

## Резюмета на научни трудове на д-р Цанко Христов, д-р.

1. Binev R., Z. Kirkova, J. Nikolov, K. Stojanchev, L. Lazarov and **Ts. Hristov**, *Efficacy of parenteral administration of ivermectin in donkeys..* Journal of South African Veterinary Association, 2005, 76, 4, 214 – 216. **IF-0.349**

Investigations into the efficacy of parenteral ivermectin (Pandex) administration for strongylidosis control in donkeys were carried out. The preparation was applied subcutaneously at a dose of 0.2 mg/kg (1m /50 kg body weight). One day prior to the treatment and 14 days post-treatment, individual coprological samples were obtained for faecal nematode egg counts and larval culture. The study was performed on 263 donkeys originating from different regions of Bulgaria. Prior to the treatment and 20 days after that, blood samples were obtained from 64 previously infected animals for monitoring of changes in eosinophil leukocyte counts. The subcutaneous application of ivermectin had an efficacy of 96 % in terms of reduction of faecal egg counts. In 92.2% of infected donkeys, a complete reduction of faecal eggs count occurred (0 eggs per gram of faeces epg), whereas in the remaining 7.8% of the infected donkeys, the egg counts were reduced by 72 %. The reduction in faecal egg counts did not result in changes in eosinophil counts. The results obtained as well as the lack of local changes after the subcutaneous application of ivermectin in donkeys allow us to recommend its use for control of strongyles in donkeys.

**Цанко Христов**, Лазарин Лазаров, Антон Русенов, Отравяне с етиленгликол при куче – клиничен случай., Научна конференция с международно участие-Ст. Загора, 2005, Т.3, .219-223

Клиничен случай на остра перорална интоксикация с неуточно количество етиленгликол при куче на възраст 4 години 7 месеца. Клиничната картина включва церебротоксични, дисметаболични и нефротоксични синдроми. Лечението се извършва само с консервативни мерки и методи (стомашна промивка, форсирана диуреза, антидоти, органозащитни и симптоматични). Резултатът от отравянето е благоприятен.

2. Georgieva T.M., I. Penchev, S. Tanev, A. Vachkov, V. Petrov, P.D. Eckersall, L. Sotirov, L. Lazarov, **Ts. Christov**, J. Nikolov. *Variation of acute phase protein (haptoglobin, fibrinogen and ceruloplasmin) concentration in weaning rabbits*

*after experimental infection with E. coli.* Revue De Medicine Veterinaire, 2009, 160, 3, 133-139. **IF - 0.198**

Infections with *E. coli* are a common cause of diarrhoea in weaning rabbits. The present study was conducted to evaluate the changes in the blood concentrations of haptoglobin (Hp), ceruloplasmin (Cp) and fibrinogen (Fb) during experimentally induced *E. coli* infection in weaning rabbits. A total of 18 rabbits, 40-45 days old and weaned at 4 weeks were used: 12 were inoculated with the *E. coli* strain type 015:H- suspension (6.107 cfu) and the 6 remained rabbits served as controls. Blood samples for acute phase proteins (APPs) analysis were collected before (0 h) and at 24th and 72th hours and on days 7, 11, 18 and 30 after inoculation. The presence of coliforms was investigated in rectal samples on days 1, 6, 11, 16, 25 and 31. The excretion of the 015:H- type began 2 days after experimental challenge in 3 rabbits and was intensified on day 3 whereas mild to severe diarrhoea episodes were observed between the 5th day to the 21st day in all rabbits except 2. In parallel, bacterial excretion gradually declined. Moreover, Hp concentrations dramatically increased after *E. coli* inoculation since 24th hours, reached maximal values on day 7 (multiplied by a factor 9) and remained significantly elevated compared to basal values until the 30th day. By contrast, significant changes in Fb and Cp concentrations compared to initial values appeared later (on days 3 and 7 respectively), less intense (maximal concentrations observed on day 11 were only roughly doubled) and were more transient (normal values were obtained on days 30 and 18 respectively). Increases of all APP concentrations were associated with the intensity of the diarrhoea. Moderate positive correlations were evidenced between Hp and Cp or Fb concentrations while Cp and Fb concentrations were strongly correlated. The time course and the magnitude of changes of these APPs induce to consider Cp and Fb as slow reacting positive APPs while Hp has to be classified as a rapid major positive APP useful for early detection of bacterial infections in weaning rabbits, before the clinical appearance of diarrhoea and faecal excretion of *E. coli*.

