

**CHENOPODIUM QUINOA – AN ALTERNATIVE GRAIN IN  
FOOD AND FEED PRODUCTS**

**AHMADI M.<sup>1</sup>, MEDERLE N.<sup>1</sup>, MILOVANOV C.<sup>1</sup>, MORARIU S.<sup>1</sup>, NICHITA I.<sup>1</sup>,  
MORARIU F.<sup>1</sup>, PASCALAU R.<sup>2</sup>, DRONCA D.<sup>3</sup>**

<sup>1</sup>Faculty of Veterinary Medicine, Banat's University of Agricultural Sciences and  
Veterinary Medicine "King Michael I of Romania" from Timisoara (BUASVM),  
Timisoara – 300645, Calea Aradului, No. 119, Timisoara, Romania

<sup>2</sup>International relations Office, BUASVM, Timisoara, Romania

<sup>3</sup>Faculty of Bioengineering of Animal Resources, BUASVM, Timisoara, Romania  
E-mail: ddronca@animalsci-tm.ro

**Summary**

The food and feed industry is looking for new resources of high biologic active nutrients, which raises the nutritional value to the final products and also does not contain allergenic substances. Quinoa (*Chenopodium quinoa*) is a pseudocereal with high nutritional value due to its content of carbohydrates and proteins, being a gluten-free grain – which places this plant in the category of products also for celiac disease and intolerance or sensitivity to gluten. There are more varieties of quinoa (white, red, black) depending also on the origin, but generally the quinoa seed contain high level of nutritional valuable amino acids, fatty acids, vitamins, minerals, dietary fibers and are rich in carbohydrates. The quinoa can be used as dry whole seeds, leaves – fresh or cooked, or even flour both in human and animal nutrition.

**Keywords:** quinoa, nutritional values

## **THE INCIDENCE OF DYSTOCIA IN COWS AND ITS EFFECTS ON POSTPARTUM REPRODUCTIVE PERFORMANCE AND MILK PRODUCTION**

**BEREAN D., BLAGA PETREAN A., CENARIU M., GIURGIU O., NADĂȘ G.,  
PALL E., BOGDAN L.M.**

University of Agricultural Sciences and Veterinary Medicine, 400372,  
Calea Mănăștur, no. 3-5, Cluj-Napoca, Romania, Faculty of Veterinary Medicine  
E-mail: anamariapetrean@yahoo.com

### **Summary**

The purpose of this research was to assess the incidence of dystocia in relation with postpartum reproductive performance and milk production in Sacuieu area (Cluj county). In the current study were evaluated 3160 animals that were calving during 2015-2017. During this period 93 dystocia were recorded (35 in 2015, 27 in 2016 and 31 in 2017). Depending on the treatment applied in 78.12% of the cases, a conservative treatment was established and 21.88% of the animals were subjected to surgical treatment. The reproductive performances and the milk yield were significantly lower at the animals with dystocia. In the same time the service interval, the service period and the calving interval were significantly longer in cows affected with dystocia compared to normal ones. The conception rate was lower, but the number of artificial inseminations per conception was higher in cows diagnosed with dystocia.

**Keywords:** dystocia, milk production, reproductive performances

## **DESCRIPTIVE ANALYSIS OF SOMATIC CELL COUNT USING STATISTICAL TOOLS**

**CĂRUNTA A.<sup>1</sup>, CHIȘ M.<sup>1</sup>, ILIE D.E.<sup>2</sup>, MIOK K.<sup>1</sup>, MOLERIU R.<sup>1</sup>, MUREȘAN R.<sup>1</sup>, ZAHARIA C.<sup>1</sup>, ZAHARIE D.<sup>1</sup>**

<sup>1</sup>West University of Timișoara, Faculty of Mathematics and Computer Science, 300223, blvd. Vasile Pârvan, No. 4, Timisoara, Romania

<sup>2</sup>Research and Development Station for Bovine, 310059, Calea Bodroglui 32, Arad, Romania

E-mail: [alina.carunta@e-uvt.ro](mailto:alina.carunta@e-uvt.ro)

