

**SCIENTIFIC AND TECHNICAL BULLETIN  
OF INSTITUTE OF ANIMAL BIOLOGY AND STATE SCIENTIFIC  
RESEARCH CONTROL INSTITUTE OF VETERINARY MEDICAL  
PRODUCTS AND FODDER ADDITIVES  
2014. – Vol. 15, № 4**

**SUMMARY**

**BIOCHEMISTRY AND PHYSIOLOGY**

**LACTATE DEHYDROGENASE ACTIVITY AND ISOFORM CONTENT  
AT COW OVARIAN FOLLICLE GRANULOSE CELL CULTIVATION**

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Activity and isoform content of lactate-dehydrogenase (LDH) in cow ovarian follicle granulose cell layer with long term incubation are researched. It is set, that cell culture characterizes by LDH activity –  $2,0 \pm 0,19 \mu\text{mol NADH}/\text{min} \times \text{mg}$  of protein ( $1,7 \pm 0,44$  –  $2,2 \pm 0,30 \mu\text{mol NADH}/\text{min} \times \text{mg}$  of protein). Activity of LDH in granulose cell culture is ensured by 5 enzyme isozymes. Enzymatic activity and isoform content depends on ovarian physiological state, from where follicles were extirpated. During researches there were studied indexes that characterizes tension of energetic metabolism in cells and priority of carbohydrate usage anaerobic and aerobic ways for ATP re-synthesis. Content increase of isozymes LDH1 and LDH2 LDH and activating of aerobic pathway of carbohydrate usage with conversion of lactate to piruvate, this is followed by increasing in progesterone synthesis in granulose culture cell. Maximal progesterone synthesis ( $49,4 \pm 10,46 \text{ nmol/L}$ ) is normal for follicle granulose cell culture taken from «late corpora lutea».

The aim of the work — to learn activity and content of LDH and concentration of sexual hormones in the culture of cells of granulose layer of follicles of cows.

The educed differences of izozymes are predefined by the physiology state of ovaries from the follicles of cells for cultivation. In particular, high maintenance of LDH 5 ( $21,7 \pm 2,33 \%$ ) is characteristic for the culture of granulose from the gonads of "fresh ovulation" and lower on 2,4-5,4 % for cells from the follicles of other physiology states of ovary. Like, LDH 4 is at most in the culture of cells from the gonad of "fresh ovulation" ( $23,7 \pm 5,21 \%$ ), less than on 5,0-6,6 % from a "early yellow body" and "follicle height", and the lowest content ( $15,9 \pm 2,35 \%$ ) is at a "late yellow body". A difference between the minimum and maximal sizes of values presents 7,8 %.

# **INFLUENCE OF VIRAL INFECTION ON OXIDATIVE–ANTIOXIDANT SYSTEM OF RAINBOW TROUT**

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Viral infections of aquatic organisms that occur in the course of the intensive development of aquaculture are causing major damage in this area. The biggest production of fish viruses cause pancreatic necrosis. The virus causes necrotic lesions of the pancreas, and provokes oxidative stress, thereby increasing the processes of lipid peroxidation.

Status of lipid peroxidation and antioxidant system was evaluated by the concentration of diene conjugates, malone dialdehyde, superoxide dismutase and catalase, as their presence is indicative for accumulation in tissues of peroxides, hydro-peroxides, compounds that have harmful effects on the cell.

As a result of studies it was found that the effect of the virus infectious pancreatic necrosis disturbs the equilibrium in the pro-oxidant - antioxidant system in the blood serum of rainbow trout and is manifested by intensification of processes of lipid peroxidation, reduced antioxidant capacity which allows us to consider the results as an important link in the pathogenesis of infectious disease.

The aim of this work was research of biochemical changes in an organism of rainbow trout underyearlings in the dynamics of development of IPN. Such information is actual and needed for the estimation of the fish health state.

Research in the serum of blood of rainbow trout experimentally infected by the virus of IPN, showed an accumulation of lipid peroxidation products of molecular content - dieneconjugates, malonedialdehyde. The activity of SOD in serum trout in the middle and final periods of infection tends to decrease.