3. Georgieva T.M., V.N. Koinarski, V.S. Urumova, P.D. Marutsov, **T.T.Christov**, J. Nikolov, T. Chaprazov, K. Walshe, R.S. Karov, I.P. Georgiev, Z.V. Koinarski. *Effects of Escherichia coli infection and Eimeria tenella invasion on blood concentrations of some positive acute phase proteins (haptoglobin (PIT 54), fibrinogen and ceruloplasmin) in chickens*, Revue Méd. Vét., 2010, 161, 2, 84-89 **IF - 0.175**

Infections with enteropathogen *E. coli* and *E. tenella* commonly cause gastrointestinal inflammatory disorders in chickens. The present study was

conducted to evaluate the changes in the plasma concentrations of haptoglobin-like protein (PIT54), ceruloplasmin and fibrinogen during separate or combined infections with *E. coli* and *E. tenella*. For that, 40 bred Cobb 500 chickens were randomly allotted into 4 equal groups according to the infection modalities: a first group was orally infected with *E. tenella* oocysts (8.104) when birds were 12 days old, a second group was intraperitoneally inoculated with serotype O78 *E. coli* (107 cfu) when birds were 16 days old, a third group received the 2 combined infections whereas the last group serves as negative controls. Blood plasma samples were collected when chickens were 20 days old. The plasma concentrations of the 3 biochemical markers were dramatically increased in birds infected with *E. coli* alone or in association with *E. tenella* (compared to controls,  $P < 0.001$ ). The chickens treated with *Eimeria* alone also exhibited significant but moderate increases of plasma ceruloplasmin and fibrinogen concentrations ( $P < 0.001$ ) whereas the PIT 54 concentrations did not significantly vary in this group although they tended to be elevated compared to the not infected controls. Moreover, a positive correlation was evidenced between haptoglobin and fibrinogen concentrations ( $r = 0.56$ ,  $P < 0.05$ ) in all birds receiving *Eimeria* alone or combined with the bacteria. These results demonstrate that ceruloplasmin, fibrinogen and PIT 54 at a lesser extend are major positive acute phase proteins in chickens suffering from inflammation from an infectious origin and they also suggest that the intensity of the acute phase response greatly depends from the nature of the inflammatory stimulus.

4. **Ц. Христов**, Л. Лазаров, Л. Сотиров, А. Русенов, *Възрастови особености на бялата кръвна картина при магарета*. Journal of Mountain Agriculture on the Balkans, vol. 13, 3, 2010, 595-604

Изследвани са 59 броя магарета, разделени в четири възрастови групи, отглеждани от частни стопани в селата Горно Къпиново, Маджерито и Загоре. Отчетени са стойностите на левкоцитите (G/L) и техните класове (еозинофили, метамиелоцити, пръчкоядрени и сегментоядрени, лимфоцити и моноцити). Установено е, че стойностите на проследените кръвни показатели са най-високи при магаретата на възраст между 5 и 10 години. Тенденцията при магаретата над 15 години е за намаляване на стойностите на левкоцитите като цяло и на отделни техни класове. Между изследваните показатели съществува много висока корелационна зависимост.

5. **Tsanko Hristov**, Rumens Binev, Lazarin Lazarov, Radostin Simeonov. *Plasma concentration of VEGF in canine lymphoma*. Юбилейна национална научна

конференция с международно участие, СУБ 6-9.10.2011г., Смолян, сборник доклади 2011, 585-591. ISBN: 978-954-397-025-4 (CD)

Vascular endothelial growth factor (VEGF) is an essential cytokine in the regulation of angiogenesis. VEGF is a dimeric polypeptide with potent angiogenic and mitogenic properties, specific for endothelial cells and increases vascular permeability. This growth factor seems to play a major role in tumor growth, and plasma concentration correlate with tumor burden, response to therapy and disease progression. This study compared plasma VEGF concentration in healthy dogs (n=7) to dogs with lymphoma (n=6).

