

SUMMARIES

Acute phase and reaction oxide level in blood cows for subclinical mastitis

A. Eroshenko, N. Pinchuk, A. Golovko, M. Rublenko

One of the leading sectors of agriculture are dairy cattle, profitability is largely dependent on the quality of milk, as the use of low-grade milk production of dairy products increases the risk of various diseases in humans.

Currently mastitis and its subclinical form the subject of many works, but most researchers in solving this problem pay attention to establishing etiological factors in the development of inflammation in the breast tissue and mainly pathogenic and opportunistic microorganisms, susceptibility to the isolates antimicrobials.

However, little attention is paid to the peculiarities of molecular mechanisms of the inflammatory response by subclinical forms of mastitis, establishment of clinical diagnostic and health care criteria. In particular, this applies to the acute phase response, which is characterized by increased synthesis by hepatocytes protein characteristics of neurotransmitter mechanisms of inflammation and the immune system.

Purpose is to determine the level of acute phase proteins and nitric oxide in the blood of cows, subclinical mastitis.

The material for the study were 15 clinically healthy and 15 patients with subclinical mastitis of lactating cows 2–3 lactation. The diagnosis of diseases set in the reaction using 2 % mastydyn solution.

The paper used cultures that were isolated from cows suffering from mastitis different etiologies. To isolate and culture microorganisms used Endo medium, Mueller-Hinton agar peptonnyy meat broth, meat peptonny Saburo agar medium and to highlight the fungal microflora. The identification of crops conducted by conventional methods. Sensitivity of isolated cultures of microorganisms studied using diffusion method disco this purpose use standard discs with antimicrobial substances production Himedia (India). Account of the disks performed after 24 hours.

Sets of "Reagent" in the blood serum of cows were tested by Ravin ceruloplasmin, haptoglobin – the reaction of rivanola, total protein – by biuret reaction, albumin – by the reaction with bromocresol green. The level of circulating immune complexes was determined by their precipitation in polyethylene glycol solutions. They also measured levels of serum stable metabolites of nitric oxide by Green in the modification Golikova and plasma – concentration of fibrinogen.

When bacteriological study of secretion samples from the affected udder quarters were identified *Staphylococcus spp.*, *Streptococcus spp.* and gram-negative bacteria in the form of thin spindle rods with rounded or pointed ends belonging to *Fusobacterium spp.*

Molecular and biochemical properties of the microbial agent inflammation largely determine the type and nature of its neurotransmitter responses, acute phase response time and system changes in immunological reactions, the intensity of the interaction of cellular and biochemical components of the inflammatory response, which is reflected in the clinical manifestation of the disease.

The content of total protein subclinical udder inflammation was significantly lower (73.8 ± 1.90 g / L) compared with the rate of clinically healthy cows (84.3 ± 1.24 g / L), that was at the lower limit of the physiological norm.

Serum sick animals increases the level of basic reagents acute phase haptoglobin – to 1.14 ± 0.041 g / l ($p < 0.01$) at a rate of 0.98 ± 0.020 g / l.

For subclinical mastitis ceruloplasmin concentration 1.3 times ($p < 0.05$) higher than the rate of healthy cows – 106.3 ± 7.72 mg / l.

Along with this, there was a significant increase in the content of fibrinogen in the blood plasma in 1.5 times to 4.5 ± 0.17 g / l.

It was established that the development of subclinical mastitis accompanied by a reduction of its content to 30.0 ± 1.46 g / l ($p < 0.01$) compared with the index of healthy animals – 36.1 ± 1.19 g / l.

It is proved that the development of mastitis in the blood of sick animals increases nitrogen oxides 1.5 times and circulating immune complexes – 1.3 times ($p < 0.01$).

So patochemical subclinical mastitis caused by phase associations *Staphylococcus spp.*, *Streptococcus spp.* and *Fusobacterium spp.*, characterized by the development of acute phase reactions and the formation of immunological reactions decreased levels of total protein in serum, indicating that the prevalence of the disease in destructive phenomena.

Key words: acute phase proteins, nitric oxide, circulating immune complexes, mastitis, the cow.

Clinical and hematological status of dog poisoning by zookumaryn

V. Bezukh, O. Piddubnyak

According to the results of laboratory studies of blood dogs that were poisoned anticoagulant zookumaryn, it was found that only the relative number of basophils was normal and did not exceed 1 % of the total number of leukocytes. However, the relative proportion of eosinophils was reduced – 2.55 ± 0.53 % (rate of 3–9 %), which may indicate the presence of disease in the body of dogs with acute or severe intoxication course that obviously, they were present at the time.

Also note that in dogs with signs of poisoning noted the leukocytosis – 13.2 ± 0.95 g/l, which is 25,7 % more than the upper limit of the physiological norm (10,5 g/l).

Number of band neutrophils was higher by 3 % compared with the upper limit of normal (6 %) and amounted to 9.1 ± 0.63 %. That is, in this case there was a simple shift of the nucleus, which is typical for the acute course of the disease, including and poisoning.

Number of segmented neutrophils was also increased and averaged 76.0 ± 1.90 %, which is 6 % more than the upper limit of normal (43–70 %). Obviously, a small neytrofiliya by increasing the number of segmented neutrophils in the background a slight white blood cell count (which was in this case) is observed in acute poisoning animals.

However the number of lymphocytes, the main function of which is involved in immune reactions and phagocytic activity, in contrast, was below normal (21–40 %) and amounted to only 13.5 ± 0.83 %. That is, in dogs by poisoning zookumaryn lymphocytopenia observed that neytrofiliya occurs on a background of acute septic processes.

Important in the diagnosis of poisoning is the definition of biochemical tests, changes which directly indicate the state of internal organs that are affected most, including the pancreas.

Established that α -amylase activity was quite high, as averaged $2903,8 \pm 177,34$ U/l (2158–3664 U/L), exceeding the upper limit (1750 U/L) by 66 %. Hyperenzymemia α -amylase for developing pancreatitis, liver, hepatitis and other diseases [8]. That is, on the one hand it can be assumed, on the other - to confirm that for poisoning dogs zookumarynom they most affected pancreas and liver. Proof of this can be to determine serum activity indicator enzymes – alanine aminotransferase (ALT) and aspartate aminotransferase (AST).

According to the research activity in patients with AST dogs was $650,9 \pm 72,66$ U/L (368,5–950,8 U/L), which 26 times higher than the maximum rate (less than 25 U/L). A similar pattern was observed with ALT activity. Indicators far exceeded its normal (10–55 U/L) has averaged $407,9 \pm 56,37$ U/L (241 687 U/L) that 7,4 times the upper limit (55 U/L) standards.

Another enzyme activity in serum which may indicate liver disease is HHTP (gamma glutamyltranspeptidaza). This enzyme has the highest activity in hepatocytes, endothelium of the biliary tract, pancreas and kidney tubules. For poisoning dogs zookumaryn activity of this enzyme, as earlier, was also high – $11,65 \pm 0,44$ U/L (10–13,7), almost twice more than the top rate standards (6 U/L).

Another enzyme activity which increases by only cholestasis is alkaline phosphatase. It would seem that, as was established by a considerable hyperenzymemia HHTP, which is a sign of the hepatobiliary system in patients animals, and alkaline phosphatase activity also must be high. However, the results of our investigations in cases of poisoning of the dogs occurred. Total alkaline phosphatase activity in serum sick dogs did not exceed the norm (20–150 U/L) – $106,0 \pm 6,94$ U/L (78,8–132,8 U/L).

Probably for this pathological process activity of alkaline phosphatase is only at the stage of growth, as evidenced by the following laboratory blood tests conducted one week after receiving the initial data when post-treatment serum dog has been a marked increase in activity of this enzyme.

For poisoning broken bilirubinosyntezuvalna function of hepatocytes. The concentration of total bilirubin in patients dogs ranged from 5,3 to 16,4 mmol/l and averaged $9,86 \pm 2,0$ mmol/l, which is significantly higher than the optimal value (0,4–5,4 mmol/l) and evidence of significant hyperbilirubinemia, which are known to occur on parenchymatous hepatitis, hepatodystrophy cirrhosis.

Proof of that is affected by the poisoning of animals and pancreas, the level of glucose in the experimental dogs. In particular, sick animals content in the blood was $5,0 \pm 0,35$ mmol/l, which is 10,2 % more than the upper limit of normal (4,5 mmol/l). Hyperglycemia installed in 88,9 % of dogs.

Typically toxic poisons adversely impact not only on the bodies listed above, but also on the kidneys. In particular, their filtration and excretory functions that define the contents of creatinine and urea.

The content in serum creatinine was normal – $97,9 \pm 6,74$ mmol/l. Perhaps for poisoning zookumaryn filtration renal function does not undergo significant changes.

Quite the opposite was found in the determination of urea in the blood. The concentration depends on the intensity of synthesis and excretion. Therefore, it is important to determine the diagnostic test as the liver, where it is synthesized, and the kidneys, through which it is derived.

According to the results of laboratory studies found that almost all blood samples (8 of 9) Number of urea was greater than the upper limit of normal (8 mmol/l) – $8,7 \pm 0,25$ mmol/l (8,1–9, 6). That is for acute toxicity in dogs is still disturbed excretory function of the kidneys.

Patients dog set hypoproteinemia, which was found in 100 % of animals – $38,3 \pm 2,54$ g/l, which is 64,7 % less than the lower limit of the physiological norm (not less than 60 g/l). As you know, hypoproteinemia in animals may occur in nephrotic syndrome, pancreatitis, by blood loss, enteritis, starvation and other causes. Signs of some of them were installed above.

Key words: zookumaryn, hypoproteinemia, bilirubinemia, hyperenzymemia, alkaline phosphatase, α -amylase.

Macroelement status of foals

O. Bodyako, V. Golovakha, S. Slusarenko

According to researches, content of blood calcium in foals after birth was $2,2 \pm 0,06$ mmol/l. The content of macronutrient in blood was constant with insignificant oscillations in the next periods of research (10-, 20-, 30-, 60th days of life). In 69,2 % of foals in 1-, 10-, 20-th days of life the calcium level was within the limits of 1,96–2,28 mmol/l; in 30-days foals with such limits of the macronutrient it was 84,6 %, in 60- –100 %; in three months – 46,2 %, in 120- – 100 %, in 150- –55,6 %, in 180-days – in 30 %, in other animals of this group content of calcium was within the limits of 2,52–2,64 mmol/l.

In 7-months of foals the blood calcium level was in a lower limit norms of adult animals, which are given in literary sources and averaged $2,54 \pm 0,035$ mmol/l.

Free fraction of calcium (ionized calcium) in foals after birth averaged $1,0 \pm 0,01$ mmol/l (45,5 %) from a general calcium). Animals had approximately the same content of the ionized calcium in the next periods of research (10th, 20-, 30th days of life). The content of the ionized calcium was higher in two-month foals, than in foals after birth ($p < 0,05$).

The most average indexes of the ionized calcium discovered in foals on the 120th and 150th days of life ($1,06 \pm 0,016$ and $1,07 \pm 0,009$ mmol/l). In next periods of research (180th and 210th days of life) the concentration of the ionized calcium did not differ from the levels in the first days of life.

According to calculations average quadratic ($\delta \pm 0,159$), in foals to monthly age content of calcium in the blood must be 1,84–2,58 mmol/l. The 100 % of results have entered in these limits. The concentration of the ionized calcium in this period of life must be 0,92–1,12 mmol/l ($\delta \pm 0,0043$). In the animals of two- and three months age – 2,02–2,48 and ionized 1,0–1,07 mmol/l. In foals 4–7 months age – 2,15–2,63 and 1,01–1,07 mmol/l accordingly.