### **Summary**

(SCC) can be used as an indicator of subclinical mastitis and its analysis in relation with the milk composition can provide useful information on the existence of some correlations or patterns. Based on milk production data recorded during 5 years (2012-2015, 2017) at the Research and Development Station for Bovine Arad we conducted a statistical analysis aiming to identify correlations between SCC and milk characteristics (protein and fat content, lactose, nonfat solids, milk quantity, pH, casein) and to find potential profiles of SCC evolution. The correlation analysis was based on 226 lactating cows for which at least 20 measurements were available. Both classical correlation coefficient (i.e. Pearson) and correlation coefficient for repeated measurements (i.e. Bland-Altman) have been computed. In both cases, a moderate negative correlation between SCC and the lactose level has been identified while no significant correlation between SCC and the other milk characteristics has been detected. However, a more accurate description of the relation between SCC and lactose was obtained using a linear mixed model. Aiming to analyze SCC profiles, an additional attribute has been added to the data based on the following encoding rule: the attribute has value 0 if SCC is smaller than  $2 \times 10^5$  cells/ml, 1 if it is larger than  $2 \times 10^5$  cells/mL and 2 if the value is missing. In this way, data vectors containing 13 values per year have been constructed for 175 cows and a dissimilarity matrix has been constructed as a first step for cluster analysis. Overall, the results have shown that lactose and SCC were negatively correlated.

**Keywords:** Somatic cell count, mastitis, correlation analysis, similarity measures, clustering

## **RESEARCH OF METHICILLIN RESISTANCE STAPHYLOCOCCI IN A PIG'S FARM**

**DÉGI J., CRISTINA R.T., DÉGI D.M., MUSELIN F., DUMITRESCU C., IANCU I.**

Faculty of Veterinary Medicine, Banat's University of Agricultural Sciences and  
Veterinary Medicine "King Michael I of Romania" from Timisoara (BUASVM),  
Timisoara – 300645, Calea Aradului, No. 119, Timisoara, Romania  
E-mail: janos.degi@gmail.com

### **Summary**

In pigs, staphylococci are important opportunistic pathogens often found in the microflora of skin and mucosal surfaces of the upper respiratory tract. Since the introduction of antibiotics into human clinical use staphylococci have shown rapid acquisition of resistance to almost all major classes of antibiotics, particularly in those strains associated with nosocomial infections in humans. Little is known about the development and spread of antimicrobial resistance in staphylococci in pigs. In this study, investigated a total 187 samples from healthy pigs, different skin areas (nipples, per vulvar, ear and abdominal) were examined for the presence of *Staphylococcus* through standard methods. The antibiotic susceptibility of the isolated strains was tested using the Vitek 2 system. The microorganism was found in 48 pigs (25.67%), colonized in the nipples skin (9/38; 23.68%) and per vulvar skin (3/25; 12.00%) from sows with piglets; nipples skin (3/23; 13.04%) and per vulvar skin (2/22; 9.09%) from pregnant sows; ear skin (13/38; 34.21%) from weaned piglets and abdominal skin (18/41; 43.90%) from fat pigs. Antimicrobial susceptibility testing revealed a remarkably susceptible population, all of isolates, to nine drugs tested, and resistant to benzyl penicillin (50.00%; 24/48), tetracycline (37.5%; 18/48), gentamicin (35.41%; 17/48), erythromycin (25.00%; 12/48), ampicillin (22.91%; 11/48), and kanamycin (20.83%; 10/48). Eighth methicillin resistant isolates (oxacillin, respectively ceftiofur) were identified. Although 12.5% (6/48) of isolates were chloramphenicol resistant, 10.41% (5/48) trimethoprim/sulfamethoxazole resistant, and 4.1% (2/48) nitrofurantoin resistant. No inducible clindamycin resistance was found. Correct identification of staphylococcal isolates is very important for the accurate management of staphylococcal infections, but it is also essential for a better understanding of the pathophysiological factors affecting the clinical outcome and for epidemiological surveillance and the distribution these bacteria in pigs and people. Our results showed the presence of non-host-specific staphylococcal species with multidrug resistance, including that to methicillin (oxacillin and ceftiofur).