6. Zapryanova D., **Tsanko Hristov**, Teodora Georgieva *Creatine kinase activity in dogs with experimentally induced acute inflammation.* J. BioSci. Biotech. 2013, 2(1): 21-24.

The main purpose of this study was to investigate the effect of acute inflammation on total creatine kinase (CK) activity in dogs. In these animals, CK is an enzyme found predominantly in skeletal muscle and significantly elevated serum activity is largely associated with muscle damage. Plasma increases in dogs are associated with cell membrane leakage and will therefore be seen in any condition associated with muscular inflammation. The study was induced in 15 mongrel male dogs (n=9 in experimental group and n=6 in control group) at the age of two years and body weight 12-15 kg. The inflammation was reproduced by inoculation of 2 ml turpentine oil subcutaneously in lumbar region. The plasma activity of creatine kinase was evaluated at 0, 6, 24, 48, 72 hours after inoculation and on days 7, 14 and 21 by a kit from Hospitex Diagnostics. In the experimental group, the plasma concentrations of the CK-activity were increased at the 48th hour ( $97.48 \pm 6.92$  U/L) and remained significantly higher ( $p < 0.05$ ) at the 72 hour ( $97.43 \pm 2.93$  U/L) compared to the control group ( $77.08 \pm 5.27$  U/L). The results of this study suggest that the evaluation of creatine kinase in dogs with experimentally induced acute inflammation has a limited diagnostic value. It was observed that the creatine kinase activity is slightly affected by the experimentally induced acute inflammation in dogs.

7. **Hristov Ts**, R Binev, L Lazarov, I Valchev. *Changes in plasma concentrations of vascular endothelial growth factor (vegf) in dogs in various stages of splenic hemangiosarcoma.* Journal of Mountain Agriculture on the Balkans, vol. 17, 3, 2014. ISSN : 1311-0489

The vascular endothelial growth factor is a key component of tumor-associated angiogenesis. VEGF plasma concentration could be of diagnostic and prognostic value. Eight canine patients of the Small Animal Clinic at the Faculty of Veterinary Medicine with histopathology confirmed diagnosis of spleen hemangiosarcoma were examined. Six healthy dogs served as controls. Blood samples were collected by venipuncture of v. cephalica antebraehii used heparin as anticoagulant. Blood plasma VEGF concentration were analyzed with a commercial Quantikine Canine VEGF – ELISA test kit (R&D Systems Inc., catalog number CAVE00). Plasma vascular endothelial growth factor was elevated in cancer patients ( $128.41 \pm 51.78$ ,  $P < 0.01$ ) compared to controls ( $44.43 \pm 8.27$ ). The highest VEGF values were determined in dogs in most advanced stage of the disease.

8. Valchev, I., L., Lazarov, Ts. Hristov, D. Kanakov, R. Binev, Y. Nikolov. *Blood triiodothyronine, thyroxine and thyroid-stimulating hormone concentrations in mulard ducks with experimental aflatoxicosis*. Bulgarian Journal of Veterinary Medicine, 2014, 17, No 3, 191-198. ISSN 1311-1477. SJR 0.143

The aim of the experiment was to evaluate the effect of aflatoxin B1 applied either independently or in combination with Mycotox NG on blood plasma triiodothyronine (T3), thyroxine (T4) and thyroidstimulating hormone (TSH) in mulard ducks. Four groups of 20 ten-day-old birds each were used. The control group received compound feed according to the species and the age. The feed of group II was supplemented with 0.5 mg/kg aflatoxin B1, of group III – with 0.8 mg/kg aflatoxin B1, whereas group IV received compound feed with 0.5 mg/kg aflatoxin B1 and 2 g/kg Mycotox NG. Blood hormone concentrations were assayed on the 21st and 42nd day in samples collected from v. Metatarsalis medialis. Lower blood T3 and T4 were established in groups II and III. The addition of 2 g/kg Mycotox NG to the feed of group IV had not a significant protecting effect against the adverse effects of aflatoxin B1 on blood triiodothyronine and thyroxine concentrations.