Content of calcitoninum in the blood of foals after birth averaged $4,36 \pm 0,384$ mmol/l. In the next two months of life content of hormone had a tendency to increase and in foals of two-month age averaged $5,46 \pm 0,264$ pg/ml, that on 25,2 % more than in the first day of life ($p < 0,05$).

The highest indexes of hormone have discovered in 120-, 180- days animals – $5,96 \pm 0,410$ and $5,93 \pm 0,357$ pg/ml (on 36,7 and 36,0 % more than in animals after birth). In further the hormone's blood level in foals has a tendency to decrease and in 7-monthly animals was in average by $5,33 \pm 0,360$ pg/ml.

Thus, according to calculations ($\delta \pm 1,318$), a concentration of calcitoninum in foals of the first month of life must be within the limits of 3,65–6,29 pg/ml. The 75,9 % of results had entered in these limits. The content of calcitoninum in two- and three months and 4-7-months foals is more high – 4,2–6,60 and 4,76–6,78 pg/ml accordingly.

The content of blood phosphorus in one-day foals had averaged 1,05±0,040 mmol/l. The level of macronutrient in 95 % of animals of this age-dependent group was within the limits of 0,95–1,23 mmol/l. The content of phosphorus in foals was during all period of researches (from 10 to 210-days age) at such level in the average.

According to calculations of average quadratic ($\delta \pm 0,016$), the content of phosphorus in foals of the first month of life must be 0,94–1,18 mmol/l, in two- and three months age – 0,92–1,18; and in 4–7-months 0,82–1,12 mmol/l. The 84,6 % results of foals of the first three months of life had entered in these limits and 80,8 % indexes in a 4–7 months age.

The level of magnesium for one-day animals had averaged 1,0±0,02 mmol/l. The average values of macronutrient did not differ from the limits of the first day of life in the next periods of research (10th, 20-, 30-, 60-, and 90th days) ($r < 0,5$). The content of blood magnesium in 4-months foals had decreased and had been 0,86±0,055 mmol/l, that less by comparison to the previous period of research ($p < 0,05$). In further the amount of magnesium increased and did not differ certain from the limits of previous periods of research ($p < 0,05$) in foals 6th-7-months age.

According to the conducted calculations, content of the blood magnesium in foals of the first month of life must be 0,95–1,11 mmol/l ($\delta \pm 0,075$); in two- and three months age animals – 0,94–1,12 and in 4–7-months – 0,85–1,07 mmol/l ($\delta \pm 0,112$). The 73,1 % of results in animals of the first month of life have entered in these limits; the 80,8 % results in animals of the second month of life.

Key words: foals, calcium, ionized calcium, magnesium, calcitoninum, phosphorus.

Activity of α -amylase and data of lipids exchange in the estimation of functional state of pancreas in highly productive cows

N. Vovkotrub, V. Vovkotrub

In the article is estimated the functional state of pancreas in clinically healthy highly productive cows of different technological groups on the indexes of carbohydrate and lipid metabolism.

Researches were made on the Holstein clinically healthy cows of different technological periods: dry period (n=11), early after calving period (n=10) and the first three months of lactation (n=20) with an average yield 7–10 thousands kg of milk.

The functional state of pancreas is more frequent estimated by activity of enzymes in the different biological liquids (blood, urine) in human and veterinary medicine, which are synthesized its cells and eliminated in intestine in composition of secret. One of such enzymes is an alpha-amylase which is secreted mainly by pancreas and salivary glands. Considerable and fast hyperamilazemiya and hyperamilazuriya develop at acute parotitis and pancreatitis.

As a result of the conducted researches was founded the considerable oscillations of activity of blood alpha-amylase in deep pregnant cows – from 0,93 to 18,5 g/h×l, while an average index has been 9,2±1,88 g/h×l. In 4 from 10 animals (36,4 %) the activity of enzyme was higher than 10 g/h×l. In the first days after calving activity of enzyme decreased in 1,2 times, by comparison to deep pregnant cows, that, possibly, related with decrease of energy metabolism in animals in this period. However, these changes were not reliable, as a result of considerable oscillations of enzyme activity (from 0,98 to 25,3 g/h×l). Only in two animals (20 %) of this group was founded hyperamilazemiya over 10 g/h×l. During early lactation period the activity of blood alpha-amylase increased to 9,5±1,17 g/h×l, thus in 45 % cows its activity was higher than 10 g/h×l, that testifies to tension of the functional state of pancreas in this period.

A pancreas, being the organ of both external and internal secretion, plays a direct role in lipid's metabolism, that is why results of determination of their separate indexes in the blood serum possible to examine as indirect indexes of its state.

The content of total lipids, which consist of free and ester cholesterol, triacylglycerols, phospholipids, nonester fat acids, had been 3,0±0,32 g/l in the blood serum of clinically healthy cows from dry period (1,4–4,9 g/l). The dynamics of content of total lipids was characterized the decrease of their amount in 1,4 times in the blood serum in the first two weeks after calving, by comparison to deep pregnant ($p < 0,1$), and the increasing in early lactation period to 4,5±0,38 g/l ($p < 0,001$). In 20 % from a group of early lactation cows marked a hyperlipemia – the level of total lipids in the blood serum was higher than 6 g/l and was within the limits of a 6,19–7,79 g/l, that, possibly, was related to strengthening of lipomobilisation processes with the purpose of indemnification of negative energy balance development.

The dynamic of blood content HDL in cows of different groups was similar to the changes of amount of total lipids. The level of HDL had a tendency to decrease in the first 14 days after calving on the average to 0,57±0,066 mmol/l by comparison to deep pregnant ($p < 0,01$) and the early lactation cows ($p < 0,001$). The difference between content of α -lipoproteins in the blood serum in lactation cows, by comparison to dry period, was also high-reliable ($p < 0,001$; 1,25±0,047 mmol/l).

The results of researches testify to the presence of appropriate dynamics in relation to the changes of activity of alpha-amylase and indexes of lipids' metabolism, which are straight or mediated related with functioning of pancreas, depending on the technological period of highly productive cows. It was founded that the period of the first months of lactation appeared more tenser in relation to functioning of pancreas, to what testify the increases of activity of alpha-amylase in 45 % cows over 10 g/h×l, the content of total lipids and high-density lipoprotein in the blood serum to 4,5±0,38 g/l and 1,25±0,047 mmol/l accordingly exactly in this period.

Key words: highly productive cows, pancreas, alpha-amylase, total lipids, high-density lipoprotein, intestinal and rumen digestions.

Functional status of liver in broiler chickens for use of Dekavit

A. Melnyk

Purpose – to study the effect of the veterinary drug "Dekavit" (solution for oral production company Vetsynez, m. Kharkiv, Ukraine) on functional state of the liver in broiler chickens.

The material for the study were 90 broiler chickens cross Cobb-500, divided into three groups (two experimental and control) to 30 each. Stock 1 and 2 research groups at twice 8–14 and 25–31 day desoldering Dekavit in doses of 1 and 2 ml / liter of water respectively.

For biochemical studies of serum clinically examined livestock broiler chickens 16 days old reference, the first and second research group found that the total protein content amounted $29,9 \pm 0,8$; $31,2 \pm 1,20$ and $31,8 \pm 1,11$ g/l respectively. The proportion of albumin in the second experimental group was the highest – $16,6 \pm 0,46$ g/l (Lim 14,8–18,6), representing 52,2 %, but had no significant difference with the rate control group $15,0 \pm 0,71$ g/l. The concentration of uric acid in the blood serum of chickens experimental group 2 ranged 0,18–0,31 ($0,25 \pm 0,02$ mmol/l) and had a tendency to decrease. Functional status was studied the activity of liver enzymes indicator that in the experimental group had minor fluctuations and virohodno unchanged from the control group pokaznkamy 16-day-old chicks.

Thus, the use of the drug in doses Dekavit 1 and 2 ml/liter of water broiler chickens at 8–16 day experiment essentially no effect on protein homeostasis and functional status of the liver.

To control the prophylactic efficacy Dekavit conducted clinical study birds and analysis of serum biochemical parameters of broiler chickens after his second application (25–31 days).

Biochemical studies of blood serum poultry 33 days old will establish that the concentration of total protein in the control and experimental groups of birds did not change significantly and amounted to $33,1 \pm 1,69$; $31,1 \pm 1,10$ and $28,6 \pm 1,16$ g/l respectively. The content of albumin also did not differ significantly from that of not only control, but the research group: $15,0 \pm 0,95$ and $14,1 \pm 0,36$ vs $15,7 \pm 0,87$ g/l in control. Only a fraction of albumin, compared with the previous indicator, tended to decrease and amounted to 47,4 respectively; 48,2 and 49,3 %.

The content of uric acid in poultry was the second experimental group tended to decrease (-18.9 %) compared with the control and amounted to $0,30 \pm 0,03$ mmol/l (Lim 0,17–0,36).

On the positive influence of the drug, including cyanocobalamin and vitamin E on metabolism and functional state of the liver broiler chickens 33 days old points decrease (- 15,3 %; $p < 0,05$) AST activity in birds other research groups to $3,04 \pm 0,15$ mmol/(h•L) to $3,55 \pm 0,13$ mmol/(h•L) in the control group. Probable difference between the activity of ALT in chickens control and experimental groups not selected.

As a result of studies found that: a) the use of the drug in recommended doses Dekavit 1 and 2 ml / liter of water likely of changes in total protein and albumin are not marked, but the concentration of uric acid tended to decrease (- 18,9 %) a group of birds that received 2 ml, which is an indicator of improving output end products of metabolism nucleoprotein; b) the partial recovery of the functional state of the liver for use in Dekavit in dose of 2 ml indicates a decrease in the activity of AST 15,5 % ($3,04 \pm 0,15$ mmol/(h•L), $p < 0,05$).

Key words: liver, total protein, albumin, uric acid, AST, ALT, broiler chickens, Dekavit.

Hematological parameters of blood and quail egg Japanese breed under the influence of amino acids and vitamin E N. Nischemenco, L. Stovbetska, O. Poroshinska, A. Emelianenko

Currently, development of non-traditional for our country's industry, namely qualities, is one of the ways of providing the population with quality food and economic efficiency of poultry. This is facilitated by biological features of quails, among which some of the main - speed growth, high egg productivity, good taste, dietary and curative qualities of eggs and poultry meat. Know that the performance of birds depends largely on the amount of protein and essential amino acids in diets. There for, the reduction of content of amino acids such as lysine, methionine and threonine in feed birds will decrease performance and slow down the growth of saplings. Lack of vitamins, including vitamin E in the diet of birds also leads to a decrease in egg production.

In the breast of quail amino acids occupy an important place as each of the amino acids in the body of the bird performs and affects a number of important functions and body systems. It is known that in feed quail often not enough of these essential amino acids, as lysine, methionine and threonine.

In particular lysine affects nervous system, the synthesis of hemoglobin of blood, tissue metabolism potassium, participates in the transport of substances through the cell membrane. Methionine is an essential amino acid, which actively participates in the synthesis of proteins, in the synthesis of vitamins, hormones and enzymes. It prevents excessive oxidation of proteins, fatty degeneration of the liver and is associated with hematopoietic activity of the organism. Together with threonine methionine is involved in the metabolism of lipids, that have a positive effect on the functioning of the liver. Also threonine positively affects the immune system birds.

