.

Key words: zinc, quality, poultry meat

IMMUNOMODULATORY EFFECT OF PHYTO-ADDITIVES IN BROILER CHICKENS

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The experiment was been performed in the sector of Nutrition and Animal Feeding discipline from Timisoara Didactic Station, on a 6 week period, beginning with hatching and finishing with 42 days of age, on 120 broilers divided into four experimental variants, each of them with 30 individuals. In LEU group was incorporated essential oils of Satureja hortensis, Mentha piperita and Hyperici herba 250 mg in 1 kg combined fodder, in LEP group was included in combined fodder structure a plants premix in 2%, in LEUP group was incorporated plants premix 2% +250 mg essential oil of Satureja hortensis, Mentha piperita, Hyperici herba in 1 kg combined fodder. After seric lizozime quntification was observed an increase with 303.46% in LEPU group, followed by LEU with 200.14%, results who demonstrated the presence of an immunological stimulation in broiler chickens. Increased values of seric properdine were observed in LEPU group, with 210.45% more increased in comparison with LM group, followed by LEU group, demonstrating that the changing of unspecific immune effectors values took place like a result of a exogenous substance with immunomodulator effect. Was also observed an easy increase of limfocytes in LPU group, but not so important like in first two determinations, if the experiment will continue, these values maybe will be significant increased, taking into consideration that these increases become more evident after a period of time after stimulation.

Key words: phyto-additives lizozime, seric properdin and polymorphonuclear leucocytes, broiler

HISTOLOGICAL MODIFICATION AT THE JEJUNUM LEVEL GENERATED BY INTRODUCING MEDICINAL PLANTS AND ESSENTIAL OILS IN BROILERS FEED

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Medicinal plants and extracts including in monogastric animals feeding represents a current practice because phyto-additives can represent an alternative to antibiotics using. In this way, in Nutrition and animals feeding discipline was been performed an experiment on 6 weeks, respectively from hatching to 42 days of age, on 120 broiler chickens, divided on three experimental variants (LEU, LEP and LM) with 40 individuals each of them. The used hybrid was Ross 308. In LEU group were incorporated essential oils of Coriandri fructus, Satureja hortensis, Hipophae rhamnoides, 250 mg at 1 kg combined fodder. In LEP group were included in combined fodder structure a plants premix (Mentha piperita, Salvia officinalis, Melissa officinalis) in 2% proportion.. Microscopic studies showed, in the case of experimental groups, a hypertropic process of intestinal mucous membrane, emphasized by villousities and glandular apparatus development, through capilar system extending and leucocytar infiltrate development on all mucous chorion thickness.

Key words: medicinal plants and extracts, jejunum, broilers

**THE INFLUENCE OF SOME ENZYMATIC MIXTURES ON
NUTRITIVE AND BIOPRODUCTIVE INDICES AND ON
DIGESTIVE VISCOSITY AT DUODENUM LEVEL AT
BROILER CHICKENS FED WITH DIETS
RICH IN NDF AND ADF**

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In this experiment we have studied the effect of three enzymatic mixtures incorporated in broiler chicken diets which contained high levels of NDF and ADF. The experiment was carried out on 120 broiler chickens divided into four experimental groups: CG, EG1, EG2 and EG3. The best results were obtained at experimental group EG1 where we used an enzymatic mixture containing amylase, xylanase and protease, followed by experimental group EG2 where we used an enzymatic mixture containing xylanase, and the experimental group EG3 where we used an enzymatic mixture containing xylanase, protease and cellulase. At control group CG we did not use an enzymatic mixture. The use of enzymatic mixture determined the decrease of the digestive viscosity levels at all three experimental groups comparatively with the control group.