9. Binev, R. I. Valchev, N. Groseva, L. Lazarov, Ts. Hristov, K. Uzunova,. *Morphological investigations of experimental acute intoxication with the anticoagulant rodenticide Bromadiolone in pheasants*. Journal of the Faculty Veterinary Medicine Istanbul University, 38, 2, 161 - 173, 2012. ISSN 02502836. SJR 0.101

Morphological investigations were performed to observe the changes after experimental acute intoxication with the anticoagulant rodenticide bromadiolone in pheasants. The study was performed with 8 groups of pheasants treated with increasing doses of the tested preparation: 5 mg/kg (group I), 10 mg/kg (group II), 20 mg/kg (group III), 30 mg/kg (group IV), 40 mg/kg (group V), 50 mg/kg (group VI), 60 mg/kg (group VII) and 70 mg/kg (group VIII). All birds from groups I to V have survived the intoxication whereas those from groups VI, VII and VIII have died. During the intoxication, inappetence, accelerated and difficult breathing, adynamia, watery blood discharge from the beak were observed. All pheasants with fatal outcome and the survivors, which were euthanized after the experiment (day 20) were necropsied and gross changes in the liver, the lungs and kidneys were described. Liver alterations varied from strong hyperaemia and activation of the monocytic-macrophageal system to diffuse vacuolar or granular parenchymal dystrophy, as well as necrobiotic to necrotic changes, intra- and inter-lobular haemorrhages, perivascular mononuclear proliferations and bile duct hyperplasia. Lungs exhibited congestive hyperaemia, oedema in the interstitium and the mucous coats of bronchi and parabronchi, desquamation of epithelial cells in bronchioles and lung parenchymal haemorrhages. In the kidney parenchyma, congestive hyperaemia and haemorrhages were seen, varying within a broad range from karyolysis and karyopyknosis in epithelial tubular cells to cellular desquamation and disintegration and necrosis. All observed changes in parenchymal organs were dose-related, being more pronounced in pheasants treated with higher doses of the tested rodenticide.

10. Valchev, I., N. Groseva, R. Binev, L. Lazarov, D. Kanakov, **Ts. Hristov**, Y. Nikolov, Krassimira Uzunova. *Investigations on Production Traits of Mulards with Experimentally Induced Aflatoxicosis*. Journal of the Faculty Veterinary Medicine Istanbul University, 2013, 39(2):238-247. ISSN 02502836. **SJR 0.151**

In this study the toxic effects of aflatoxin B1 (AFB1) on production traits (live body weight, weight gain, feed intake and feed conversion) and relative weights (g/100 g body weight) of visceral organs (liver, kidneys, thymus, spleen, Bursa of Fabricius, heart, gizzard and proventriculus) in mulard ducklings were investigated. The experiment was carried out with four groups of 30 10-day-old ducklings each, over 42 days. The groups were as followed: group I – control, which received standard feed according to the species and age, group II – experimental, which received compound feed with 0.5 mg/kg AFB1, group III – receiving compound feed supplemented with 0.8 mg/kg AFB1 and group IV – compound feed supplemented with 0.5 mg/kg AFB1 and 2 g/kg Mycotox NG. In

experimental groups II and III, the body weight, weight gain, feed intake were lower, feed conversion ratio was higher as well as the relative weights of liver, kidneys, heart, pancreas, gizzard and proventriculus. At the same time, the relative weight of the thymus, bursa of Fabricius and the spleen were considerably reduced. The supplementation of feed of group IV with Mycotox NG protected birds from the negative effects of AFB1 on production traits and prevented changes in the weights of visceral organs.

11. Valchev, I., **Ts. Hristov**, L. Lazarov, D. Kanakov, R. Binev, Y. Nikolov, 2013. *Investigations on productive traits in broiler chickens with experimental aflatoxicosis*. Bulgarian Journal of Veterinary Medicine, 16, No 4, 271–281. ISSN 1311-1477. **SJR 0.139**