Statistically significant increase in catalase activity in serum of trout was set throughout the period of infection.

As a result of undertaken studies it is set that the virus of IPN assists the unbalancing of the prooxidant-antioxidant system in blood serum of rainbow trout, and manifested intensification of LPO, reduced antioxidant capacity, which allows us to consider the results as an essential link in the pathogenesis of infectious disease.

# **STRUCTURAL AND FUNCTIONAL STATE OF ERYTHROCYTE MEMBRANES IN PERIPHERAL BLOOD OF RATS BY ALCOHOLIC INTOXICATION UNDER INTRODUCTION TO L-ARGININE AND L-NAME**

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Erythrocyte population uneven redistribution and their resistance to acid hemolytic membranes in normal and alcohol intoxication under of the introduction of L-arginine or L-NAME has been analyzed. It was found that under alcohol intoxication erythropoiesis becomes ineffective due to intense hemolysis of red blood cells in the bloodstream. It was shown that L-arginine has positive stabilizing effect on the membrane of red blood cells in peripheral blood under alcohol intoxication. Whereas the introduction of L-NAME exerts testify that a slight increase in the stability of erythrocyte membranes under the conditions of this disease, which is associated with direct inhibition of NO-synthase and decrease toxic effect formed by peroxynitrite on membranes.

The aim of this research was exposure of changes of redistribution of different-aged populations of red corpuscles and firmness of membranes of red corpuscles of rats to acid hemolytic, at the terms of the protracted alcoholic intoxication, and will become the way of introduction of basic substrate NO- synthasis - L-arginine and inhibitor of this enzyme L-NAME.

Analysing the obtained data it is set that quality composition of red corpuscles of blood of rats during alcoholic intoxication changes totally, destructive changes increase in the membranes of red corpuscles, there is exhaustion of corpuscles-producing ability of marrow.

At these terms, quick-ageing of cells is the starting mechanism of disbalance of homoeostasis of red corpuscles, that shows up in the change of redistribution of populations of red cells in a circulator river-bed, physical and chemical changes of properties of membranes of red corpuscles, namely in their mionectic resistability to the hemolyzing aggressive factors that are an ethanol and his metabolites.

# AMINO ACID COMPOSITION OF MUSCLE TISSUE OF PIGS AND IT'S BIOLOGICAL VALUE

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The article highlights the results of studies of amino acid composition of muscle tissue of pigs and its biological value. The necessity for such studies is due to two main reasons. First, the using of new industrial technologies aimed at increasing pigs meat concentration. Second — the adoption of new standards on human need in protein. Studies conducted in different parts of the muscle of the left half-cut pig meat production performance — large white breed of English selection (castrated). As required by the FAO approved in 2011, the biological value of different muscles of pigs varies. Arrange studied muscles in order of increasing biological value can be as follows: the longest muscle back — back — direct stomach muscle — ham — diaphragm — neck. Valine is the limiting amino acid in the test object.

The study of amino acid composition of different groups of muscles of pigs was conducted.

The analysis of the received material showed that amino acid content of muscles of different fast cuts is not identical. The muscles of dynamo-static type have 2 limiting amino acids — valine and isoleucine.

However a trapezius muscle has higher content of the marked amino acids, in comparing to the longest muscle of back. The muscles of dynamic type (ham and diaphragm) have one limiting amino acid — valine, content of which is 84 and 84,7 %.

However, in the under-abdomen muscles valine is at on lower level — 81,9 %, and in neck muscles it is contained close to the norm — 4 gs on 100 gs of albumen, against a 4,3 g on 100 gs of albumen. We want to notice that in the muscles of neck studied by us ratio of amino acids was closest to the mark. In further researches it is necessary to conduct monitoring of amino acid composition of muscles of pigs of different breeds and directions of the productivity, more in detail to learn influence of the muscle type on these indexes.