Key words: enzymatic mixture, broiler, bioproductive indices, digestive viscosity

**THE INFLUENCE OF DIFFRENT LEVELS OF NDF AND ADF
ON NUTRITIVE AND BIOPRODUCTIVE INDICES AND ON
DIGESTIVE VISCOSITY AT THE JEJUNUM AND ILEUM
LEVEL AT BROILER CHICKENS FED WITH A DIET
CONTAINING AN ENZYMATIC MIXTURE**

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In this experiment we have studied the effect of different levels of main cellulose categories (NDF, ADF) on nutritive and bioproductive indices and on digestive viscosity at the jejunum and ileum level at broiler chickens. The experiment was carried out on 44 broiler chickens divided into two experimental groups (V1-5% and V2-15%). In the structure of combined feed was used barley in proportion of 5% for V1-5% and 15% for V2-15%. For both experimental groups were used enzymatic mixture which contained protease and cellulose. The hybrid used was Ross 308. The raising of NDF and ADF levels in broiler diet did not affect significantly the nutritive and bioproductive indices, but was recorded an increase of digestive viscosity at the jejunum and ileum level with 28,31%.

Key words: NDF and ADF levels, barley, enzymatic mixture, broiler, bioproductive indices

EFFECTS OF SOME PROBIOTICS ON THE GROWTH INDICES IN YOUNG SHEEP

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*Researches were carried out in order to follow the effect of ruminal microsymbionts activity stimulation, after supplementation with *Lactobacillus plantarium*, *Streptococcus fecium*, *Pediococcus acidolactici* (0.13 g/kg concentrate mixture) and *Sacharomyces cerevisiae* Yea-Sacc¹⁰²⁶, (3.2 g/kg concentrate mixture), on nutritive and productive indices in lambs. During the experimental period (23 – 58 days), lambs were fed, ad libitum, with a diet containing alfalfa hay and a complex mixture insuring 16 % crude protein (PBD). Differences observed between the two groups (L_1 – control, $n = 11$; L_2 – experimental, $n = 11$), concerning the growing performances, were significant ($p < 0.02$) regarding the final weight (20.31 kg and 21.95 kg respectively), total weight gain (9.37 kg and 10.94 kg respectively) and for the daily average gain (267.66 g and 312.47 g respectively). Both bacteria population and protozoa population were greater numerically and more diversified in experimental group comparing with the control group.*

Key words: unweaned lambs, probiotics, growing performances, microsymbionts.

INVESTIGATIONS ON THE INFLUENCE OF HIGH FATTY ACIDS DIETS ON FATTENING STEERS MEAT PRODUCTION AND MEAT QUALITY

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The effects of using high fatty acids forages on Maramures Brown fattening steer performance were studied on 30 finishing steers assigned uniformly to 3 groups: control group (no fatty acids-rich feed), E1 (24% full fat soybean in the compound feed) and E2 (32% rapeseeds in the compound feed). The diets consisted of Sudan grass as bulk forage (free access) and of limited amounts of compound feeds. The use of fatty acids-rich forages did not influence the ingesta of compound feeds and of the complete diet. Weight gain in the experimental groups were higher than in the control group (1393 and 1113 g/steer/day in groups E1 and E2, respectively, compared to 1053 g/steer/day in group C) a significant difference being noticed between groups C and E1 ($P < 0.05$). The meat of steers from the experimental groups had a higher level of crude fat (18 and 24 g in groups E1 and E2, respectively, versus 13 g in group C), while meat protein was lower in group E1 (211 g), intermediary in group C (226 g) and higher in group E2 (240 g). Crude fat linoleic acid (C18:2) level increased from 8.33% (group C) to 9.46% (group E1), which is beneficial to human health. A higher level of saturated fatty acids was noticed in the meat of animals from group E2, a higher level of monounsaturated and polyunsaturated fatty acids was noticed in the meat of animals from group E1, as well as a higher level of medium-chain fatty acids to the detriment of long-chain fatty acids.