Vitamin E has an important role in the regulation of metabolic processes in the body birds and redox reactions, because it is an important antioxidant. Since the use of bird vitamins affects their health and performance, the equipment of its various vitamins, including vitamin E, allows to support the high performance, reproductive qualities during the whole productive time.

The goal was to study the influence of various doses of amino acids - lysine, methionine, threonine together with vitamin E on hematologic parameters and productivity.

Blood system changes are impartial evidences, characterizing state of animal organism.

While analyzing blood morphological data, it is necessary to note, that erythrocytes, leukocytes and platelets number data in the control and experimental groups before feeding quails with lysine, methionine, threonine and vitamin E were almost identical. Yet during the experiment the erythrocytes number in the quails blood have changed. Thus, it was noted, that after 15 days of application of amino acids complex and vitamin E, their number had an increase tendency, yet not significant. It is established, that by the 75-th and 90-th day of experiment the quails erythrocytes number of group 2 reliably increased by 9,87 % ($p < 0,05$) and by 11,3 % ($p < 0,05$) correspondingly, comparing to the control group.

For the period of experiment we established that with age, the experimental quails of all groups their laying ability increases, yet with adding to main diet the amino acids complex and vitamin E in different doses, their laying ability changed differently.

Key words: eritrotsity, leukocytes, platelets, quail, egg production, lysine, methionine, threonine, vitamin E.

Polymorbid internal pathology in highly-productive cows prevention V. Sakhnyuk, V. Levchenko, O. Chub

An integral approach to clinical and functional status study of high yield Holstein and Ukrainian black-and-white breeds under different technologies and feeding has been applied in Ukraine for the first time. It has become the development basis for informative methods of multiple internal pathology clinical and laboratory diagnostics.

Polymorbid internal abnormalities were diagnosed in 32.0 % of the animals, including 34.7 % of the cows in the group calved 1-14 days before the testing and in 31.2 % in the group calved 15-90 days before. Only a few diseases, specifically hepato- and osteodystrophy were diagnosed in the dry cows. The main causes of polymorbidity internal pathology are: a) violations in feeding and diet structure; b) lack of easily fermentable carbohydrates in the, especially against the background of protein excess and their low ratio of digestible protein which is 1.3-1.8: 1 (the norm is 2.0-2.5: 1); c) irregular concentrated feed feeding (120,0-136,0 g per 1 feeding unit) in two or three intakes (3.5-4.0 kg each); d) diets imbalance in macro- and microelements, vitamins A and D; e) obesity and lack of motion during the dry period.

Polymorbid internal pathology in high yield cows is clinically manifested with general oppression, drowsiness, ketonuria, tahikardia, tachypnea, decreased appetite, refusal of concentrated feed, proventriculus hypotension, hepatomegaly. rapid decline of milk yields (1.5-2 times) and body weight (60-80 kg) was observed in sick animals.

Rumen pH content, ciliates number, rumen microflora reductase and cellulase activity decreases, VFA total amount and acetic acid content come down and butyrate increases at a propionate constant amount under polymorbid internal pathology in high yield cows. The propionic and butyric acids relation is 1: 1 (in clinically healthy animals it is 1.3: 1); hyperproteinemia (77.4 %), hypoproteinemia (10.2 %), hypoalbuminemia (97.8 %) develops, positive Sublimate (94.9 %) and Formalin (97.2 %) sedimentary tests sediment in 94.9 % of cases coincide with hypoalbuminaemia, indicating high sensitivity and diagnostic value of these reactions. Coagulation test with copper sulfate was positive in 80.3 % of sick cows.

Syndromes of hepatocytes cytolysis develops in polymorbidity internal disorders cows causing asparaginic (AST) transferase (97.7 %), alanine aminotransferase (ALT) (32.3 %) and intrahepatic cholestasis (49.8 % were diagnosed with hyperfermentemia HFT) activity increase, in 39.6 % of the cows urea synthesizing liver function reduced; blood glucose level, total lipid, cholesterol, triacylglycerols reduce; the thyroid gland functional activity decrease, resulting in a reduced secretion of triiodothyronine and thyroxine, and TSH concentration increase.

Testing ketone bodies in urine, rumen pH content, butyric acid, total protein and albumin serum, Formalin and Sublimate tests samples, AST hyperfermentemia are comprehensive diagnostic laboratory tests for polymorbid internal pathology in high yield cows.

Implementing phase feeding, balanced diet structure and feeding regime, using pathogenetic and substitution therapy remedies, feeding vitamins and minerals premix contributed to efficient treatment (93.1 %) of sick high yielding cows with multiple internal pathology.

Systemic implementation of technological and medical preventive complex, phase feeding, energy, protein, vitamin and mineral nutrition optimization regime normalizes cicatricial digestion, propionic and butyric acids relation and liver function as well as prevents polymorbid internal pathology in high yield cows.

Key words: high yield cows, multiple pathology, ketosis, hepatodystrophy, proventriculus dystonia, aethiology, pathogenesis, diagnostics, prophylaxis.

Diagnosis and combined therapy for calves catarrhal pneumonia

N. Suslova, L. Ulko

There are many different efficient means and methods of treatment of animals suffering from bluetongue bronchopneumonia. To achieve positive results, combined treatment should be aimed at eliminating violations feeding, care, maintenance, improve immune status, application of therapy: pathogenetic, causal and symptomatic with the peculiarities of the disease and the general condition of the animal.

The aim was to determine the effectiveness of adjuvant therapy with antibiotics (ceftriaxone, vetrimoksyn) of the clinical examination hematological, biochemical, immunological studies of blood sick calves and justify their use for therapeutic catarrhal pneumonia.

The study was conducted under conditions of experimental farm "Polyvaniivka" Magdalinovsk Dnipropetrovsk region. Studied Ukrainian gray breed calves aged 2-3 months, patients with bluetongue bronchopneumonia. The animals were selected on the basis analohiv. Dlya research used three groups of calves Grey Ukrainian breed.

Animal control group was treated by the method of farming using benzylpenicillin sodium salt 10 tys.OD. and streptomycin sulfate at a dose of 0,01 g per 1 kg of animal dissolved 0,5% novocaine and asking sulfadimezin dose of 2 g 2 times a day internally. With symptomatic drugs used: caffeine sodium benzoate internally 2 g 2 times a day and coughing out: ammonium chloride at a dose of 5,0-2 times a day.

The animals of the second group used antibiotic ceftriaxone 500 mg intramuscularly 1 time per day. Ceftriaxone is a semi-synthetic antibiotic with a group of third-generation cephalosporins. The drug has a bactericidal action, active against gram-positive and gram-negative bacteria. Also prescribed symptomatic therapy (coughing out – ammonium chloride, internally, heart – caffeine sodium benzoate – 2 times a day), nonspecific therapy (nonspecific gamma globulin at a dose of 0,5 ml / kg body weight subcutaneously every 48 hours).

The animals of the third group was injected by vetrimoksyn - suspension for injection, which is highly bactericidal action.

Antibiotic peptidase inhibits microorganisms is a violation of osmotic balance, resulting in the death of their development stage. The drug is active against gram-positive and gram-negative bacteria. Vetrimoksyn was administered at a dose of 1 ml per 10 kg body weight 1 time per day - which corresponds to 3,5 ml. Symptomatic treatment: tryvitamin - intramuscularly, 5 ml of 1 every three days, injected glucose - bicarbonate mixture at the rate of 1 ml/kg body weight of the composition: 5,0 g of glucose, 6,5 g of sodium hidrokarbonat 4-5 g of salt dissolved in 1 liter of bidistilled water solution not boiled.

When diagnosed with clinical symptoms into account, a history, an analysis of the epizootic situation in the economy and the results of laboratory tests of blood (proteins, glycoproteins, non-specific resistance, formed elements, Ca, P, carotene). In sick animals observed depressed general condition, loss of appetite, sero-catarrhal discharge from the nasal cavity, cough, increased respiratory rate, heart rate, overall body temperature. Auscultation of the lungs crackling noted, small bulbs moist rales and pathological bronchial breath, percussion found in limited areas of upper blunting and cardiac lobes of the lungs.

The therapeutic effect of antibacterial drugs (ceftriaxone and vetrimoksyn) contributed to weakening the inflammatory process in the lung tissue, resulting in a number of albumin in the experimental group 1 increased to $43,20 \pm 1,20$ %, 2 experimental group – to $42,7 \pm 1,50$ %. In addition calves research groups have noted an increase in the number of α -globulins from $14,87 \pm 0,39$ to $17,4 \pm 0,45$ % 1 research, group and from 16 to $0 \pm 0,28$ $18,4 \pm 0,2$ % 2 % in the experimental group. Calves control group recorded a slight increase in globulin (from $17,30 \pm 0,72$ to $17,7 \pm 0,8$ %).

After treatment in most animals of control and experimental groups revealed recovery of appetite, absence of cough, nasal leakage, normalized pulse rate, body temperature, decreased and disappeared parts of blunting wheezing. In conducting research hematological marked increase in the number of red blood cells under all experimental groups of calves at 8,11; 20,65; 19,91 %, while the number of white blood cells decreased respectively by 47,83; 50,0; 60,44 %. The content of hemoglobin at the end of treatment was $98,6 \pm 2,28$ g/l in the control group calves, while the experimental groups respectively – $107,5 \pm 2,15$; $108,4 \pm 3,12$ g/l, at 20,65 and 19,91 % higher than the control group.

The complex treatment of calves for bluetongue bronchopneumonia, contributed to higher indices of nonspecific resistance, normalization of blood protein spectrum, sharing glycoproteins and enhance hematopoiesis. The data obtained by the use of antibiotics ceftriaxone and vetrimoksynu contributed to rapid normalization of bactericidal activity of blood and convalescence animals. So, in the animals of the experimental group activity increased by 47,69 % and in animal of 2nd at 54,50 % to $17,86 \pm 0,32$ %. Bactericidal activity in serum of calves increased by – 11,59; 12,86; 13,51 %.

Analyzing the results of research should be noted that the complex treatment of calves used for catarrhal pneumonia helps eliminate clinical symptoms, recovery indices of nonspecific resistance, protein spectrum of blood and hematopoiesis. In the treatment of calves second experimental group for bluetongue bronchopneumonia, where complex treatment included antibiotic vetrimoksyn full clinical recovery was observed on 7–8-th day of treatment in 93,3 %. Calves of first experimental group, which was used in the treatment of ceftriaxone clinical recovery was observed on 8–9 th day in and only 80,8 % in the control group of animals recovery occurred on 10–13 days at 60 %.

The complex treatment of calves for bluetongue pneumonia with antibiotics ceftriaxone and vetrimoksyn, symptomatic and regulating acid-base status, provides adequate therapeutic effect accordingly – in 93,3 and 80,8 % of animals shorten terms of their treatment to 7–10 days hematohichni normalizes parameters, protein spectrum of blood increases nonspecific resistance.

Key words: bronchopneumonia, calves, nonspecific resistance blood protein spectrum, sharing glycoproteins ceftriaxone, vetrimoksyn, hematological.

Morphological changes in internal organs of ewes in zone of antropogenic pollution

P. Sharandak, M. Utechenko

Sheep breeding in Ukraine is a traditional industry. The main herd size is concentrated in the steppe zone. Sheep produce wool for industry, supply necessary for the production of various fabrics, valuable Karakul curls that play a role in exports, given milk is an important staple food of the population. Critical as raw undoubtedly plays wool. Sheep fur provides valuable raw materials. Sheep's clothing in great demand among the population. Modern technology makes it possible to produce a sheep skins elegant, beautiful and warm coats, jackets and coats, collars and more.