# **NITROGEN BALANCE IN THE ORGANISM AND PERFORMANCE TRAIT IN COWS IN CASE OF THE METAL OXIDE AND ZEOLITE POWDER PRESENCE IN RATION OF PASTURE PERIOD**

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The effect of metal oxides and a zeolite powder in the ration of the cows during the summer period into nitrogen balanced, milk production and milk composition have been studied. Three groups of cows of Ukrainian black-and-white dairy breed in the first half of lactation was formed. The cows of control, I and II experimental groups from May till July grazed on pasture with a young grass-legumes. In addition, the experimental cows got a feed (4,0 kg per head and 100 g per each kilogram milk). The structure of their feed included the following mineral elements: magnesium, cobalt, zinc and copper. The cows of I research group as part of feed were fed by characteristic mixture of zeolite minerals with the following chemical composition (the mass fraction): SiO<sub>2</sub> — 70,0; Al<sub>2</sub>O<sub>3</sub> — 12,0; Fe<sub>2</sub>O<sub>3</sub> — 1,0; FeO — 0,6; TiO<sub>2</sub> — 0,1; MnO — 0,1; P<sub>2</sub>O<sub>5</sub> — 0,1; K<sub>2</sub>O — 3,1; Na<sub>2</sub>O — 1,8; SO<sub>3</sub> — 0,1; CaO — 7,1; MgO — 4,0.

The cows of II experimental group as part of feed were fed by zeolite. Number of minerals and zeolite in the fodder for the cows of I and II experimental groups was 0.4 g / kg body weight of the animal. In the end of experimental period digestible trial was conducted and samples of feed, milk, urine and feces was selected for laboratory researches. The selected samples were tested for nitrogen. For cows were fed by mass of green grass-legume pastures, feed, metal oxides, and especially zeolite powder increased nitrogen excretion with milk, but decreased – with feces and urine was found. The feeding to the cows of a mass of green grass-legume pastures, feed, metal oxides, and especially zeolite powder, led to significant increased average milk yield. Simultaneously, the milk of cows which further were fed by zeolite a level of protein, fat and lactose significant increased.

As the fed oxides of metals and zeolite flour did not change content of Calcium, Magnesium, Phosphorus, Potassium, Natrium, iron, magnesium in blood of cows, it is possible to consider that forage additions served as first of all a surface on which microorganisms showed the activity, first of all bacteria, and influenced on intensity and orientation of exchange processes and content of nitrogen-containing connections in a deck-house.

# **INFLUENCE OF HYPO-GEO-MAGNETIC FIELD ON HAEMATOLOGICAL PARAMETERS OF ANIMALS DURING IN VITRO**

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The hypo-geo-magnetic field causes a number of changes in physiologic, biochemical and morphological levels of functioning of organism. It testifies to negative influence of this factor and has a direct relation to the problem of "industrial extrime", "magnetic hunger", or to "situational industrial chronic stress".

It is well known that almost all biorhythms in humans and animals are synchronized with variations alternating magnetic field of low frequency. In particular, the daily fluctuations of the intensity of the geomagnetic field (GMF) (Earth's magnetic field) cause changes in blood pressure, the magnetic properties of red blood cells, white blood cell count in peripheral blood, changing adaptive properties of animals.

The aim of research was to study the influence of hypo-geo-magnetic field on hematological parameters in conditions in vitro. For creation of the hypo-geo-magnetic field in the laboratory terms close to the terms in stock-raising were used containers or apartments for screening from the low-frequency and permanent magnetic fields.

The studies of biological influence of the hypo-geo-magnetic field testify that this factor causes a number of changes on the physiology, biochemical and morphological levels of functioning of organism.

For realization of experiments with laboratory animals in the conditions of faculty clinic was taken for basis Faraday jar.

Influence of hypo-geo-magnetic field on the investigated blood at the terms of in vitro shows up in massive destruction of red corpuscles and expressed erythropenia, activating of lipid peroxidation processes, increasing of hemoglobin level, which means hyperchromemia, also decline of general albumen level.

The decline of level of tension of the geomagnetical field of to 20-6 mTl results in considerable negative changes in blood and thus, for certain in all living organism.