**Keywords:** *Staphylococcus*, swine, methicillin, resistance

## **DEPLOYMENT OF THE CARVER PLUS SHOCK VULNERABILITY ASSESSMENT METHOD IN A FOOD PROCESSING FACILITY - A CASE STUDY**

**GEORGESCU M., RAITA Ș.M.**

University of Agronomic Sciences and Veterinary Medicine of Bucharest,  
Veterinary Medicine College of Bucharest, 011464, Blvd. Mărăști no. 59,  
Sector 1, Romania

E-mail: dr\_georgescu\_mara@yahoo.com

### **Summary**

Food safety plans have been increasingly implemented by food business operators, mainly due to requirements of the food regulations, but also due to market competitiveness which set continuously growing standards for these programs. However, food defense is still an overlooked issue, leaving significant unattended risk associated with the food industry activities. This study reveals the steps to be followed for achieving a threat vulnerability assessment using the CARVER plus shock method, in order to put together an effective food defense plan. The CARVER plus shock analysis was conducted in a food processing facility, in 5 steps: establishment of parameters, assembling experts, detailing food supply chain, assigning scores and ranking critical nodes depending on the vulnerability relative to each other. The completed analysis is the most relevant item in the development of a complete facility defense program. It must be reviewed on a regular basis to ensure all changes in risk levels are covered at all times. The model revealed in the present case study can be easily tailored for other particular food business industries.

**Keywords:** CARVER plus shock, vulnerability assessment, food processing facility.

**RESEARCH ON THE EVOLUTION OF ENZOOTIC BOVINE  
LEUKOSIS IN SOUTHWEST ROMANIA BETWEEN 2013-2017**

**IANCU I., BEJINARU C.V., PASCU C., DÉGI J., CĂTANĂ N., HERMAN V.**

Banat's University of Agricultural Sciences and Veterinary Medicine "King Michael I  
of Romania" from Timisoara, Faculty of Veterinary Medicine, 300645, Calea  
Aradului, No. 119, Timisoara, Romania  
E-mail: ionicavet@gmail.com

**Summary**

In the following are presented the results obtained, through the serological tests regarding enzootic bovine leucosis, in South-West Romania, between 2013-2017.

In the studied time period, the total number of bovines fluctuated. All the bovines above 6 months have been examined as follows: 32011 in 2013, 31453 in 2014, 29584 in 2015, 28759 in 2016 and 25701 in 2017.

After the serological tests, positive serological bovines have been found as follows: 3 bovines in 2014, 5 bovines in 2015, 3 bovines in 2016 located in one or more households. Between 2013-2017, 8 facilities were sanitized, from which 7 were non-professional and 1 was commercial. Therefore, in 2017 no enzootic bovine leucosis has been found.

**Keywords:** bovine enzootic leucosis, cattle, ELISA

**EFFECT OF DEUTERIUM-DEPLETED WATER BASED  
ACTIVATORS ON SPERM MOTILITY IN PIKEPERCH (*SANDER  
LUCIOPERCA*), STERLET (*ACIPENSER RUTHENUS*), RUSSIAN  
STURGEON (*ACIPENSER GUELLENSTAEDTII*) AND CATFISH  
(*SILURUS GLANIS*)**

**IGNA V.<sup>1</sup>, MATHIU T.M.<sup>1</sup>, TELEA A.<sup>2</sup>, GROZEA A.<sup>2</sup>**

<sup>1</sup>Banat's University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timisoara, Faculty of Veterinary Medicine, 300645, Calea Aradului, No. 119, Timisoara, Romania

<sup>2</sup>Faculty of Animal Science and Biotechnologies, BUASVM, Timisoara, Romania  
E-mail: ignavioleta@gmail.com

**Summary**

In aquaculture reproductive biotechnologies, semen quality indicators, especially spermatozoa motility, are key points for the success of egg fertilization. The activating solution that provides sperm motility for a longer period of time can be effective in case of low quality of fresh semen or in the use of cryopreserved semen. The aim of the present study was to determine the effects of different activators, based on deuterium-depleted water, on sperm motility duration and sperm velocity, in four species of fish: pikeperch (*Sander lucioperca*), starlet (*Acipenser ruthenus*), russian sturgeon (*Acipenser gueldenstaedtii*) and catfish (*Silurus glanis*). Deuterium-depleted water (DDW) at 60 and 90 ppm, used either alone, or as basis for an activation medium, determined an increase in the velocity and duration of sperm motility in pikeperch, sterlet and russian sturgeon. In catfish, deuterium-depleted water had no effect on sperm motility parameters.