To assess the function of internal organs in farm animals and general clinical use special techniques including: laboratory and instrumental methods such as biopsy, diagnostic laparoscopy, ultrasound, measuring the electrical resistance of the parenchyma, histological examination. Using advanced techniques allows more informative diagnose internal pathology. Introduction to Veterinary Medicine instrumental methods helps in diagnosis and providing for timely and effective treatment.

The study of the internal organs of sheep using special methods of research carried out by many scientists. However, data about the liver and kidneys of contaminated industrial emissions territory is not enough. So consider this topic relevant.

The object of the study were ewes of Romanov breed that stay in agricultural farm of Lugansk NAU.

Soils and feed were tested of lead and cadmium by atomic absorption chromatography.

Ultrasonography was performed after determining the area of the liver blunting the matter 9–11 intercostal spaces and the use of ultrasound scanner Tringa Linear 6.5 MHz. Kidney Research conducted by the same scanner with right and left behind the last rib of a sensor along the spine.

Pieces of bodies collected from slaughtered animals were fixed in 10 % neutral formaldehyde solution, put in alcohols of increasing concentration than in paraffin. Histological pieces 5–10 microns thick performed on microtome, stained with hematoxylin with eosin and Sudan-3.

An important step in the study of animals in contaminated areas is determining the number of trace contaminants in soils and feed. It was established that the concentration of Lead and Cadmium above the average in Luhansk region ($0,41$ – $0,46$ and $5,3$ – $8,1$ mg/kg, respectively). In feed investigated sheep lead content was $3,26$ mg/kg cadmium $0,32$ mg/kg, which is less than the maximum allowable concentrations of these elements in 3,1 and 2,2 times (10 and $0,7$ mg/kg, respectively).

Before the procedure was carried out by us percussion liver blunting line 10 and 9 intercostal spaces. In the same place we held ultrasound body. The result revealed a characteristic pattern: ehohepatohrama fine-grained, homogeneous, consisting of a large number of small and low intensity echo signals that are reflected from its internal structures and placed evenly apart, forming the contours of the body. Inside clearly visualized hepatic vein, internal cavity which is echo negative (dark) and its wall echo positive. In the parenchime of the organ there is a significant amount echo positive areas, especially around the bile ducts.

For sonographic study of renal cortical clearly distinguished and medulla and pelvis. Cortex zone hypoecho negative, medulla echo negative. The boundary between them is clearly expressed. There is hyperechoic renal pelvis, homogeneous.

Having analyzed the ultrasound examination, concluded that revealed changes characteristic of degenerative processes in parenchymal organs. The reason for this is the presence of contaminants in the feed namely, their accumulation in internal organs.

For histological examination of the liver, adult sheep, observed some differences from animals studied by biopsy. Central vein containing different amounts of hemolyzed blood. Column structure broken particles, caused by the development of pro-

tein malnutrition significant number of hepatocytes. Across the structure revealed little groups of 20–30, randomly placed lipotocytes (formed of dystrophic hepatocytes). Latest located throughout the parenchyma pinky. The structure of the bile ducts saved.

Also in some animals by microscopic examination of the liver in the background distinct signs of granular dystrophy protein cirrhotic observed phenomena in individual areas of the bile ducts. The structure of the latter replaced by young reticular cells. Enlightenment of ducts dilated and contain a homogeneous light brown-yellow mass, indicating signs of cholestasis.

For histological examination of the kidneys revealed that the epithelium most convoluted and straight tubules slightly swell, cytoplasm, cloudy or enlightened, enlarged nuclei, chromatin sparse. In convoluted tubule lumen contains a small amount of weakly eosinophilic mass, indicating the development of protein granular degeneration of the epithelium of the kidneys and the presence of protein in urine composition. Glomerular structure is not changed.

For the study of myocardial structure in longitudinal section transverse cardiomyocytes are not known. Muscle fibers slightly thickened, cytoplasm their slightly eosinophilic nuclei of cardiomyocytes increased, become rounded, chromatin enlightened. These changes indicate the development of protein in the myocardium granular degeneration of cardiomyocytes. Around the various large caliber vessels visible fat tissue deposition.

Histological examination of liver ewes found that the background of unchanged structure individual hepatocytes in a state of granular protein and low fat level microdropped dystrophies. Similar changes have been received by us for the study of liver biopsies sheep from the same area. Additional Sudan-3 staining allowed to identify fat accumulation outside the cells. We believe these changes indicate lipid metabolism in the bodies of sheep that are in areas of anthropogenic pollution.

Key words: ewes, liver, kidney, miocardium, Cadmium, Lead, dystrophy.

Biological properties and immunoregulatory activity of probiotic cultures *Bac. subtilis* strain BI-12

I. Biben

At the present stage of development of medical-biological, molecular genetics and biotechnological research avalanche of experimental data justifying the use of saprophytic resident microflora as probiotic biologics to suppress vital functions infectious pathogens, repression of neoplastic processes and the normalization of metabolism and immune biological reactivity of the microorganism.

One of the most promising microorganisms with probiotic potency is *Bac. subtilis*. A variety of metabolic processes, biochemical, and genetic variability, resistance to digestive enzymes and lytic served as the basis for their wide use as probiotics. Managing for quality control of food and Drug Administration has assigned *Bac. subtilis* status GRAS (generally regarded as safe) – it is safe organisms, which is a prerequisite for use in the manufacture of biologics mikrobiontov.

Based on experimental data, that the probiotic culture *Bac. subtilis* strain BI-12 has a typical kind of morpho-tinctorial and cultural properties, exhibits high antagonistic activity to a wide spectrum of pathogenic and conditionally pathogenic microorganisms with little resistance to antibiotics and severe biochemical activity. This microbial mass has a positive effect on the immune biological reactivity of the microorganism; it stimulates nonspecific resistance, increases the absorption capacity of phagocytes, and increases the level of LASK and BASK.

When evaluating the functional state of nonspecific immune biological reactivity of the organism should be noted a significant increase in phagocytic activity of phagocytic cells. This statistically significant change in the level of oxygen metabolism of neutrophils were found. This indicates that the biomass of probiotic bacillary culture *Bac. subtilis* strain BI-12, has expressed a positive bio influence control function on phagocytic function and its mechanisms immune biological reactivity of organism of experimental animals in a comparative perspective with those of intact features of the control group.

Biological properties of the probiotic culture *Bac. subtilis* strain BI-12 and bacillary immune biological activity of living cells in the physiological characteristics and functional activity of non-specific resistance mechanisms microorganism suggest promising research immune stimulation effect of probiotic cultures *Bac. subtilis* strain BI-12 in the construction of complex multi-symbiotic biological products for the correction of the physiological state of the microorganism and immune biological status.

Key words: probiotic culture *Bac. subtilis*, phagocytic index, phagocytic activity and bactericidal activity of lizotsymna activity serum blood.

The kit for serological diagnosis of glanders in complement fixation test

R. Koziy, V. Skripnik

The glanders is a dangerous zoonthroponotic disease which is caused by Gram-negative bacterium *Burkholderia mallei*. This disease strikes mainly horses, donkeys and mules. Today, the detection of infected animals by serological methods and their isolation are crucial to preventing the spread of glanders, including its entry into the territory of Ukraine. At the same time the diagnosis of glanders can be established only on the basis of comprehensive studies. The main role in this matter occupies laboratory diagnosis. There are several methods of laboratory diagnosis of glanders, but the only method recognized by the OIE for international trade is the complement fixation test (CFT). Unfortunately, Ukraine lacks its own production of diagnostic tests to identify glanders.

That is why the main purpose of our study was to develop the laboratory CFT kit for the diagnosis of glanders, which consists of the antigen and positive control serum, to determine the diagnostic sensitivity and specificity of obtained antigen and to establish the activity of the obtained positive serum.

The development of the CFT kit for glanders was performed in two stages. In the first stage the antigen was produced and its diagnostic sensitivity and specificity was determined. During the second stage a positive control serum was received.

Three strains of *B. mallei* Bogor, Mukteswar and Zagreb were used for manufacturing the series of experimental antigen. Cultures were plated on blood agar with the addition of 3% glycerol and incubated at 37 °C for 72 hours. Then each strain subcultured on Brucella-agar. After incubating for 5 days the cultures were collected and washed with normal saline. Finally, a 2% suspension was prepared with normal saline and 0,5 % phenol. The suspension was inactivated at 80 °C for 3 hours. The obtained antigen was plated on blood agar with 3 % glycerol and incubated for 10 days. In the absence of microbial growth during this period we concluded that the antigen was inactivated and sterile. To determine the working concentration of the antigen successive antigen dilutions of 1:10, 1:20,

1:40, 1:80, 1: 160, 1: 320 were prepared and CFT with a positive serum (c.c.pro, Germany) with a known titer 1:160 (± 1 dilution) was performed. Definition of diagnostic sensitivity and specificity was performed according to Martin et al. (1977). The panel of the negative serum samples was $n = 400$ and positive serum samples panel was $n = 92$.

During the second phase of research we aimed to obtain a positive glanders serum. To develop the serum we conducted immunization of rabbits with the glanders antigen that was received by the previously described method.

It was found that the diagnostic sensitivity of the experimental antigen was 79.3 % and diagnostic specificity – 98.97 %. Thus, the antigen received by the method described is comparable to commercially available foreign analogues.

To evaluate the activity of the experimental positive serum CFT was performed according to the Guidelines for the diagnosis of glanders, approved by the State Committee of Veterinary Medicine of Ukraine № 214 from 11.06.2010. According to the results of CFT it was found that the activity of the obtained serum was +++ at a dilution of 1:320. In our opinion, the serum can be used as a positive control during serological tests for the diagnosis of glanders in horses in Ukraine.

Thus, as a result of our studies a kit for the diagnosis of glanders in CFT was developed consisting of a trivalent antigen and a positive control serum. It was established that the diagnostic sensitivity of obtained antigen was 79.3 % and specificity – 98.97 %, which is not inferior to commercial counterparts. It was established that glanders positive control serum has high activity in CFT and can be used as a positive control.

We believe that an important area of future research is to study the effectiveness of monoclonal antibodies against specific lipopolysaccharide antigens of *B. mallei*. Identification of new protein antigens as well as novel lipopolysaccharide and capsular polysaccharide epitopes will significantly increase the sensitivity and specificity of serological diagnostic methods of glanders.

Key words: glanders, horses, serological diagnostics, complement fixation test.

Immunoreactivity sheep body to the action of anthrax vaccine strain of animals with *Bacillus anthracis* UA-07 "Antravak"

I. Rublenko

Among infectious animal diseases one of the dangerous is anthrax. Despite a sufficient number of prevention (vaccines), each year a large number of anthrax outbreaks in many countries. The large number of stationary points, disadvantaged bears the potential threat of epizootic and epidemiological complications.

The system of prevention of disease is a major element of vaccination of animals. The process of immunization of animals is a proven tool in the fight against infectious diseases and even their elimination. However, some authors argue that despite the significant number of actively immunized animals, the relative number of deaths did not decrease.

Unfortunately, today in Ukraine the existing range of preventive measures against anthrax cannot get rid of this disease. In this respect, it should be remembered about the large number of old graves of animals suffering from anthrax. In this regard, the issue of developing specific prevention tools is extremely relevant in terms of antiepidemiological prosperity in Ukraine.