# **THE STUDING OF THE TOLERANCE OF MEDICINAL PRODUCT FLORICOL USED BY CATTLE**

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Injectables based on fluorfenicol, fluorinated derivative of chloramphenicol and thiamphenicol, antibiotic of broad spectrum of antimicrobial activity, were among the main antibacterial preparations used worldwide for the treatment of respiratory disease in cattle.

To improve the therapeutic effect and prevention of complications different combinations of preparations are used. The pathogenesis of respiratory diseases includes the development of inflammation in the lungs, followed by the development of the disease, which often leads to compaction of the lungs. The degree of this inflammatory process determines whether the disease will lead to death, chronic stunting and development or to cure an animal mild.

It is proved that the application of non-steroidal anti-inflammatory preparations in conjunction with antibiotics useful in the treatment of respiratory disease in animals. It is known that preparations based on NSAIP flunixin meglumine effectively leads to a rapid decrease of piremia accompanying respiratory tract infections of bacterial etiology.

The studying of the tolerance of new medicinal products intended for veterinary medicine, namely antimicrobial medicinal products, facilitates the studying of the action mechanism and influence on morpho-functional state of organism of target animals that can prognose and prevent various side effects.

The article presents the results of tolerance studying of new antimicrobial non-steroid substance flunixin meglumine using cattle. The obtained results showed that tested medicinal product administered intramuscularly during 3 days to young cattle in the doses by 2-10 times higher than the recommended one is tolerantenough without negative influence on general clinical state of calves, physiological and functional state of their organism.

# **THE CONTENT OF VITAMINS A AND E IN COLOSTRUM UNDER THE INFLUENCE OF IMMUNOTROPIC MEDICATION IN THE FORM OF LIPOSOMAL EMULSION**

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Maintenance of population of agricultural animals, especially in an early postnatal period, and providing them high-resistivity to the diseases is one of major tasks of veterinary medicine. Maintenance to the sapling depends on a number of factors, of which the main ones are timely feeding colostrum of sufficient quality. Colostrum is no alternative product supply of newborn calves through the optimal ratio of nutrients in it that provide the basic needs of animals in energy, plastics, vitamins, minerals and so on. In particular, vitamins A and E provide the normal course of biochemical and physiological processes in the body, the regulation of growth and development of animals.

Increased need for vitamins A and E was observed during pregnancy, lactation and enhanced during growth.

In this regard, the need to ensure the optimal calf cows need for vitamins A and E in the dry period is essential to increase the activity of antioxidant system in their body and increase the content of these vitamins in colostrum, which positively affects the viability of newborn calves and to prevent diseases.

The data on the effects of parenteral injection of cows in the last month of pregnancy vitamins A, E, lysine, methionine separately with zinc acetate and sodium selenite in the form of liposomal emulsion the amount of vitamins A and E in colostrum of cows.

The study was conducted under farm „Mezhyrichchja” Zhydachiv district, Lviv region on three groups of cows 3–4 lactations ukrainian black and white dairy cattle last month of pregnancy, separated on the basis of analogues of five animals each.

The analysis of the research results showed that the use of these drugs in the period leading to increased content in leads to an increase in vitamin A in colostrum first day ( $p < 0,05$ ) and vitamin E in colostrum 1- and 3 days ( $p < 0,01$ ), which also has a positive effect on its biological value.



# **THE CONTENT OF VITAMIN A IN THE FEMALE CARP ORGANISM, EGGS AND LARVAE, DEPENDING ON ITS AMOUNT IN THE DIET**

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A height and reproductive function of carp largely depend on a level of liposoluble vitamins in his organism, in particular — vitamin A. Its deficit results in the decline of resistance, deceleration of height and violation of reproductive function that negatively influences on profitability of pond fish-farming.

At vitamin A adding to the ration, almost all signs of deficit disappear in a few weeks. Especially important in this aspect is providing the necessity of carp in a period spawning. It is well-proven that additional introduction of vitamin A to the ration of carp assists the increase of its content in an organism. Important is a question about optimal content of retinol in the ration of carp and his influence on metabolism, height and reproductive function.

In this connection, the aim of researches was a study of influence of different amounts of vitamin of A (2500 and 5000 IO/kg) in the ration of carp females on its content in an organism and the posterity received from them.