**Keywords:** Deuterium depleted water (DDW), sperm motility, activators, fish

## **DEUTERIUM DEPLETED WATER - BIOMEDICAL IMPLICATIONS**

**MATHIU T. M., IGNA V.**

Banat's University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timisoara, Faculty of Veterinary Medicine, 300645, Calea Aradului, No. 119, Timisoara, Romania  
E-mail: ignavioleta@gmail.com

### **Summary**

Deuterium depleted water (DDW), also known as "light water", is the water with low deuterium ( $^2\text{H}$ ) content (less than 144ppm). In nature, water has approximately 144 ppm  $^2\text{H}$ , with variations influenced by temperature or altitude, across the entire Earth. DDW can be obtained based on physical and chemical differences between normal water ( $\text{H}_2\text{O}$ ) and heavy water ( $\text{D}_2\text{O}$ ). Using deuterium depleted water as part of cellular medium or as drinking water for organisms leads to modifications in  $^2\text{H}$  content of the cells, plasma and tissues. This paper aims to review the studies investigating the use of deuterium depleted water in different medical fields like oncology, toxicology, immunology, cardiology and reproduction. The main bioactive effects that were observed and noted in the reviewed papers focus on remission of certain tumoral cells, antioxidative and antitoxic effects, increase of the vascular resistance, immunostimulatory effects, anti-aging effects and increasing resistance in some dermatological pathologies. Although the conclusions may reveal beneficial effects of light water on cells and living organisms, the biological mechanisms underlying these results need further research.

**Keywords:** deuterium, deuterium depleted water, anti-tumoral, antioxidative



## **EPIDEMIOLOGICAL RESEARCH IN CANINE DIROFILARIOSIS IN THESSALONIKI AREA OF GREECE**

**MEDERLE N.<sup>1</sup>, OPRUȚI D.A.<sup>1</sup>, DIAKOU A.<sup>2</sup>**

<sup>1</sup>University of Agricultural Sciences and Veterinary Medicine King Michael I of Romania from Timișoara, Faculty of Veterinary Medicine, Calea Aradului, 119, Timișoara-300645, Romania

<sup>2</sup>Aristotle University of Thessaloniki, Faculty of Veterinary Medicine, University Campus, 541 24 Thessaloniki, Greece  
E-mail: narcisa.mederle@yahoo.com

### **Summary**

Dirofilariosis is a zoonotic parasitic disease in dogs which is caused by the filarial nematode parasites *Dirofilaria immitis* and *Dirofilaria repens*, both transmitted by the bite of infected mosquitoes. Both *D. immitis* and *D. repens* are enzootic in Greece. The aim of the present study was to bring the new epidemiological data on the *Dirofilaria* infections in dogs in Thessaloniki area (Greece) and to evaluate the risk factors of heartworm infection. The samples were collected over a period of 9 months (July - March) from 100 dogs. The blood samples were examined by blood smear, the modified Knott's method and by serology (Pet Check IDEXX kit). The obtained data were analyzed by Kruskal Wallis statistical software. We diagnosed dirofilariosis in the Thessaloniki region (Greece) with a prevalence of 7% by the blood smear and Knott's modified methods, respectively by 14% by the serology. The risk groups, diagnosed with the highest percentage of prevalence, were hunting dogs (26.47%) and males (57.14%). High percentages of the prevalence of canine dirofilariosis diagnosed in Thessaloniki (Axiou Delta) indicate this region as one of the most favorable for the development of vector hosts.

**Keywords:** dirofilariosis, dogs, prevalence, diagnosis, Thessaloniki

## **THE IDENTIFICATION AND ANTIMICROBIAL SUSCEPTIBILITY PROFILE OF CONJUNCTIVAL FLORA FROM DOGS**

**NADĂȘ G.C., FILIPOI C.D., BOUARI C.M., BUZURA-MATEI I.A., CHIRILĂ F.,  
NOVAC C.Ș., FIȚ N.I.**

University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, Faculty of  
Veterinary Medicine, 400372, Calea Mănăștur, No. 3-5, Cluj-Napoca, Romania  
E-mail: filipoi\_cosmin\_dan@yahoo.com