The aim is to study the dynamics of formation of anthrax antibodies in the serum of sheep immunized with the new vaccine against anthrax domestic animal strain of *Bacillus anthracis* UA-07 "Antravak."

To study the animals they were divided by age in groups: 3–6 months age (group I), 6–12 months age (2nd group) and adults (over 12 months old) animals (3rd part). The animals were injected subcutaneously recommended for vaccination vaccine doses from 3 to 6 months of age – $0,3\text{sm}^3$; over 6 months age – $0,5\text{sm}^3$. Sheep control groups subcutaneously instead of animal anthrax vaccine strain of *Bacillus anthracis* UA-07 "Antravak" enter sterile saline in a volume corresponding doses of vaccine.

The obtained results indicate that the serum of experimental animals to vaccination was found low anthrax antibody (1:10 in animals and groups of animals in 1:15 and 1:25 of the second to the third group of animals). In particular, it should be noted weakly expressed maternal immunity in animals of the first group ($\log_2 = 3,32$) and remaining active post-vaccination immunity from prior vaccination of animals in group II ($\log_2 = 3,82 \pm 0,18$).

After 21 days of vaccination, observed significant increase ($p < 0,001$) serum antibody anthrax all age groups in the credits: the animals of group – to $\log_2 = 8,32$, II group – to $\log_2 = 8,57 \pm 0,18$, III – to $\log_2 = 8,61 \pm 0,02$.

Eventually, after 3 months after administration of the vaccine in sheep and titers of antibodies anthrax not changed. Animals II and III groups recorded a downward trend (0,25 and 0,15 \log_2 , respectively). Indicators of antibody levels after vaccination were significantly higher ($p < 0,001$) than in received the vaccination. Animals in the control group during the next period of research antibodies detected.

Serum sheep I, II and III groups, taken after 6 months after vaccination titers of specific antibodies continued to decline. It should be noted that anthrax titers of antibodies in the serum of sheep from third group were higher compared with the figures I and II groups (0,06 and 0,39 \log_2 respectively).

Later, in 1 year after vaccination, antibody levels declined anthrax. In the third group of sheep titers were higher compared with the figures and animals (at 0,79 \log_2) and II (on 0,29 \log_2) groups were significantly higher ($p < 0,001$) than in antibody titers obtained before vaccination.

Comparison anthrax level of antibodies in the serum of sheep immunized with a vaccine against anthrax strain of animals from *Bacillus anthracis* UA-07 "Antravak" indicates that the vaccine caused their formation significantly higher in the third group of animals (over 12 months old).

The research found that the vaccine against anthrax strain of animals from *Bacillus anthracis* UA-07 "Antravak" caused anthrax raising antibodies in sheep of all age groups, especially in the third. The lowest anthrax antibody synthesis was in the group of animals and vaccination which was carried out in 3–6 months of age.

Key words: anthrax, vaccine, antibody, titers, prevention, sheep.

Establishment, cultural and morphological characterization of primary cell cultures from clawed frog (*Xenopus laevis*)

I. Savinova, Z. Klestova

The method of cell culture is a fundamental method, whose appearance at the time led to the rapid development of virology today remains one of its main tools also. In the world's largest cell banks such as ECACC, ATCC, DSMZ and several collec-

tions of cell cultures institutes of international importance, which account for tens of thousands of a variety of cell cultures, at present remains very limited number of cell lines amphibians. Most of them received in the middle of the last century and preserved to the now days. However, despite on existing cell lines frogs they cannot always meet the growing needs of researchers. Ukrainian banks collections and cell cultures contain not only a single domestic cell line of amphibians, and even strains from international collections. Also worth noting that diseases of amphibians in the last few years caused an increased interest not only because of a sharp decline in their numbers due to destruction of their natural habitat, as well as due to sudden outbreaks of diseases such as infection with *Batrachochytrium dendrobatidis* and infection with ranavirus lead to high morbidity and mortality among of populations of these animals in industrial farms and zoological collections, but also in the minority populations of rare and endangered species in nature. And therefore from 2009 these diseases are included in OIE Listed diseases. According to the guidelines of the OIE Manual of Diagnostic Tests for Aquatic Animals (2012) cell culture is the gold-standard test for agent isolation and identification. There are many fish cell lines are used to amphibian ranavirus diagnostic isolation and identification. But for better understanding ecological and evolutionary features of the pathogen, as well as interaction pathogen-host species the amphibian cell lines are more preferable.

As the donor tissue for primary cell culture young clawed frog (*Xenopus laevis*) were used. The hind limbs from two animals were washed properly with Decasanum 0,02 % after collection, dissected with forceps and then washed three times with 80 % DMEM (SH30243.01; HyClone), 20 % sterile demineralized water, supplemented with 200 IU/mL penicillin (Sigma), 200 µg/mL streptomycin (Sigma), 400 µg/mL gentamicin (Arterium) and fluconazole 40 µg/mL (Arterium). The dissected tissue were incubated with trypsin 0,25 % (Biotestlab) at room temperature approximately one hour with periodic shaking. The isolated cells and the remaining tissue pieces were then washed with culture medium, centrifuged at 100g for 5 min. After discarding supernatant, the cell pellet was re-suspended at 3–4 ml of growth media (the same media, as for cell obtaining, supplemented with 15 % fetal bovine serum (Hyclone) and seeded in flasks (Sarstedt, TPP and glass). Previously treated and untreated flasks were used. Explants and cell suspension were arranged evenly on the growth surface, and flasks were maintained in working position without additional media for 30–40 min at 37 °C. Growth media was added very carefully, did not disturbed explants, which have been attached. The flasks were tightly closed and cultured at 28 °C.

Suitability of the treated and untreated substrates was evaluated by the seeding (attachment) efficiency. Counting was performed in 10 fields of view at x100 magnification. The TPP flasks with treated and untreated surfaces have demonstrated almost the same results, such as attachment and proliferating of cells were noticed at 6–8 from 10 fields of view. The Sarstedt flasks have promoted cells and explants attachment and proliferating also. Seeding (attachment) efficiency was 7 from 10 fields of view in the treated, and 6 from 10 in the untreated flasks. The glass flasks almost did not support cells proliferating and growing: 3 and 1 from 10 fields of view for the treated and untreated surfaces accordingly.

Established primary cell culture from *Xenopus laevis* demonstrated fibroblast morphology. The strongly flattened, elongated, fusiform cells had the oval, centrifugal located nucleus and surrounded by unclearly expressed cytoplasm. The cells, which migrate from tissue explants, attached form bundles that randomly intertwined, compact adjoining to each other.

Key words: cell culture, amphibian, frog (*Xenopus laevis*), fibroblast cultural substrate, nutrient medium.

Epizootic situation and rabies epizootic features animals in the territory of Bila Tserkva region

B. Yarchuk, O. Dovhal, R. Tyrsin, Y. Tyrsina

Analysis of rabies epizootic situation in Ukraine for 1995–2013 years according to official data (according to the form 1 – VET) shows that tension epizootic process is characterized by a growing number of disadvantaged points and the number of sick animals. Thus there is a pattern of growth these indicators from year to year, up to and including 2007.

Performance analysis that the number of cases increased from 351 in 1995 to 2976 in 2007 and to the level that was in Ukraine in the postwar years before the introduction of specific prevention, and the highest in the last 55 years.

In the following years with rabies epizootic situation remains difficult. So in 2008, discovered in 1797 disadvantaged localities where sick animals in 2171; in 2009–1094 and 1254; in 2010–1581 and 1854; 2011–1262 and 1423; 2012–1727 and 1979; 2013–1296 and 1518 respectively.

It should be noted that in the epizootiology of rabies in Ukraine, unlike a number of European countries, epizootic process involved dogs and cats. In 2007, their share in the overall incidence was 40.3 %, and foxes – 40.8 %. This indicates the presence in Ukraine natural focal (tank foxes) and antropological (reservoir cats, dogs) types of infection. During the 10 months of 2010, the share of dogs and cats account for 50.5 % (525 of 1039).

Ukraine ranks third in Europe on rabies in cats. On the complexity of rabies epizootic situation in Ukraine influenced by such negative factors as low level of immunization, especially wild predators, weakening of control over the implementation of the rules of keeping dogs and cats, population growth of stray dogs and cats, foxes increasing population.

Analysis of the prevalence of rabies for 2009–2014 years shows that it diffuses nature, the source of infection recorded in 17 localities, which are located throughout the area. This tension epizootic situation in 6-years period, the analyzed varied from extreme changes. The highest intensity of epizootic process was during the 2012–2014 years. During this period revealed 16 points disadvantaged, which is 69.6 % for the six-year period. In 2009–2011 years found 7 disadvantaged areas (30.4 %) including: in 2009 – 2 (8.7 %), 2010 – 3 (13.9 %), 2011 – 2 (8.7 %).

Analysis of induced epizootic situation in the area, indicates the formation of stable zones trouble. By definition – a territory where rabies is registered annually, or more than 2 times in five years. They are usually found in areas with high density foxes, settlements wolves and other wild carnivores. These areas include the territory of the city. Uzyn where rabies was recorded 5 times, Rozaliyivka and Hlybichka – two cases of rabies.

The data on the epizootic situation in the district for the 2009–2014 years correlated to some extent with the data in the Kiev region. So, if in the Kyiv region in 2009 recorded 5 points disadvantaged, in 2010 – 27, 2011 – 55, 2012 – 69, 2013 – 82 respectively.

Analysis of the epizootic situation in the incidence of rabies on individual species shows that first in the number of cases of rabies take cats – 12 (66.7 %), second – dogs – 3 (3 %), third – fox – 2 (11.1 %).

The fate of the remaining animals was small, but it marten – 1 (5.5 %).

In order to stabilize the epizootic situation in the area, necessary to implement the measures under the "comprehensive plan for prevention and control of rabies in animals in Bila Tserkva district."

One factor that provides effective interventions to prevent and combat rabies is completeness of coverage immunization of dogs against rabies, and in areas of stable and trouble cats and oral immunization of wild carnivores.

Key words: animal rabies, epizootic situation, epizootological process, cats, dogs, foxes.

Influence of pathogens demodecosis and otodektosis on biochemical indices of sick dogs blood

K. Havryk

In modern terms domestic carnivores are human companions in life and in all areas of its operations. A dog is not just a friend of man, but also companion in civilian life and invaluable assistant in extreme conditions. In many cases domestic carnivores are members of the family of the modern city dweller, and so their health is a constant concern of man. Among domestic carnivores are registered diseases, not unique to these types of animals, but also common to other animals and humans.

The most common among dogs registered ectoparasitic invasive diseases caused Acariformes, namely otodektosis, sarcoptosis and demodecosis. Akaroses of dogs spread in large cities in Ukraine and abroad.

Dissertation work is made during 2013–2015 years at the Scientific Laboratory of Parasitology of Department of Parasitology and Veterinary Examination of Faculty of Veterinary Medicine of Poltava State Agrarian Academy. Some studies conducted at the Kremenchug City State Veterinary Hospital and Veterinary Laboratory.

In the experiment used 15 dogs of mixed breeds aged from 6 months to 5 year, belonging to residents of Kremenchug. Since they were formed in three groups of animals by 5 dogs each: a control (clinically healthy dogs) and two research (5 dogs – affected otodekteses, 5 dogs – affected demodexes). Blood for biochemical studies were obtained from the lateral saphenous vein forelimb morning before feeding.