The data about the effect of additional amounts of vitamin A in feed of six years old female carp in before-spawning period on its concentration in the blood, liver, eggs and larvae were presented in the article. It was found that the additional consumption of 2500 and 5000 IU retinyl-acetate leads to the increase vitamin A content in their organism.

The additional entering in diet 2500 and 5000 IU retinyl-acetate leads to the accumulation of vitamin A in eggs and larvae carp and the increase a weight of eggs and intensive growth of larvae carp. It was found the higher absolute fecundity of female carp which were fed additionally vitamin A in before-spawning period.

Feeding to the females of carp additionally to the vitamin of A by a dose 5000 IO/of kg of feed results in the increase of them absolute fecundity, mass of the got grain of roe and more intensive height of larvae.

# COMPARATIVE EVALUATION OF IMPACT OF DEINTOXICANTS ON THE ORGANISM OF PIGLETS AT T-2 TOXICOSIS

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Mycotoxins, as toxic waste products of fungi, are causing great harm to livestock. Particular attention was attracted by their devastating effects on the immune system and detoxification organs. Scientists worldwide are looking for effective ways of early detection and neutralization of mycotoxins contaminated feed, feed raw materials and prevention mycotoxicoses.

However, the problem of mycotoxicoses remains acute, and needs to be addressed. In the literature, there is evidence of a protective effect against various mycotoxins adsorbents that bind mycotoxins in the gastrointestinal tract of animals. It is impossible to completely eliminate the negative effects of mycotoxins on animals, but minimizing is possible through the use of veterinary medicines. Today they are divided into two categories — sorbents and inactivators, each of which has its advantages and disadvantages after application.

The aim of the research was to investigate the efficacy of the solution HPSH (high-purity sodium hypochlorite) and feed additive on the body of aliosept pigs under conditions of spontaneous T-2 toxicosis.

Feeding pigs the fodder, which contaminated the fungus toxin led to disease of T-2 toxicosis, which was characterized by lesions of detoxification organs (liver), allocation bodies (kidneys), digestive system (intestine), immunity, lungs and heart.

Studied treatments applicable in terms of spontaneous T-2 toxicosis: high HPSH solution and feed additive aliosept significantly reduced functional and morphological manifestations of pathological process in piglets, which was caused by mycotoxins. Indicators of natural immunological resistance improved body weight gain.

Reduced activity indicators ALP, ALT, total bilirubin concentrations, cholesterol and total lipids compared with the figures of the II group, indicating that under the influence of HPSH and aliosept in the liver of piglets intensified metabolism in hepatocytes, leading to the recovery of the liver.

# FAT COMPOSITION OF RAW PORK AT USING COMPLEX DISINFECTANTS

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The results of raw pork fat composition at using complex disinfectants are shown in the article. During the chromatographic studies of lipid internal fat was identified 15 higher acids.

You must also specify that the content of lipid acids in the fat of experimental and control groups of domestic pigs was within normal limits, but there were also differences. The use of the proposed complex disinfectants leads to an increase in the ratio of polyunsaturated to saturated lipid acids.

Reducing the ratio of unsaturated acid was saturated to show the negative impact of complex disinfectants that are used in the control room for growing pigs on lipid metabolism in animals. Also lowering the melting temperature and increasing iodine number in the test sample is shown. The use of disinfectants in the experimental group "Bi-dez<sup>tm</sup>" and "Biotsydin" does not reduce the nutritional value of the product.

Determination of lipid-acid composition was conducted in the research laboratory of the Kharkiv research institute of lipids and oils the by method of gas chromatography on gas chromatograph GC-14b, produced by "SHIMADZY". Preparation of methyl ethers of lipid acids was conducted according to ISO 5509 by the method of ultra-etherification.

By the method of gas chromatography there were determined methyl ethers of lipid acids. The task of research was to investigate lipid-acid composition of internal fat of pigs at different terms of their maintenance.

Pigs maintenance with the use of complex of preparations "Bi-dez<sup>tm</sup>" and "Biotsydin" results in an increase of the coefficient of correlation of lipid acids to saturated.