### **Summary**

The microbial flora from the conjunctival sac is represented by mainly Gram-positive species, with Gram-negative bacteria usually isolated when conjunctivitis is diagnosed. A total of thirty-seven samples from the same number of dogs with clinical signs of conjunctivitis were collected from a private practice in North Rhine Westphalia, Germany. Microbial identification was performed using MALDI-TOF mass spectroscopy technique. The evaluation of antimicrobial susceptibility was performed in the same laboratory using disk diffusion test. The results revealed that the most frequently isolated microorganism was represented by *Staphylococcus pseudintermedius*, present in 19 (51.35%) samples, followed by *Streptococcus pyogenes* in seven (18.91%), *Staphylococcus haemolyticus* in five (13.51%), and *Escherichia coli*, *Bacillus pumilus* and *Pseudomonas aeruginosa*, each in one (2.7%) sample. A total number of six (16.21%) samples were negative for the presence of bacterial species. The most efficient antimicrobials were doxycycline and tobramycin, while the least recommended is Polymyxin B.

**Keywords:** conjunctivitis, antimicrobial susceptibility, MALDI-TOF

## **DATA INTERPRETATION FROM A DNA FINGERPRINTING EXPERIMENT**

**NICULA A.G., TULCAN C., BOLDURA O.M.**

Banat's University of Agricultural Sciences and Veterinary Medicine " King Michael I of Romania" from Timisoara, Faculty of Veterinary Medicine, 300645, Calea Aradului, No. 119, Timisoara, Romania  
E-mail: oanaboldura@usab-tm.ro

### **Summary**

DNA fingerprinting, also called genotyping, or identity testing, in genetics, is a method of isolating and identifying variable elements within the base-pair sequence of DNA (deoxyribonucleic acid). The technique was developed in 1984 by British geneticist Alec Jeffreys, after he noticed that certain sequences of highly variable DNA (known as minisatellites), which do not contribute to the functions of genes, are repeated within genes. Later, after the event of PCR method development, certain type of molecular markers from the group of VNTR were developed having the ability of revealing a unique molecular pattern of an individual. A fingerprinting experiment starts with DNA isolation followed by several PCR amplifications. The obtained amplicons are migrated in agarose gel and so a DNA fingerprint for a particular set of molecular markers is obtained. After the laboratory work all the data are analyzed in silico. This paper describes the procedure of analysis and interpretation of data obtained from the DNA fingerprinting experiments. The image analysis software is presented as well as similarity and genetic diversity matrixes and dendrogram development.

**Keywords:** DNA fingerprinting, VNTR molecular markers systems, PCR amplification, molecular data analysis

**MORPHOPATHOLOGICAL RESEARCH IN CANINE INFECTIOUS  
HEPATITIS AND ASPECTS REGARDING THE  
HISTOPATHOLOGICAL DIAGNOSIS OF THE CONDITION**

**OLARIU-JURCA A.<sup>1</sup>, CIULAN V.<sup>1</sup>, AVRAM E.<sup>2</sup>, BORCHESCU G.<sup>1</sup>, TESLICI L.E.<sup>1</sup>**

<sup>1</sup> Banat's University of Agricultural Sciences and Veterinary Medicine „King Michael I of Romania” from Timișoara, 119 Calea Aradului, 300645, Timișoara, Romania

<sup>2</sup> LSVSA Satu Mare, Romania

E-mail: olariujurca\_adrian@yahoo.com

**Summary**

The research of the present study has been conducted during the period October 2017 - May 2018 through anatomopathological examination of the liver and organs from 5 dog corpses, of various ages, sexes and breeds, coming from private owners, kennels and pet rescue associations. The corpses were necropsied in the Forensics department of the Faculty of Veterinary Medicine Timisoara. Samples (tissue fragments of 2/1.5 cm) were collected following detailed macroscopic examination of the studied organs from the stomach, intestine, lungs, heart, liver, kidneys, lymph nodes and encephalon for histopathological examination. The tissue and organic lesions identified in the studied case, which play a role in the diagnosis of canine infectious hepatitis are represented by specific lesions such as: focal hemorrhagic gastritis, focal hemorrhagic-necrotic hepatitis with evidence of viral hepatocellular intranuclear inclusions, serous, edematous cholangitis, jaundice-like hepatosis and nephrosis, hepatocellular intranuclear inclusions; lymphomonocytic nephritis with viral intranuclear inclusions in the glomerular mesangial cells of the uriniferous tubules; lymphomonocytic meningoencephalitis and non-specific lesions such as: inflammatory pulmonary edema, myocardial hemorrhage in the shape of ecchymosis and sub-epicardial and intraparenchymal suffusions, cardiac, hepatic and renal protein-lipid dystrophies.