Several production traits (live body weight, daily weight gain, feed conversion, daily feed consumption) and relative weights (g/100 g body weight) of visceral organs (liver, kidneys, heart, bursa of Fabricius, thymus, spleen, pancreas, gizzard and proventriculus) were investigated in broiler chickens with experimentally induced aflatoxicosis B1. The experiments were carried out with five groups of ten 7-day-old Cobb broiler chickens in each. The groups were as followed: group I – control (fed standard compound feed according to the age and species); group II – experimental, whose feed was supplemented with 1 g/kg Mycotox NG, group III – experimental, receiving 0.5 mg/kg AFB1; group IV – experimental, receiving 0.8 mg/kg AFB1 and group V – experimental, supplemented with 0.5 mg/kg AFB1 and 1 g/kg Mycotox NG. The duration of the experiment was 42 days. The dynamics of live weight, daily weight gain, daily feed consumption and conversion were followed out on 21, 35 and 49 days of age. The differences between relative visceral organ weights between control and experimental groups were determined after the trial's end. Lower live body weight, daily weight gain, daily feed consumption as well as increased feed conversion and higher relative weights of the liver, kidneys, heart, pancreas, spleen, gizzard and proventriculus were found out in groups III and IV. Simultaneously, the relative weights of the thymus and bursa of Fabricius were statistically significantly reduced. The supplementation of the feed of experimental group V with 1 g/kg Mycotox NG resulted in substantial reduction of negative effects of AFB1 on production traits and visceral weights. There were no statistically significant differences between studied parameters between group II, receiving only mycosorbent, and controls.

12. Valchev, I., D. Kanakov, **Ts. Hristov**, Lazarov, R., Binev, N., Grozeva, Y., Nikolov, 2014. *Effects of experimental aflatoxicosis on renal function in broiler*

*chickens*. Bulgarian Journal of Veterinary Medicine, 17 (4), pp. 314-324. **SJR 0.143**

The morphological changes in kidneys and some blood parameters of the renal function were followed out in broilers chickens with experimental aflatoxicosis. The possibility for prevention of the toxic effects of aflatoxin B1 (AFB1) through supplementation of feed with the mycosorbent Mycotox NG was also investigated. The experiments were conducted with five groups of ten 7-day-old Cobb broiler chickens in each. The formed groups were as followed: group I – control, fed a standard compound feed; group II – experimental, whose feed was supplemented with 1 g/kg Mycotox NG, group III – experimental, receiving 0.5 mg/kg AFB1; group IV – experimental, receiving 0.8 mg/kg AFB1 and group V – experimental, supplemented with 0.5 mg/kg AFB1 and 1 g/kg Mycotox NG. The trial's duration was 42 days. Blood samples for analysis were collected on days 21 and 42. The results showed increased urea, creatinine and uric acid levels, as well as reduction in blood calcium, inorganic phosphate, sodium and potassium concentrations in groups III and IV. There were no morphological changes in the renal parenchyma of chickens from group I and II. In chickens from group III, the renal parenchyma showed cloudy swelling and vacuolated cytoplasm of tubular epithelial cells. Chickens from experimental group IV exhibited stronger desquamation of tubular epithelial cells, necrotic and necrobiotic changes and haemorrhages. The supplementation of poultry feed with Mycotox NG (group V) decreased the deviations in blood changes, as well as the incidence and severity of histological lesions (hyperaemia, epithelial cell disintegration and glandular dystrophy).

13. Grozeva, N., I. Valchev, R. Binev, D. Kanakov, Ts. Hristov, L. Lazarov, K. Uzunova, Y. Nikolov. *Investigations on liver function in mulards with experimentally induced aflatoxicosis*. Journal of Faculty of Veterinary Medicine, Istanbul University, 40, 1, 53 – 62, 2014. **SJR – 0,143**

Ducklings are among the most sensitive avian species to the toxic effects of aflatoxin B1 (AFB1). In this experiment, the toxic effects of AFB1 on liver morphology, blood plasma aspartate amino-transferase (AST), alanine amino-transferase (ALT), alkaline phosphatase (ALP), lactate dehydrogenase (LDH),  $\gamma$ -glutamyltransferase ( $\gamma$ -GT), albumin, blood glucose, and plasma total protein (TP) were established in mulard ducks. The experiment was carried out with four groups of 20 10-day-old ducklings each. Each group included three subgroups with 10 birds. The groups were as followed: group I – control (which received standard feed according to the species and age), group II – experimental, which



received compound feed with 0.5 mg/kg AFB1, group III– receiving compound feed supplemented with 0.8 mg/kg AFB1 and group IV – compound feed supplemented with 0.5 mg/kg AFB1 and 2g/kg Mycotox NG. The experiment lasted for 42 days. Macroscopically, livers were enlarged, rounded, with yellowish colour and a frail consistency in group II and III. Histopathologically, a various extent of dystrophy was detected depending on the dose of ingested toxin. The supplementation of compound feed with the mycosorbent Mycotox NG improved deviations in blood biochemical parameters and substantially reduced the severity and prevalence of histological lesions.