There was greater humidity and temperature of melting in the control tests of fat.

An acid value is for certain less in the researched tests of fat.

The increase of iodine number in experience tests specifies on higher emulgate ability of fat and increase of amount of the nonsaturated acids.

## **REDOX PROCESS AND SPERM QUALITY AT ADDING CHOLINE CHLORIDE IN BULL SPERM**

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For creation of high-efficiency methods of gametes cryo-conservation, that would answer the modern requirements of production, there was put a task to attain high level of storing of reproductive cells by application of cryo-protectors composition of different cryo-defending action, including, biologically active substances. Thus, developments of composition of cryoconservant for freezing of sperm, conducted on the basis of literature data about the positive role of methyl groups at plugging of them in the molecule of glycerin. Among connections that is able to supply with methyl groups there is choline, in particular choline-chloride, that is one of factions of lecithin and performs the duty of methyl agent. In this connection, the use of choline-chloride is approved in rarefied ejaculate of bulls for the improvement of physiology and biochemical descriptions of sperm.

Aim of researches - to learn intensity of the ORP processes and survival of sperm for adding to the choline-chloride to rarefied ejaculate of bulls.

Influence of choline chloride in diluted bull ejaculates on redox processes and spermatozoa survival was studied. It was determined, that by adding increasing doses of choline chloride (1,5; 3,0 i 6,0 %) in diluted semen intensity of redox processes proportionally decreases. At maximum choline chloride concentration (6,0 %) respiration activity is lower on 45,8 % ( $p < 0,05$ ), reduction ability — on 22,3 % and succinate dehydrogenase activity — on 23,6 %, comparing to control. Downward trend of succinate dehydrogenase indicate choline chloride inclusion in spermatozoa membrane, that changes structure and lowers their permeability, but it also decreases substrate receipt, in particular succinate, in citric cycle. Analogically, choline chloride, that was added in doses higher 1,5 % in diluted ejaculates, lowers shuttle mechanisms activity of electron (proton) transport from spermatozoa in extracellular environment. Decrease of oxidative processes intensity manifests in higher preservation of physiological characteristics of spermatozoa by existence in diluted ejaculates. The highest spermatozoa survival is provided by addition of 1,5 % choline chloride in diluted bull ejaculates.

## **FEED AND FEEDING**

### **STUDY CHEMICAL AND AMINO ACID COMPOSITION OF FRESHWATER ALGAE LEMNA MINOR**

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At the lack of microelements and for the prophylaxis of microelementosis of animals and poultry it is recommended to apply premixes containing all set of necessary mineral substances in necessary correlation. Timely addition of absent microelements to the rations normalizes metabolism in an organism, assists the increase of full value of feeding and productivity of animals.

However, technological properties of salts of microelements substantially influence on quality of premixes and mixed fodders, in contempt of stability of acid-sensible vitamins in presence of free moisture and aggressive anions (sulfates, chlorides and others like that) of salts.

For determination of content of amino acids applied the method of capillary electrophoresis the electrokinetic phenomena are stopped up in basis of that is an electromigration of ions and other charged particles and electro-osmose. Researches conducted by means of the system of capillary electrophoresis of "Capel'-105/105M", that is equipped by the special software on the basis of the personal computer.

So, a search of alternative sources of microelements of natural origin, stable at storage (for example, iodine), that would fill up the physiology necessities of organism of agricultural animals and poultry, is an actual task.

The article reasonably relevance of studies on the chemical and amino acid composition of freshwater algae Lemna Minor, described research methods were used to determine the moisture, ash, protein, fat, fiber and amino acids, and the results are, made their analysis and conclusions.

The obtained results indicate that freshwater algae Lemna Minor is a source of complete protein, which is composed of the entire set of essential amino acids and can be used to balance the diets of farm animals and poultry for their content.

# **THE CONTENT OF LIPIDS IN TISSUES OF LAYING HENS UNDER DIFFERENT LEVELS OF MINERAL ELEMENTS IN THEIR DIET**

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Feeding to the sapling of chickens of egg direction of the productivity from 45 - to 90-day's age of a 0,2 % natrium sulfate with megascopic on 10 % from the recommended norms of Zinc, Copper and Manganese stipulated the row of changes of lipid composition of liver fabrics of pancreas and pectoral muscles.