**Keywords:** infectious hepatitis, dog, lesions, histopathological exam

## THE POTENTIAL LOCAL PATHOGENIC ROLE OF CIRCULATING IMMUNE COMPLEXES IN CONTAGIOUS AGALACTIA OF SHEEP

ȘANDRU C.D.<sup>1</sup>, NICULAE M.<sup>1</sup>, BRUDAȘCĂ G.F.<sup>1</sup>, PALL E.<sup>1</sup>, VASIU A.<sup>1</sup>, CERBU C.<sup>1</sup>, SUĂTEAN M.I.<sup>1</sup>, SPÎNU M.<sup>1</sup>, KRASOVSKAIA I.<sup>2</sup>

<sup>1</sup>University of Agricultural Sciences and Veterinary Medicine, Faculty of Veterinary Medicine, 3-5 Mănăștur street, 400372, Cluj-Napoca, Romania

<sup>2</sup>Kazan State Academy of Veterinary Medicine named after N.E. Bauman, Sibirskiy Trakt, no. 35, 420029, Kazan, Tatarstan, Russia  
E-mail: sandranac@gmail.com

### Summary

Contagious agalactia of sheep and goats, caused by *M. agalactiae*, included on the OIE list of notifiable disease, is clinically expressed by septicemia, arthritis and eye lesions. The immune response plays an important role in the clinical outcome of the infection, extent of lesions and survival. The research aimed to place the circulating immune complexes (CICs) in the pathological framework of the disease, by correlating their levels in vaccinated or non-vaccinated sheep showing clinical signs of the disease with the severity of the lesions.

Eighteen Țigaie rams and ewes, aged 2 to 8 years, with clinical illness, from a flock vaccinated against contagious agalactia two years ahead the trial, were sampled twice at 18 days intervals, before and after therapy and circulating immune complexes levels were estimated by 4.2% PEG precipitation method. The location and magnitude of the lesions and vaccinal status were quantified by scores (1 for joint lesions, 2 for ocular lesions and 3 for mixed lesions and 1 for vaccinated, 2 for non-vaccinated, respectively). Excel program was used to correlate the results and evaluate their statistical significance. There was a positive but not significant correlation of CIC levels and vaccination status after the therapy. Albeit no significant difference between CIC levels ( $0.0089 \pm 0.004$  and  $0.0086 \pm 0.009$ , respectively), there was a decrease in correlation with the lesion score (0.272 and 0.213 respectively) before and after therapy, suggesting the potential pathogenic role of CIC.

**Keywords:** contagious agalactia, circulating immune complexes, lesion score, vaccination, correlations

## DISSIMILAR STRESSES INFLUENCE DIFFERENTLY THE IMMUNE RESPONSES IN BROILER CHICKENS

ȘANDRU C.D.<sup>1</sup>, NICULAE M.<sup>1</sup>, BRUDAȘCĂ G.F.<sup>1</sup>, PALL E.<sup>1</sup>, VASIU A.<sup>1</sup>, CERBU C.<sup>1</sup>, POTÎRNICHE A.<sup>1</sup>, SPÎNU M.<sup>1</sup>, KRASOVSKAIA I.<sup>2</sup>

<sup>1</sup>University of Agricultural Sciences and Veterinary Medicine, Faculty of Veterinary Medicine, 3-5 Mănăstur street, 400372, Cluj-Napoca, Romania

<sup>2</sup>Kazan State Academy of Veterinary Medicine named after N.E. Bauman, Sibirskiy Trakt, no. 35, 420029, Kazan, Tatarstan, Russia  
E-mail: sandranac@gmail.com