14. Valchev, I., D. Kanakov, **Ts. Hristov**, L. Lazarov, R. Binev, N. Grozeva & Y. Nikolov. *Investigations on the liver function of broiler chickens with experimental aflatoxicosis*. Bulgarian Journal of Veterinary Medicine, 2014, 17, 4, 302 – 313., **SJR – 0.143**

blood activities of aspartate aminotransferase (AST), alanine aminotransferase (ALT), gamma glutamyltransferase ( $\gamma$ GT), lactate dehydrogenase (LDH), alkaline phosphatase (AP) and liver morphology. Also, the possibility for effective alleviation or prevention of toxic effects of AFB1 by feed supplementation with the mycosorbent Mycotox NG was evaluated. The experiments were conducted with 50 7-day-old Cobb broiler chickens allotted to one control and 4 experimental groups. The chickens were orally treated with 1 g/kg Mycotox NG, 0.5 mg/kg AFB1, 0.8 mg/kg AFB1 и 0.5 mg/kg AFB1 + 1 g/kg Mycotox NG over 42 days. Blood samples for analysis were collected on days 21 and 42. Blood chemistry revealed that the groups receiving only AFB1 showed increased activities of studied enzymes and total bilirubin concentrations. Total protein, albumin, cholesterol, triglycerides and blood glucose were lower than respective control values. Histopathological changes consisted in various degree of dystrophy depending on the amount of ingested toxin. The addition of mycosorbent to the feed of group V reduced partially the deleterious impact of AFB1 as could be seen from blood biochemical changes and the lower frequency and severity of liver lesions.

15. **Hristov Ts.**, Iliev P., Binev R, Valchev I., Lazarov L. *Life-threatening anemia in a goat as a manifestation of haemonchus spp. infection - case report*. Proceedings of The international symposium on animal science (isas) 2017., 309-316. ISBN: 978-86-7520-403-9

A clinical case of predominant *Haemonchus* spp. infection in a goat was described. A goat was introduced to Farm Animal Clinic in Veterinary Faculty at Trakia University with lethargy, recumbent, anorexia, adipsia, moderate diarrhea, accelerated and superficial breathing and pale conjunctivas and gingiva. Blood tests showed an extreme decrease of hemoglobin (19 g/L) and erythrocytes (2.09 T/L). Parasitological examination was carried out. Coproovoscopy revealed a presence of strongylid eggs. Number of eggs per gram feces (EPG) was 18600. Coproculture confirmed a mixed infection by strongylids belonging to *Haemonchus* spp. (91%), *Chabertia* spp. (7%) and *Teladorsagia* spp. (2%). Stained blood smears were negative for presence of *Babesia* spp. A therapy by albendazole, multiple fresh whole blood transfusions, vit. B6, vit. B12, iron, Catosal and electrolytes was prescribed. Two weeks later, the goat was returned to the owner with a significant improvement of clinical and paraclinical parameters.

16. **Hristov, Ts. & R. G. Binev** *Blood and urine concentrations of vascular endothelial growth factor in dogs with tumours*. Bulgarian Journal of Veterinary Medicine, 2019 online first ISSN 1311-1477; DOI: 10.15547/bjvm.2264 **SJR - 0.164**