To the agricultural bird high energy of height, intensive metabolism and reproductive ability, is peculiar. In the first ten weeks of post-embryonic development mass of chickens of egg breeds increases in 18-20 times, and broilers - in 30-40 times. Such energy of height is not observed in найскороспіліших of agricultural animals.

For realization of the put tasks experience was conducted on the sapling/pl of chickens of egg direction of the productivity from a 45-day's to 90-day's age.

At the increase of level of consumption of mineral substances in a ration in liver fabrics and pancreas in 60 - and 90 - day's age, content of general lipids ( $p < 0,01-0,001$ ) rose.

At the sapling of chickens, during feeding of an increase amount of sulphur sulfate and microelements, there was higher relative content of phosphotides in all fabrics. In fabrics of pancreas in 60-day's age, and in a liver and muscles in a 90-day's - relative content of triacylglycerols diminished. In fabrics of liver and muscles during all experience there was lower level of free lipid acids.

The article demonstrates that chicken had shown increased amount of total lipids in liver and pancreatic gland tissues and increased relative level of phospholipids in all researched tissues while being fed increased amount of mineral elements.

Relative amount of triglycerides has decreased in the tissues of the pancreas gland in 60 days age and increased in the tissue of the liver and muscles in 90 days age. During experiments, decreased level of free fatty acids was determined in liver and muscle, in comparison with control group.

# **SAFETY ASSESSMENT OF TECHNOLOGICAL FEED ADDITIVES**

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By basic principle that is inculcated in the European concord and inculcated now in Ukraine there is guaranteeing of unconcern of food foods on principle "from the field to the table of consumer". For guaranteeing of unconcern of foodstuffs, a necessity is control of all stages of chain of production of foodstuffs, beginning from the production of feed raw material and forage and ending delivery to end-user, as every stage has potential influence on the unconcern of foodstuffs.

The aim of our researches was development of the general methodical approach to control safety of technological forage additions.

For the executing of the put objective the requirements of legislation of European Union were analysed in relation to the safety of forage additions. In particular to Regulation (EU) 1831/2003 from September, 22, 2003 about additions, that are used in feeding of animals, Regulation of EU 429/2009 from April, 25, 2008, positions of Code Alimentarius in relation to the safety of forage and positions of home legislation.

Technological forage additions are a group of additions, that, depending on the physical and chemical composition, can carry a considerable potential risk for the safety of animals and food.

On the basis of the conducted analysis, and also own researches it was worked out and offered general chart and methodical approach to realization of researches of safety of technological forage additions.

The general chart of process safety study before the introduction of feed additives on the market. Scheme explore technological safety of feed additives includes the study of: toxicity in laboratory animals, safety (tolerance) for the target species, consumer safety, safety for personnel working with additive safety for the natural environment. Implementation of the proposed chart will ensure safety of feed additives and process of obtaining safe food of animal origin.

# **PREMIX QUALITY CONTROL FOR THE CONTENTS OF CHOLINE CHLORIDE BY CAPILLARY ELECTROPHORESIS**

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Choline or vitamin B4 is one of necessary vitamins in the organism of animals and poultry, participating in its physiology, exchange processes, what is scientifically well-proven and reasonable, known and his connection with other vitamins, amino acids, and also nutritives of feed.

In the laboratory of forage additions and premixes control of State Scientific Research Control Institute of Veterinary Medicinal Products and Feed Additive, method of capillary electrophoresis is inculcate for controlling of premixes quality by content of choline-chloride.

The electro-kinetic phenomena - electromigration of ions and other charged particles and electro-osmose are stopped up in basis of method. These phenomena arise up in solutions at the location of them in the electric field, mainly, of high tension. If solution is in a thin capillary, then the electric field that is along a capillary, causes motion of the charged particles and passive stream of liquid in him, as a result of what a test is divided into individual components, as parameters of electromigration are specific for every type of the charged particles.