### Summary

The sharp increase in intensive farming of broilers is inductive of stress of various origins, with release of corticosterone and subsequent detrimental influence on production and immune performance and thus diminished resistance to disease. The aim of this study was to compare the influence of two different types of stress (relocation and vaccination) on non-specific and adaptive immunity in two equal (n=20) groups of broiler chickens 19 days of age, by monitoring the dynamics of circulating immune complexes (CIC) (PEG 4.2% precipitation method) and adaptive cell mediated immunity (*in vitro* blast transformation test), through blood sampling prior, and 4 days after the onset of the stressors. The relocation stress led to a significant decrease ( $0.039 \pm 0.003$  and  $0.0188 \pm 0.003$ ,  $p < 0.05$ ) of CIC, while the values were increased for the vaccination stress ( $0.013 \pm 0.002$  and  $0.039 \pm 0.010$ ,  $p < 0.05$ ). The spontaneous blastogenic index decreased in broilers subject to adaptation stress ( $19.01 \pm 13.10\%$  to  $12.37 \pm 11.11\%$ ) but remained unchanged in vaccinated chickens. Furthermore, the response to PHA mitogen was present in vaccinated chickens ( $28.98 \pm 17.71\%$  and  $32.49 \pm 7.14\%$ ) and absent ( $24.47 \pm 10.22\%$  and  $24.78 \pm 10.47\%$ ) in relocated chickens. A comparison of the influences of two different types of stress based on the immunological results indicated that 4 days after the onset of stress, the adaptation was more impacting than the vaccination and that humoral immunity was more influenced than the adaptive cell mediated immunity.

**Keywords:** broiler chickens, adaptation stress, vaccination stress, immunity

## MICROBIOLOGICAL INVESTIGATIONS IN A SEVERE HEMORRHAGIC SYNDROME IN FARMED OSTRICHES

VASIU A.<sup>1</sup>, TURCU B.<sup>1</sup>, KICSID Z.<sup>1</sup>, NICULAE M.<sup>1</sup>, PALL E.<sup>1</sup>, OLAH D.I.<sup>1</sup>,  
BRUDAȘCĂ G.F.<sup>1</sup>, SPÎNU M.<sup>1</sup>, KRASOVSKAIA I.<sup>2</sup>

<sup>1</sup>University of Agricultural Sciences and Veterinary Medicine, Faculty of Veterinary Medicine, 3-5 Mănăștur street, 400372, Cluj-Napoca, Romania

<sup>2</sup>Kazan State Academy of Veterinary Medicine named after N.E. Bauman, Sibirskiy Trakt, no. 35, 420029, Kazan, Tatarstan, Russia  
E-mail: aurel\_vasiu@yahoo.com

### Summary

Farmed ratites, frequently kept outside their countries of origin, commonly suffer of infectious, bacterial or viral, economically highly impacting diseases. This study aimed at investigating the etiology of two episodes of hemorrhagic enteritis in South African ostriches (*Struthio camelus*) farmed in NW of Romania. Both episodes ( $n_1=11$ ,  $n_2=45$ ) were recorded in young birds (9-16 month of age), with sudden onset and peracute (sudden death) to sub-acute (6-7 days) clinical course. The clinical picture included depression, anorexia, ataxia, convulsions, oedema and pain in the limbs, followed by death in all cases. The necropsy revealed cahexia, dehydration, anemia and congestion of conjunctive mucosa, diffuse subcutaneous, intramuscular and splenic hemorrhages, necrotic myositis, hemorrhagic to necrotic enteritis and proventriculitis, necrotic hepatitis, congestion of the kidneys, lungs and tracheal mucosa, ecchymosis in the ventricular mucosa.

Classical microbiological methods (simple broth, Mueller Hinton agar, McConkey agar) and anaerobic environment (TSC agar) cultivation were performed. The results indicated the presence of *Clostridium perfringens* and *E. coli* in the internal organs of the birds and also the bone marrow.

It was considered that an imbalance in feeding the birds created favorable conditions for the insertion of these widespread bacteria. In short term, broad spectrum antibiotic treatment was attempted with promising results.