Statistical analysis of experimental results carried out by determining the arithmetic mean (M) and its error (m) and the level of probability (p) using the table Student's t-test.

As a result received data revealed that the course of demodecosis and otodektosis characterized by significant changes in serum of infested dogs.

For demodecosis in serum of patients dogs registered a significant reduction of albumin to 9,8 % ($27,6 \pm 0,7$ g/l, $P < 0,05$) increase content of globulin on 11,74 % ($46 \pm 1,73$ g/l, $P < 0,05$), creatinine on 10,8 % ($79,6 \pm 1,02$ mmol/l, $P < 0,01$), cholesterol on 18,24 % ($4,44 \pm 0,16$ mmol/l, $P < 0,01$) compared with rates in clinically healthy dogs (respectively 30,6 \pm 0,87 g/l, 40,6 \pm 0,4 g/l, 71 \pm 2,28 mmol/l, 3,63 \pm 0,15 mmol/l). However, the increased content of total bilirubin in 3,27 times (19,6 \pm 2,37 mmol/l, $P < 0,001$). This increase was due to increased content of direct – in 2,78 times ($5 \pm 0,94$ mmol/l, $P < 0,05$) and indirect bilirubin – in 3,48 times (14,6 \pm 1,56 mmol/l, $P < 0,001$).

For otodektosis change parameters in serum of patients dogs were similar than demodecosis, decreased albumin content on 9,15 % ($27,8 \pm 0,58$ g/l, $P < 0,05$), increased content of globulin on 11,74 % ($46 \pm 1,30$ g/l, $P < 0,01$), creatinine on 8,03 % ($77,2 \pm 1,24$ mmol/l, $P < 0,055$), cholesterol on 17,87 % ($4,42 \pm 0,14$ mmol/l, $P < 0,01$). Also recorded increase of total bilirubin in 2,83 times (17 \pm 2,02 mmol/l, $P < 0,001$), including: content direct – in 2,67 times (4,8 \pm 0,91 mmol/l, $P < 0,05$) and indirect – in 2,9 times (12,2 \pm 1,42 mmol/l, $P < 0,001$) bilirubin.

At the same time in the blood serum of patients with demodecosis dogs increased enzyme activity (Table 2): ALT in 1,53 times (49,6 \pm 4,94 U/l, $P < 0,01$), AST – in 1,15 times (49,6 1,4 U/l, $P < 0,01$), GGT – in 2,19 times (11,8 \pm 1,01 U/l, $P < 0,001$) and α -amylase – in 1,34 times (1924,4 \pm 47,66 U/l, $P < 0,001$).

Also in the blood serum of infested by otodekteses dogs increase occurred of activity: ALT (in 1,47 times, $P < 0,01$), GGT (in 1,93 times, $P < 0,001$), α -amylase (in 1,3 times, $P < 0,001$).

Thus, the nature of the biochemical changes in the blood serum of dogs suffering from demodecosis and otodektosis dermatitis, namely hypoalbuminemia, hyperglobulinemia, hyperenzymemia, hyperbilirubinemia, increased content creatinine, indicating the presence of pathological processes in internal parenchymatous organs caused by parasites mites and their livelihoods. These changes indicate damage to the integrity of mitochondrial membranes and systems of bile secretion of hepatocytes.

Key words: dogs, demodecosis, otodektosis, blood serum, biochemical parameters.

The improvement of helminthoses postmortal diagnosis methods in wild animals

V. Goncharenko, S. Ponomar, O. Matsyuchenko

The purpose was to determine the priorities to optimize and to solve the problem of objective evaluation of parasitological epizootic situation in livestock and wildlife animals. For the diagnosis improvement there were analyzed the pertinent cases and scientific literature, official veterinary documentation and the results of previously conducted research there were taken into account.

There were made the experimental and theoretical rationale for using an integrated approach for post-mortem diagnosis of helminths in wild animals in general, and in view of the adoption of the "General ethics of animal experimentation" (Ukraine, 2001) and "The European Convention for the Protection of Vertebrate Animals used for experimental and other scientific purposes" (Strasbourg, 1985). The mass helminthological autopsies were not supported. It was proved that at the necropsy of each troupe of rare and endangered animals it is necessary to do the complete parasitological section (not just zooparasitologic survey). For mass helminthological examination there should be used technique of the full helminthological section proposed by K.I. Scriabin. One element of the technique is the method of successive washings. This method in a combination with compressor and the use of magnifying glass and if necessary, under the microscope of the tissue sections of various organs for identifying the worms and sampling different taxonomic groups while examining large and medium sizes of animals are highly effective.

A thorough description of eggs and larvae picture of the vast majority of worms is mostly absent today. That is why the methods of worm's determination and pertinent atlases require updates and reissues. The successful conduct of full helminthological autopsy of vertebrates of different taxonomic, ecological and size groups requires a differentiated approach. They need, along with the general and specific instructional techniques, take into account the stage of differentiation and morphological and physiological characteristics of helminth's bearers.

In a view of the above circumstances there is a need in making up new guides for helminthological survey of the representatives of wildlife. There is also need for the development of manuals for in-alive examination of animals using sparing techniques that would allow maintaining their viability and stereotype conduct.

All the above fully applies to the full parasitological examination of wildlife representatives. This task is more difficult and urgent, because a single methodological guidance on a full parasitological examination has not yet been developed. There were published manuals on some parts of full zooparasitological examination – the collection of parasites in animals, how to conduct microbiological or virological surveys, special diagnostics of fungal infections and other, but still remains undeveloped even the consistency of principles and a comprehensive survey on the autopsy, not to mention a comprehensive approach to in-alive parasitological examination.

Key words: worms of wildlife animals, helminthological section, an integrated approach for the postmortem diagnosis, sedimentation and compressor microscopy.

The particularities of the pathological process during helminth invasion

S. Ponomar, N. Soroka, V. Goncharenko, Z. Ponomar

Theory and practice has accumulated a significant amount of effective methods and techniques to combat helminthes invasion in humans and animals. Very wide distribution of helminths species and wide range of their pathogenicity, and hence the introduction of new anthelmintics in to the practice needs further scientifically advanced search for techniques to solve this problem. The relevance of the problem lies in the fact that helminth pathology cannot be considered separately from others diseases of different etiology.

During the helminth invasion in mammals it is developed the multifaceted immune alteration, which involves phenomena of cellular and humoral immunity. Also, this changes the activity of natural resistance factors. There are reports that helminth antigens stimulate T- and B-immune system that leads to accumulation of immunoglobulin IgM, IgG and IgA, and others. At the same time, the literature is rich on material about the ability of worms to suppress immune reaction in the animals they parasitize on. Also, the worms are able to suppress immune reaction in the animals in response to the others infectious micro-organism, antigens, and viral organisms.

The particularities of the cellular and humoral immunity depends on the type of worms, dose and frequency rate of lesion, stage of invasive process. Mixed parasite invasion in animals causes more harmful impact than the invasion by one type of the worm. By many researches there was established certain imbalance of humoral and cellular immunity in the animals with helminth. Suppression of the immune response leads to the lowering the effectiveness of deworming measures and drugs, increased susceptibility to relapsed infestation. At the same time, it is widely recognized that the success of anthelmintics drugs largely depends on their impact on the defense mechanisms of infested animals. Not adequate etiologic therapy, carried out during the helminthes process that characterized by immunosuppression may be an additional pathogenetic factor that lower the efficacy of the therapeutic procedures.

The decrease of immunobiological protection leads to the increase of the degree of super- and reinvasion by worms and other parasites and to the complications of the current helminthes process by the diseases of associative etiology. The cause of the recurrent lesions caused by worms can be larval and preimaginal forms of worms. They intervene the relationship between the parasite and its host by causing immunobiological changes in the organism on the latter stages.

Most researchers while studying the effect of experimental infestation on the immune status of the host have observed the activation of T and B immune systems. At the same time the infestation that is not occurring very often can caused an increase in the number of both T- and B-lymphocytes in the days following the invasion. However, during the permanent infestation, characterized by the systematic flow of invasive agent in the host organism, scientists are often faced with the fact of suppression of the immune response. It is assumed that the formed immune antigen-antibody complexes, which come as a result of infestation of a large number of antigen formed with the participation of IgG-antibodies are capable via Fc-receptors activate T-suppressor and consequently depress the immune response. Antibodies that accumulate in the body react with antideterminant areas previously synthesized antibodies inhibiting the ability of these cells to synthesize the corresponding antibodies.

Thus, the results of many studies show that during the helminthes process it is evident an imbalance of humoral and cellular immune factors, suppression of the immune response and the reduced immunobiological reactivity. All of this leads to reduced effectiveness anthelmintic therapy and increased susceptibility of animals to reinfestation.

Thus, the study of immunological reactivity during the helminthic process are both of theoretical and practical importance. They allow more fully to evaluate the relationship of the "parasite-host" connection, which makes it possible to use not only causal, but the pathogenetic therapy as well.

Key words: helminth invasion, the pathological process, immunobiological restructuring, cellular and humoral immunity, proteins, immunoglobulins IgM, IgG and IgA.

The toxico-pharmacological qualities of Biostim drug and its use in veterinary

K. Zolotariov, A. Belko, A. Lyakh, A. Matsinovich

This article contains research of toxico-pharmacological properties of the drug Biostim electrochemically activated aqueous solution on the basis of the alkaline catholyte. Determination of acute toxicity of this solution. The purpose of this study was to investigate toxico-pharmacological properties of the drug Biostim, as well as the rationale for reconciliation in his veterinary practice. Non-communicable diseases of young farm animals occupy a special position in the pathology of animals. Recover at an early age animals are unsuitable or is not suitable to supplement the main livestock.

The share of newborn calves accounted for over 90 % of cases of death from non-communicable diseases. Most often, the death rate of calves takes place on the grounds of diseases of the gastrointestinal tract. Not the well-being of farms and complexes for this disease causes huge economic damage, which is composed not only from direct loss, but also long-term outcomes, kill a significant portion of the litter, spent money on Treatment and preventive measures, delayed growth and development of young animals.

Proceeding from above mentioned, the study of toxic and pharmacological properties and prophylactic efficacy of electrochemically activated aqueous-based alkaline catholyte (the drug Biostim) in the treatment of gastrointestinal diseases in calves is an actual trend, which will improve the effectiveness of therapeutic interventions and to increase the safety of young cattle.

Installed features and regularities of the morphological changes of the blood, histological examination of the internal organs, open up opportunities and prospects for the use of the drug Biostim in terms of production for the improvement and permanent maintenance of health and high animal productivity. The research described in the article confirms the safe usage of the drug Biostim.

Key words: Biostim preparation, alkyl catholyte, toxicity, histological structure, grainy dystrophy.

The application efficiency of Geocide disinfectant in pigs production

V. Kovalenko, V. Lyasota, Y. Balatskiy

The investigations showed that in all sectors of piglets production, there was a marked microbic background of various microorganisms association – of bacterial, viral and fungal nature. According to the analysis of serial dissolutions of samples, the tentative contamination level was about 0,9–1,0 million of colony forming units per 1 cm² of surface. After the treatment of air, surfaces of the premises and equipment in production sectors by means of disinfection preparation used in the farms, the number of microorganisms in the samples decreased by 4–5 times. These contamination levels exceeded considerably the norms for production premises. One of the investigated disinfectants for control was sodium hydroxide of 2,0 % concentration. After treatment of air and equipment surfaces by 0,5 % water solution of Geocide, the level of microbial contamination decreased during 60 min by 40000–100000 times (number of colony forming units was 9–32 cm²).