Vascular endothelial growth factor (VEGF) is a potent mitogen for vascular endothelial cells. It improves cell survival, stimulates angiogenesis, inhibits cell apoptosis and strongly enhances vascular permeability. In this study, VEGF concentrations were assayed in blood plasma and urine of 22 dogs with neoplasms (lymphosarcoma, splenic haemangiosarcoma and mammary gland carcinoma) and in 7 healthy dogs by means of ELISA. Average blood plasma VEGF in control dogs was  $42.13 \pm 7.37$  pg/mL, while in dogs with lymphoma –  $113.35 \pm 16.48$  pg/mL, in dogs with haemangiosarcoma –  $154.85 \pm 48.46$  pg/mL and in dogs with mammary gland carcinoma –  $104.31 \pm 12.45$  pg/mL. Urine VEGF concentrations in dogs affected with lymphosarcoma were  $712.42 \pm 233.85$  ng/g uCr, in animals with haemangiosarcoma –  $223.50 \pm 262.33$  ng/g uCr and in those with mammary carcinoma:  $1053.92 \pm 311.63$  ng/g uCr. In healthy controls average urine VEGF was  $310.11 \pm 28.11$  ng/g uCr.

17. Valchev I., N. Grozeva, D. Kanakov, **Ts. Hristov**, L. Lazarov, K. Dimitrov & R. Binev. *Effect of aflatoxin b1 alone or co-administered with mycotox ng on the renal function and morphology of turkey broilers*. Bulgarian Journal of Veterinary Medicine, 22, No 4, 466-477, 2019. **SJR - 0.164**

The changes in relative weight of kidneys, blood plasma uric acid, urea, creatinine, calcium and inorganic phosphate, and the morphology of kidneys were investigated in turkey broilers with experimentally induced aflatoxicosis B1 (AFB1) treated or not with a mycosorbent (Mycotox NB). Experiments were carried out with 60 7-day-old female turkey broilers (meat TM strain) divided into one control and five treatment groups (n=10): Group I – control (0 mg/kg AFB1 not supplemented with Mycotox NG); Group II (0.5 g/kg Mycotox NG), Group III (0.2 mg/kg AFB1), Group IV (0.4 mg/kg AFB1), Group V (0.2 mg/kg AFB1 and 0.5 g/kg Mycotox NG) and Group VI (0.4 mg/kg AFB1 and 0.5 g/kg Mycotox NG). The changes in blood parameters were assayed on day 21 and 42. Blood analysis in groups III and IV on day 21 showed increased urea and creatinine concentrations and reduction in blood uric acid, calcium and inorganic phosphate. These changes tended to become more pronounced on day 42. The relative weight of kidneys was increased in groups III and IV after the end of the experiment. Morphological alterations of renal parenchyma in Groups I and II were not present. In birds from group III, desquamation of epithelial cells from the basement membrane, dilated glomerular subcapsular space and round-cell proliferation were noted. In Group V, these changes were far more severe and comprised granular and fatty dystrophy, karyolysis and plasmolysis, necrobiotic to necrotic processes, haemorrhages, congestion. The supplementation of the feed of groups V and VI with the tested toxin binder reduced the severity of reduction of kidneys' relative weight, magnitude of changes in blood parameters, and the frequency and severity of histological lesions.

## Резюмета на научни трудове след защита на дисертация

1. Groseva, N., I. Valchev, L. Lazarov, **Ts. Hristov**, D. Kanakov, R. Binev. *Cloacal bursa morphology in turkey broilers challenged with aflatoxin b1 alone or coadministered with mycotox Ng*. Bulgarian Journal of Veterinary Medicine, 2020, 23, No 3, 121-129. ISSN 1311-1477. SJR 0.164 (2019)

Aflatoxins are toxic metabolites of moulds from the genus *Aspergillus* (*Aspergillus flavus* and *Aspergillus parasiticus* being the main producers). The aim of the present investigation was to evaluate the toxic effects of aflatoxin B1 on bursa of Fabricius morphology. Also, the possibility for prevention of toxic effects of AFB1 by feed supplementation of a mycosorbent (Mycotox NB) was studied. Experiments were carried out with sixty 7-day-old female turkey broilers (meat TM strain) divided into one control and five treatment groups (n=10).