**Keywords:** *Struthio camelus*, hemorrhagic syndrome, *C. perfringens*, *E. coli*

## TEMPORAL DYNAMICS OF POST-VACCINATION HUMORAL IMMUNE RESPONSE IN OSTRICHES PRIMED AGAINST ANTHRAX

VASIU A.<sup>1</sup>, ȘANDRU C.D.<sup>1</sup>, SZALO-MUREȘAN D.<sup>1</sup>, NICULAE M.<sup>1</sup>, CERBU C.<sup>1</sup>, SEICHEL R.<sup>1</sup>, BRUDAȘCĂ G.F.<sup>1</sup>, KRASOVSKAIA I.<sup>2</sup>, SPÎNU M.<sup>1</sup>

<sup>1</sup>University of Agricultural Sciences and Veterinary Medicine, Faculty of Veterinary Medicine, 3-5 Mănăștur street, 400372, Cluj-Napoca, Romania

<sup>2</sup>Kazan State Academy of Veterinary Medicine named after N.E. Bauman, Sibirskiy Trakt, no. 35, 420029, Kazan, Tatarstan, Russia  
E-mail: aurel\_vasiu@yahoo.com

### Summary

Ostrich farming became lately an alternative for small producers allowing access to external markets by meat and skin exports. The paucity of scientific information on diseases and diagnostic tests, most of the poultry methods being unvalidated, supports the researches regarding enhancement of disease resistance in this peculiar group of birds. Furthermore, semi-intensive raising could become a source for variable pathology, unless fit exploitation technologies are applied, including veterinary medical prevention.

This study aimed at evaluating the fitness of various vaccination protocols in preventing anthrax, one of the most severely impacting zoonoses encountered in ostriches on Romanian farms. Two groups of South African ostriches (*Struthio camelus*) were subjected to vaccination with the live anti-anthrax vaccine strain R1 190, using a single dose (sc injection) of 0.2 ml (group 1) and 0.3 ml (group 2). Blood was sampled 3 weeks and 5 months after the priming. Total Ig (24% zinc sulphate test) and antibody levels (precipitation test) were quantified at both samplings. After three weeks, all birds vaccinated with 0.3 ml versus 0.2 ml showed increased Ig levels ( $0.023 \pm 0.003$  and  $0.018 \pm 0.004$  ODU, respectively). The precipitation test was intensely positive in all birds from group 2 and in significantly lesser numbers (16.66%,  $p < 0.01$ ) in group 1. An almost complete decline of the humoral immune response was encountered after 5 months in both groups. Both methods indicated better results for an immunizing dose of 0.3 ml of vaccine, but also a compulsory booster before 5 months after the first vaccination.

**Key words:** *Struthio camelus*, anthrax, vaccine dosage, antibodies



**MORPHOLOGY OF THE SKULLS IN BADGER (*MELES MELES*)  
AND OTTER (*LUTRA LUTRA*) – COMPARATIVE ASPECTS**

**ZAGRAI G.<sup>1</sup>, ȘEICARU A.<sup>1</sup>, LIXANDRU D.<sup>1</sup>, ZAGRAI (MĂIEREAN) A.M.<sup>2</sup>**

<sup>1</sup>Faculty of Veterinary Medicine, University of Agricultural Sciences and  
Veterinary Medicine Bucharest – 050097, Splaiul Independentei 105, Bucharest,  
Romania

<sup>2</sup>Faculty of Veterinary Medicine, University of Agricultural Sciences and  
Veterinary Medicine of Cluj-Napoca  
E-mail: gavrilazag@yahoo.com

**Summary**

In some cases it is necessary to establish, in a short time, the species from which a number of bones belong. One example is that from badger (species that are hunted) and otter (protected species). There are some morphometrical study regarding the skulls in these species but comparative aspects missing. For this purpose we conducted a study on six skulls from badger (*Meles meles*) and five skulls from otter (*Lutra lutra*). Following an overall analysis of the two skulls, we found the flattening aspect of the otter skull, compared to the badger skull, and a development of neurocranium in the first species. In dorsal aspect were found differences regarding the angles between sagittal ridge and nuchal ridges and between the ratio of the width of the viscerocranium, measured at the level of canine's alveoli, and the length of viscerocranium, measured between the zygomatic process line and rostral extremity of incisive bone. On the lateral side it is observed the reduction of jugal and retrotympanic processes in otter. In this two species the holes from the base of the skull and the hard palate look totally different. Establishing the species can be made easier if exist the possibility to study the whole skull. Our study surprised the details that helps to identify the species even if we rely on bone fragments.

**Keywords:** morphology, badger, otter, skull