After treatment of premises by 0,5 % solution of Geocide, there was no essential change in microclimate indexes. After treatment of premises by sodium hydroxide, the air humidity increased to 77,0 %, which was caused by moisture on the surfaces. These data confirmed the bactericidal effect of surfaces disinfection by these disinfectants in the presence of piglets. With exposure of 1 hour they decontaminated the test objects and surfaces, which did not contacted with animals during the treatment. In swabs from the floor, equipment, walls, feeders surfaces, a small number of microorganisms was detected in all samples. These microorganisms were discharged by the animals.

It was of some scientific and practical interest to investigate the duration of disinfection effect after one-time treatment by Geocide and comparison of animal deaths in this sector with analogical index in the sector treated by traditional disinfection method.

With this aim, the trials were carried out in two production sectors with air volume of 1000 m³. One of them (control sector) was on routine disinfection by 2,0 % sodium hydroxide. The experimental sector was disinfected one time by aerosol of 0,5 % Geocide solution (150 ml per 1m³ of space without animals). 120 animals were located back to the sector 24 hours after disinfection.

The one time aerosol application of Geocide allows reducing by two times the animal losses in the production sector (the monitoring period was 60 days) compared to analogous control data. At the same time, the piglet mortality in the sector treated by conventional technology was observed on the 5–7th day after animals location.

The economical aspects of our disinfection method contain considerable time reduction of disinfection works, reduction of personnel in this sector and qualitative improvement of microbial background in the premises. Application of Geocide and disinfectants without formaldehyde, chlorine-containing compounds and alkali will inevitably lead to improvement of biological status of animals, which in its turn will have positive impact on profitability of their fattening.

Moreover, the low toxicity of the preparation allows its application in the presence of animals and for water disinfection. This will considerably increase the disinfection efficiency and improve the indexes “price-quality”.

Thus, the aerosol disinfection of air, working surfaces in the production sector, equipment by Geocide allows achieving qualitative disinfection of a typical animal farm in conditions high contamination levels by pathogenic and opportunistic microflora.

The research results showed that Geocide, according to its immunopharmacological characteristics, had no negative immunotropic impact on the system of actively phagocytizing mononuclear cells and the cells-predecessors and has no contraindication to application in pigs production as sanitation measure.

Thus, the investigations show a sufficient clinical safety level of Geocide preventive application for pig production.

Key words: disinfection, bactericidal, insecticide, Geocide, humidity, microflora, blood morphology, phagocytic index, phagocytic number, immune potential.

Correction of inflammatory regeneration processes in pigs after hernia repair Avesstim

V. Andriets, A. Yaremchuk, S. Chernyak, S. Semenyak, A. Berezovsky

In a clinical study found probable ($p < 0,05$) reduction of healing of wounds in animals of experimental group an average of $2,4 \pm 0,7$ days. Healing the wounds they have occurred at primary intention operational stitches removed on the 7th day. Complications during the healing process have not noted.

However, in two animals in the control group extension for healing was a festering and subsequent complication due to slow granulation and differences edges of the walls of the wound, followed by healing by secondary intention.

In the treatment of postoperative wounds probable deviations morphological and biochemical parameters of blood were found. However, one should note the tendency to reduce the number of white blood cells in the 3rd and 7th day of treatment in the experimental group of animals, while control on the 7th day the number of leukocytes contrary increased. In general, this may indicate a lack of effective constraints inflammation or its complications inflammatory process.

Leykoformula analysis revealed no significant alteration of the neutrophils, but should pay attention to the sharp increase in eosinophils in the experimental group on 3rd – $5,8 \pm 0,77$, to lower – $3,60 \pm 0,51$ on the 7th day. What we believe is associated with an active course of reparative processes, basic plasma activation system, including alternative route of complement

activation in inflammatory response Avesstim. However, eosinophils play an important role in the formation and transport of antymediator inflammation. Eosinophils not only absorb antigens and immune complexes, and isolated and almost all antymediator enzymes: histaminase, carboxypeptidase, esterase, prostaglandin dehydrogenase, catalase, arylsulfatase thus maintaining optimum mode mediator of inflammation. By the 7th day reduced levels of eosinophils and close to the level that was before the surgery.

On the third day in the experimental group found significantly lower levels of lymphocytes compared to controls. This indicates heavy use of lymphocytes and their accumulation in the inflammation that will positively affect the dynamics of the regenerative process.

Research hemostasis major indicators including FXIII fibrinogen and reflects the dynamics inherent to inflammation. FXIII significantly reduced to 3rd day in both groups due to its intensive use in this period. The sharp decrease in fibrinogen in the control group on the 7th day – $1,70 \pm 0,42$ g / l may be a reflection of consumption coagulopathy that occurred through intense inflammatory reaction in the healing of postoperative wounds.

However, in the experimental group use of Avesstim caused significant increase of NOx $76,1 \pm 4,59$ and hold it throughout the observation period $69,0 \pm 6,65$ mmol / l.

In the control group of animals NOx lowest rate – $49,3 \pm 3,75$ mmol / l, against a background of low levels of fibrinogen – $1,70 \pm 0,42$ g / l indicates the development deficit of coagulation factors by prolonged inflammation, since NO produced by leukocytes in terms of inflammatory response.

Wounds after operation are prone to septic complications, accompanied by increasing deficit of natural anticoagulants, decreased activity FXIII factors and predisposition to the development of coagulopathy.

Supplement traditional treatment schemes and immunostimulant Avesstim prevents the development of coagulopathy in sick animals increases the activity FXIII, levels of nitric oxide and eosinophils in the blood., Which clinically manifested in shortening the recovery of patients by 2.4 days compared with conventional treatment.

Prospects for further research is to study the effectiveness of the drug in other forms of lymphoma surgical pathology in pigs and other farm animals.

Key words: hernia, pigs, adjuvants, wounds, Avesstim.

Morphological, radiological and biochemical characteristics of reparative osteogenesis at bone defects replacement in animals by Biomin-GT

M. Rublenko, V. Dudka, S. Semenyak

Among all surgical diseases of dogs fractures of long bones make up 6–15 %. A fraction of comminuted fractures reaches 25–60 %. Occurred fractures has defects that can lead to various complications of bone repair. This requires the use of multiplex methods of osteosynthesis and defect replacement by osteotropic materials.

The purpose of research – a complex morphological, biochemical and radiological evaluation of reparative osteogenesis using osteotropic material Biomin-GT.

The solution of problem of a bone malregeneration researchers pay attention to the improvement of osteosynthesis techniques use of vitamins and microelements, laser and metal nanoparticles. It has been studied single report accelerate ingot the bone repair using osteotropic materials. The number of such materials in recent years has increased significantly. However, they do not have sufficient clinical and experimental study. Last studies have showed an importance of bone metabolism markers as alkaline phosphatase and its bone isoenzyme, osteocalcin, C-terminal telopeptide of collagen type I, tartrate-resistant acid phosphatase.

The experimental estimation of osteoplastic material Biomin-GT was performed on 20 rabbits of 7 months age. A bone defects were performed with drill that has diameter 3 mm. Defect in the rabbits of experimental group (n=10) was replaced by granules of Biomin GT-500 (hydroxyapatite and β -tricalcium phosphate ≤ 50 %) A bone defects of control rabbit (n=10) noting replaced. To histological examination conducted a bone biopsy in five rabbit of each group on the 21st and 35th day.

The clinical and experimental canine studies performed in case of fractures that had a defect using plates. In dogs of the first experimental group (n=7) (fractures of femur) and second experimental group (forearm fractures (n=7) bone defect was filled with granules of Biomin-GT. A first control group (femur fractures, n=7) and second control (forearm fractures, n=5) defect is not filled. Surgery of all animals performed under general and local anesthesia.

Histomorphological studies found that bone defect in rabbit with Biomin GT-500 filled with fibrous tissue on 21st days after surgery. And it was completed by replaced with bone on 35th day. That is the area of the defect formed bone-ceramic composite able to fully perform functional load. By contrast, in the control group, the bone defect to the 35th day completely filled less mature fibrous bone tissue.

Healing fractures of the forearm or femur bone defect replaced by Biomin-GT, characterized by moderate periosteal reaction and shorten fracture consolidation in 1.3 times ($r < 0,001$). The replaced defect observed less bleeding and lower inflammatory response. As a result, the destructive processes observed was more or less and moderate activity of osteoblasts.

Therefore, Biomin-GT optimized of reparative osteogenesis and locates it within the bone defect. At this time Biomin acts as a frame for reparative osteogenesis, which contributes to the accelerated course of its stages.

Key words: reparative osteogenesis, bone markers, dogs, rabbits, Biomin.

Distribution and causes of inguinal-scrotum hernia in pigs on modern pig complexes

M. Chornozub, V. Koziy

The hernias in pigs often result in significant economic losses for farmers on the modern pig complexes That is why the main purpose of this study was to establish the causes and etiologic role of genetic factors for inguinal-scrotum hernia in pigs on the modern pig complexes.

The study was conducted in modern piggery complex of SE "Clearing-Agro" Skvira district of Kyiv region. To understand the distribution and causes of hernias development in pigs there were conducted analysis of the records of the primary

documentation, veterinary and livestock reports and personal observations (clinical examination of pigs, observation of sick animals before and after the operation, monitoring of topographic anatomical structural features of the hernia sac and the hernia hole at the time of herniotomy) during the 2012–2013 years.

It was established that for the artificial insemination of sows on the farm during the years 2012–2013 there was used the semen of 7-boars-sires, 3 of which were hybrids of the meat line (Optimus, 2- and 4-rock hybrids), and 4 - animal breeds Yorkshire and Landrace. As the results of the study, there was established significant gap among these boars as to their descendants piglets morbidity level.

Thus, the most of the animals with hernia (292 pigs out of 333, that represented 87.7 %) were obtained from 3 boars hybrids. The greatest number of the sick piglets (137 or 41.2 %) was found among the descendants of boar hybrid Optimus, and the rest of the piglets were descendants of 2 boars' lines 2- and 4-hybrides. Only 41 animal or 12.3 % of all that had hernia were found among the descendants of the 4 other boars, Landrace and Yorkshire breeds. Based on these results we conclude on the significant differences among the boars regarding the number of pigs with hernia.

In cases we did the same calculation but only for the pigs with inguinal-scrotum hernia, there was found that from 3 boars of meat hybrids there were received 93.4 % (271 of pigs with inguinal-scrotum hernia), and from the rest of the boars there were found only 6.6 % of the sick pigs.

On the investigated farm, during the years 2012–2013, the castration of the male piglets was carried out in a 3-day age pigs with closed-open bloody method using special forceps. During the operation there were used a special technique that enable the doctor to examine both the spermatic cord and the total vaginal membrane. There was found that many of male piglets, the descendants of hybrids boars, showed slightly thicker than usual spermatic cord, covered with a total vaginal membrane. At the same time the thickness of the external (and sometimes internal) cremaster muscle was increased. The thickening of the spermatic cord among the operated pigs who were descendants of boars of Landrace and Yorkshire breeds were not registered.

The subsequent observation of castrated pig during the further period (before weaning) there were noticed that pigs with inguinal-scrotal hernias (that appeared after castration) made up the bulk of the pig out of those which during castration showed thickening of the spermatic cord.