Groups were as followed: Group I – control (fed standard feed according to the species and age of birds); Group II – experimental, whose feed was supplemented with 0.5 g/kg Mycotox NG, Group III– experimental, whose feed contained 0.2 mg/kg aflatoxin B1, Group IV – experimental, whose feed contained 0.4 mg/kg aflatoxin B1, Group V – experimental, supplemented with 0.2 mg/kg aflatoxin B1 and 0.5 g/kg Mycotox NG and Group VI – experimental, supplemented with 0.4 mg/kg aflatoxin B1 and 0.5 g/kg Mycotox NG. The duration of the experiments was 42 days. The changes in bursal morphology in control and treated groups were followed out after the end of the study. In birds from experimental groups III and IV, atrophy and degenerative changes have occurred in the bursa of Fabricius: reduction of lymphoid cell – populations in lymphoid follicles along with dystrophy. Feed supplementation with the tested toxin binder (Groups V and VI) resulted in partial neutralisation of deleterious effects of AFB1 on severity of histological lesions: interfollicular oedema, considerably lower lymphoid follicle rarefaction.

2. Valchev I., K. Stoyanchev, V. Marutsova, D. Kanakov, L. Lazarov, **Ts. Hristov** & R. Binev, *Evaluation Of Mycotoxin Binder Supplementation On Production Parameters And Organ Weights In Toulouse Geese With Experimental Aflatoxicosis*. Bulgarian Journal of Veterinary Medicine, 2020 ONLINE FIRST, ISSN 1311-1477; DOI: 10.15547/bjvm.2341 SJR 0.164 (2019)

The present study was undertaken to evaluate the beneficial effects of a mycotoxin binder (Mycotox NG 0.05%) in 40 day-old Toulouse geese from both sexes with experimental aflatoxicosis. The birds were reared from day one to 42 days of age on deep litter system and divided into four groups. Normal feed free of aflatoxin (AFB1), was given to the control (Group 1). The feed of Group 2 was supplemented with 0.5 g/kg Mycotox NG, aflatoxin (0.5 mg/kg feed) was supplemented to the feed of Group 3 and Mycotox NG (0.05%) + 0.5 mg/kg AFB1 to the feed of Group 4. Production parameters (body weight gain, feed intake, feed conversion) and relative organ weights were recorded. The results showed that the total feed intake, final live weight of Mycotox NG + AFB1 treated birds (Group 4) at 6 weeks of age were significantly increased ( $P < 0.01$ ) as compared to birds treated only with AFB1 (Group 3). The total feed conversion ratio of the group given AFB1 only (Group 3) at 6 weeks of age was significantly increased ( $P < 0.01$ ) compared to controls while in Mycotox Ng + AFB1 treated birds (Group-4) it was significantly increased ( $P < 0.01$ ) by post treatment week 1 vs controls, but not as compared to birds treated with AFB1 alone. There was a significant increase in relative weights of liver, kidneys, spleen, heart, pancreas,

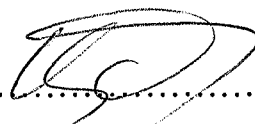
proventriculus and gizzard in birds fed only aflatoxin (Group 3). The co-administration of Mycotox NG (0.5 g/kg feed) with AFB1 (Group 4) reduced the relative weights of thymus and bursa of Fabricius. The study concluded that dietary supplementation of Mycotox NG could partially neutralise aflatoxicity in geese.

3. **Hristov Ts.**, *Complete Blood Counts In Dogs With Haemangiosarcoma Of The Spleen*. Bulgarian Journal of Veterinary Medicine, 2020 online first , ISSN 1311-1477; DOI: 10.15547/bjvm.2020-0064 SJR -0.164 (2019)

Haemangiosarcoma is the commonest splenic tumour in dogs. In this study, haematological studies were carried out in 21 dogs with splenic haemangiosarcoma. The findings comprised microcytic, hypochromic anaemia (MCV  $60.05 \pm 2.24$  fL, MCH  $21.33 \pm 0.87$  pg, Hb  $103.47 \pm 8.85$  g/L), erythropania ( $4.72 \pm 0.43$  T/L), thrombocytopaenia ( $222.67 \pm 26.36$  G/L), neutrophilic leukocytosis ( $16.41 \pm 1.78$  G/L), lymphopaenia ( $16.47 \pm 1.67\%$ ), and eosinopaenia ( $1.28 \pm 0.38\%$ ).

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Изготвил: .....



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