Keywords: diets, fatty acids, steers, meat quality

THE VERIFY OF PROBIOTIC PREPARATE IN FATTENING OF HYBRID HUBBARD JV MALES

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Using of probiotic preparates in present time very actual especially from spectacle of poultry practice in which realised increasingly on base of large-scale production conditions. So with increased severity in this manner orientated breeds to secure optimal breeding conditions in combination with high stocking density expanded possible risk health complications connecting with following fall of utility with eventual loses population and economical character. Rightly probiotics fulfils very significant role in prevention against infected diseases as well as positive effect on utility animal parameters. In experiment we tested effect of probiotic Bio-Plus 2B on basic parameters of Hubbard JV males fattening. Broiler chickens were divided into two group - control (feed mixtures without probiotic) and experimental (feed mixtures with added tested preparation in quantity 400 g.kg or 1.28×10^6 spores in gram of feed). From spectacles of observed parameters, with exception average live weight, where we founded in last week statistically significant difference ($P < 0.05$) in benefit of control, we recorded at both groups equal tendency in reached average values. Effect of probiotic manifested in largest rate in 3. week, when we founded statistically significant difference ($P < 0.05$) at same parameter in benefit of experimental group.

Key words: *probiotics, broiler chickens, fattening parameters*

THE EFFECT OF TWO - ELEMENTED PROBIOTIC PREPARATE ON BASIC FATTENING PARAMETERS OF HYBRID HUBBARD JV

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Growth stimulators on basis of probiotics are preparations biological character with correctly defined strains live micro organisms. Most important signification their used consisted in positive stimulation natural micro flora of digestive tract therefore fortified mechanisms of autoimmunity system of organism, what very narrowly relate with achieved utility animal parameters. Healthy and vital individuals marking better nutrient utilisation, equally growth intensity consistent higher slaughter yield. Propoul is two - elemental probiotic prepare designated for poultry, which include special selected strain of genus Lactobacillus. Results their affect is improve of immunity, metabolism and also favourable effect on utility. In 42-days experiment we tested effect of probiotic prepare Propoul on basic fattening parameters of hybrid Hubbard JV. We divided broiler chickens into three groups - control (C) without probiotic, experimental 1 (E1) with decreased probiotic amount during fattening period and experimental 2 (E2) with constant concentration of testing prepare). Propoul in fluid form we was applying in drinking water. Effect of probiotic positive manifested in all observed parameters. With exception organic growth and growth index, where we founded favourable effect his application especially in first two weeks in all other both experimentals by expressive rate dominated in achieved values in compared with control. Mostly, from aspect average live weight, where we recorded from 2. week to end of fattening period statistically high significant ($P < 0.01$) and statistically very high significant difference ($P < 0.001$) in benefit of E1 and E2 groups.

Key words: probiotics, broiler chickens, fattening parameters

UTILIZATION OF PROBIOTIC STRAIN AT INTENSIFICATION OF BROILER CHICKENS GROWTH ABILITY

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The aim of experiment was verified relation to effect of growth stimulator Protexin Concentrate application on basic broiler chickens growth parameters. As biological material we used one-day males of commercial fattening Hybro hybrid. The preparation Protexin Concentrate: additional substance probiotic Enterococcus faecium (NCIMB 10415). Medium: dextrose, content: Enterococcus faecium $2 \cdot 10^{10}$ CFU/g. Total 180 broiler chicks we divided to three groups: Control (C) - without addition of tested preparation, Experimental 1 (E1) - with lower and Experimental 2 (E2) - with higher concentration of preparation applied in drinking water. From the point of view observed parameters of growth ability we recorded higher values average live weight, average daily live weight gain, organic growth and index of growth at both experimental groups in compared with control group during whole of experiment. At the end of fattening period we detected better results in group E2 with higher concentration of tested growth stimulator in drinking water at mutual comparison between experimental groups.

Key words: growth stimulator, Enterococcus faecium, broiler chicken, growth ability

STUDY ON THE GRASSLAND ECOSYSTEM FLORA OF THE MEȘENDORF ECOLOGICAL FARM (BRAȘOV COUNTY)

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The paper presents the results of the botanical study performed on the natural grasslands within the Meșendorf mixed ecological farm (Transylvanian Natural Product). Floristic researches show a wide floristic biodiversity determined by pedoclimatic and microstation factors. Of the 329 identified species, 34 species belong to the Poaceae family, 36 to the Fabaceae family, and the majority of the species (259) belong to other botanical families, among which Asteraceae family species are dominant.

Key words: pastures, hayfields, floristic composition, ecological studies.