Overall, the results of the research allow us to make the following conclusions. The vast majority of pigs with inguinal-scrotum hernias (93.4 % or 271 head) were descendants of boars of meat hybrids. In male hybrids offspring of the meat boars there were found the thickening of the spermatic cord during castration. They also showed increased thickness of the external (and sometimes internal) cremaster muscle, accompanied by an increase in the size of the internal inguinal ring and the emergence of intravaginal hernias.

From all of this we conclude that an important area for further research is the introduction of monitoring to the use of breeding boars of meat hybrids and developing the algorithm of different castration methods that while detecting defects in the structure of the spermatic cord and inguinal channel, allow to avoid and prevent the hernias in pigs.

Key words: pigs, hernia, inguinal-scrotal, intravaginal, distribution, etiology, meat boars hybrids, cremaster.

The quality and safety of raw milk, which is obtained in dairy cooperatives, depending on their technological equipment

Yu. Horyuk, Yu. Perkiy, V. Horyuk

In order to give a full veterinary assessment of the activities of dairy cooperatives at the village, conducted a comparative study of indicators of quality and safety of raw milk procured through a system of dairy cooperatives and collection points was conducted. Such a comprehensive comparative assessment will identify the most significant factors that reduce the grade of milk, and develop preventive health interventions.

It is revealed that most milk that meets the requirements of DSTU 3662-97 is harvested through dairy cooperatives, it is 52,3 per cent. This is 1,4 times more than in milk, which is procured via collection points equipped with coolers. The milk procured via collection points without cooling, mainly does not possess the quality – 93,9 %.

The results of these studies indicate that although the system procurement of raw milk through dairy cooperatives allows you to get milk of higher grades, compared to the collection points, however it does not provide 100 % finding quality milk according to the requirements of DSTU 3662-97. Milk that complies with the European requirements, that is of extra varieties, are not harvested by dairy cooperatives.

Studying the major factors that reduce the grade of raw milk received in milk cooperatives, and through collection points revealed the following. There is no difference in content of somatic cells in milk from dairy cooperatives and collective centres. From 80,5±2,3 % to 83,5±2,6 % of batches of milk had the content of somatic cells to 400 thousand/cm³, which corresponds to the requirements of the extra class. Milk of the first grade with a content of somatic cells produced in dairy cooperatives of 14,8±0,8 %, the second – 2,8±0,3 % and not aconave – is not received for processing. Therefore, the content of somatic cells, as an indicator mastitis situation of the herd, indicates good care of the mammary gland of cows and good sanitary conditions. By this measure the milk produced in dairy cooperatives and private farms complies with the European requirements, in about 80 % of cases.

Research on content of substances in milk procured through dairy cooperatives and collection points showed that the processing from dairy cooperatives and collective centres received almost the same number of batches of milk with the content substances from 5,2±0,4 to 7,7±0,6 percent. This suggests that it is not always the milk from cows that used antibacterial drugs, and discarded it comes to overall yield.

Regarding bacterial obse of raw milk, we can see a clear pattern of prepared milk in dairy cooperatives with less content of microorganisms, compared with milk, procured via collection points. So, aconave milk with a bacteria count to 3 million CFU/cm³ in dairy cooperatives is made of 63,8 %, which is 1,7 times more than goes to collection points with coolers, and 2,8 times more than in non-refrigerated milk from collection points without coolers.

Analyzing research data, it can be noted that the most significant parameter, which reduces the grade of raw milk received in milk cooperatives, and through collection points is an excessive amount of microorganisms. However, even in dairy coopera-

tives, which are equipped with coolers, extra milk and extra class for processing is not supplied, indicating compliance with all hygiene requirements for milking and processing of milk.

Full quantitative assessment of raw milk in terms of quality and safety in accordance with DSTU 3662-97 found that the milk received at the dairy cooperatives in almost all indicators inferior to the demand, the introduction in the EU. The total number of bacteria in milk is more than 40 times, despite the fact that the milk is immediately cooled to a temperature of 4 ± 1 °C. 19,7 % of milk samples contained water in an amount of $2,3\pm 0,4$ percent. The fat and protein content was also lower due to the dilution of milk with water.

Summing up the research and study of indicators of quality and safety of raw milk procured in dairy cooperatives, it can be noted that, despite the automatic milking of cows in 40–45 %, equipping them with the milk coolers and satisfactory sanitary conditions of its initial processing, and 47,7 % of the batches of milk processed from cooperatives quality according to the requirements of Ukrainian standards and 100% of the batches of milk does not meet the requirements of the EU. It should also be noted that the prepared milk in dairy cooperatives of the highest quality and safety, compared with milk procured via collection points. This indicates that dairy cooperatives are technically superior, and their activities and work is necessary to provide the legal documents regarding sanitation requirements and technologies for the production and primary processing of milk. As the technology of production and collection of milk in dairy cooperatives has its own specific differences, compared with the technology on traditional dairy farms.

The research results found that the dairy cooperatives in the Ternopil region pass for processing of 5,7 % parties first grade milk of 46,6 %, and 47,7 % – negatoscope. The decline in the quality of raw milk received at the dairy cooperatives is mainly due to the excessive number of microorganisms by non-compliance with sanitary requirements for receipt and initial processing of milk.

Key words: dairy cooperatives, equipment, milk, quality, safety.

Sea water contamination of chlororganochlorine pesticides as an important component of primary food chain control in mussels production

V. Kasyanchuk, I. Fodchenko

The paper presents an analysis of the scientific literature on studies of sea water for the presence in it of organochlorine compounds (OCC), their sources and effects of these toxins on marine biota, seafood and mussels. The aim of this study was to summarize the literature about OCC content in sea water as a component of primary care in the control of food production chain mussels and features of OCC accumulation in seawater Ukraine, including Odessa region.

Ukraine is a sea states and therefore monitoring study as seawater and marine biota in safety performance are critical to addressing environmental and food issues. Among the pesticides found in recent years, scientists in seawater in coastal areas of Odessa region prevalent HCH and DDT. Migration of pesticides causes instability concentration in sea water and determine the need for continuous monitoring them.

The ecological environment of Odessa region – one of the largest in Ukraine territorially areas also unsatisfactory. During the postwar period, from 1949 to 1993, its territory was used for agriculture more than 260 thousandton Pesticides. For an average load of these substances at 1960–1990, and the mass of insecticides and herbicides (as active substance) region ranked third after Vinnitsa and Kirovograd. It was a prerequisite for widespread circulation and OCC in the environment and groundwater. To study the distribution of pesticides Geological Survey of Ukraine were investigated soil, sediment (reservoir, the lower reaches of the Danube, Dniester river valleys and Great Kuyalnik, Dniester and other estuaries), streams and groundwater artesian aquifers Odessa region. As a result, studies have found that among the pesticides detected a significant portion of the class represented by OCC (HCH, DDT).

So in the sediments of the Dniester estuary of the 45 samples studied OCC detected in 41. Total HCH was found in 53 % of samples (0–7,260 mg / kg) DDT – 71 % (0–18,365 mg / kg).

The deterioration of the Black Sea environment, pollution of sea water in the last decade led to the depletion of marine resources, worsening its aesthetic and recreational values and standard of living

Since OCC reservoirs in food webs transmitted and collected aquatic organisms in an amount that exceeds several times their original concentration. The literature shows that DDT levels in the chain of sludge – algae – marine crustaceans – fish in each following link increased an average of 10 times from the previous level of the chain.

The main parts of the food production chain mussels include: a) cultivation of mussels in seawater (natural or industrial); b) capture and transportation; c) processing technology; d) storage; e) transportation; e) consumption. Using data on OCC content in the seas considered an important tool for tracking the beginning of the food chain to ensure the safety of seafood.

In Ukraine, the monitoring of pesticides in seafood done, but it does not apply mussels caught in national waters of the Black Sea. Media is one of the resources of the national seafood Black Sea. Toxicological characterization of mussels regarding OCC domestic scientists hardly understood. At the same time, the mussels are used as food in Ukraine.

Mussels among marine biota populations belong to the best natural bioindicators. Research results biological concentration of the OCC copper is an important information to predict their level in the final food product are intended for human consumption Elevated concentrations of OCC in Media dangerous to human health.

The study of the relationship between pollution of sea water and OCC levels of toxins in mussels are an important tool for monitoring their safety at all levels of the food chain longitudina "from sea to table".

Key words: sea water, sea biota, chlororganochlorine, food chain, mussel.

The detection of *Campylobacter's* sources contamination in beef

O. Lapa, O. Yakubchak, V. Zagrebely

An increased risk of food poisoning in human during consumption of contaminated food and water is registered in Ukraine and worldwide every year. A significant part in the etiology of acute intestinal infections belongs to "non-traditional" bacteria. These microorganisms are most important is *Campylobacter* genus, which account for 10–15 % of sporadic cases of diarrheal disease, as well as a significant amount of water and food, including milk outbreaks described in foreign literature.

The main natural reservoir of *Campylobacter* are chickens, turkeys, wild birds, rodents and cattle, sheep, goats and pigs. There are *Campylobacter* localized mainly in the intestine and excreted in faeces infecting the environment, and during slaughtering and primary processing – products of slaughter in cattle.

This infection is spread with contaminated feeding, drinking bowls, tools, bedding, infected food, especially animal water.

The detection of *Campylobacter* species DNA in research material under the absence of clinical manifestations of the infection with bacteria's indicates that in case of breaking rules during primary processing and circulation of animal slaughter provides increase in the number of these microorganisms (*Campylobacter jejuni*, *Campylobacter coli*, *Campylobacter lari*) and risk for infection, which occurs with symptoms of poisoning in consumers.

The aim of the study was to identify the *Campylobacter* genus bacteria in environmental objects (water, fodder and litter) in dairy farms by polymerase chain reaction.

The research materials were: water bowls, hay and silage mixture of racks and warehouse, litter on the farm.

The preparation of samples for DNA isolation of *Campylobacter* research trial was conducted according to the "Methodological guidelines for the selection, handling, storage and sample preparation of biological material for diagnostic PCR". The DNA isolation from test material was performed by PCR Ampli Sens of test systems "DNA Sorb-B-50." The Detection of PCR amplification products were determined by electrolytic separation of amplification mixture in shaded ethidium bromide agarose gel.

After preparation of samples and separation of pure DNA the samples were subjected to electrophoresis research to detect the presence of *Campylobacter*. Therewith the Ethidium bromide contacted with fragments of double-stranded DNA that appeared in the gel as light bars for UV radiation ($\lambda = 290-330$ nm). For visualize these bands were used a special device – transilluminator and the results documented pictures. As a positive control we used the scale DNA containing *Campylobacter* DNA fragments of different lengths to estimate the size of PCR reaction products.

Further, we see that water silage and haylage mixture from feeding reacted positively on presence of bacteria of the genus *Campylobacter*. The DNA fragments were divided by the molecular weight in agarose gels. The specificity of the amplified DNA bands confirmed their placement relative molecular weight to markers and placing fragment amplification positive control.

Thus, the objects of the farm environment contaminated bacteria of the *Campylobacter* genus. Failure of proper sanitary-hygienic requirements for slaughter and primary processing of animals are contributes to contamination products of slaughter by *Campylobacter*.

The results of this study encourage us to conduct researches on the following number and type of *Campylobacter* in the environment (water, food, litter) and subsequently to detect *Campylobacter* in raw beef after slaughter of cattle.

The researches have found out that bacteria of *Campylobacter* is present in the farm's medium, such as water, hay and silage mixture of feeding and litter that can later enter the animals body.

Key words: campylobacters, cattle, dairy farms, food, water, polymerase chain reaction.