The article states the relevance of introducing an alternative method of capillary electrophoresis for the determination of choline chloride in premixes described conditions and circuit analysis, and presents the results of determining the content of choline chloride in standard and experimental samples premixes using the device "CAPEL-105/105M" which equipped with special software from the PC.

The received results of researches testify that the method of capillary electrophoresis, conducted on the device of CAPEL-105/105M", is recreated, exact enough and reliable in case of researches of premixes by content of choline-chloride. An error between brought in amounts and received results hesitates in limits from 1 to 15 %, in dependence on a kind and concentration of choline-chloride in composition of premixes, that is assumed for this device and attested methodology of researches.



# **INFLUENCE OF IODINE, ZINC AND SELENIUM SUPPLEMENT IN THE DIET OF REPRODUCTIVE CARP ON THE ACTIVITY OF ANTIOXIDANT SYSTEM IN THEIR ORGANISM**

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A study of the questions related to influence of microelements on the certain links of metabolism in the organism of fish is in the spotlight of domestic and foreign researchers. However, in recent year basic direction was a study especially of the applied questions, related to quality of products of fish-farming and problems that touch influence of excessive level of peroxide processes in skeletal muscles and meat of fish. It is known that the lipids of fish are characterized by high maintenance of polyunsaturated lipid acids that are basic substrate of peroxidation.

Vital functions of pond fishes, in particular carp, him reproductive ability largely depends on providing of their requirement in these microelements.

It is predefined by the wide spectrum of biological action of microelements in the organism of man and animals and them by positive influence on the different links of metabolism in the organism of animals.

In this connection actual is research of role of microelements, and especially of Selenium and Zinc, that enter in the complement of active centers of antioxidant enzymes, such as superoxide-dismutase and glutation-peroxidase and play an important role of providing antioxidant resistance for fish.

The aim of the study was to lern the effect of feeding with mineral supplements containing zinc, selenium and iodine in the diet of female carp before spawning on intensity of peroxidation and activity of antioxidant enzymes in their organism. It was elucidated that the addition to the diet of carp in the this period of mineral supplements containing zinc, selenium and iodine lowers the plasma level of lipid hydroperoxides and TBA-active products and increases erythrocyte superoxide dismutase activity and plasma catalase activity in female carp.

## **GMO IN FEEDSTUFF AND RAW IN UKRAINE IN 2011-2013**

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The question of turnover of genetically modified organisms (GMO) in Ukraine remains for today actual and difficult enough for a decision. By law № 1103 - V "About the state system of biosafety at creation, test, transporting and use of genetically modified organisms" in the state an industrial production and introduction are forbidden to turnover of GMO, and also products mine-out with application of GMO, to their state registration (art.15).

An import of GMO is forbidden on custom territory of Ukraine, and also products mine-out with application of GMO, to their state registration, except for such that is intended for research aims or state approbations (tests) (art. 16).

For today the only brought in to the register of genetically modified sources of forage, is soy-bean meal of MON 40-3-2 (by order State veterinary phyto service from 23.07.2013 № 1752).

The aim of our work was to undertake a study on GMO content standards of forage of phytogenous and raw material for their making from the different regions of Ukraine by the method of PCR.

Researches conducted in SSC "IECVM" on the base of laboratories of the toxicological monitoring and molecular epizootology and diagnostics during 2011-2013.

In a period from 2011 to the end of 2013 by us it was investigational on content of GMO 102 tests of both the prepared feed (mixed fodders, soy-bean and others like that) and raw material for his making (grain of corn, grain of soy, wheat, barley and others like that) from 13 areas of Ukraine (including from AR Crimea).

There are presented the results of studies on the content of genetically modified organisms (GMO) in feedstuff and plant raw from different regions of Ukraine by polymerase chain reaction.

It was established that GMOs contained in the 2011 — 26,3%, in 2012 — 27,6% and in 2013 — 53,7 % in the studied samples.

# CLINICAL BIOCHEMISTRY AND VETERINARY MEDICINE

## THE DYNAMICS OF BIOCHEMICAL INDICES IN PIGLETS SERUM BLOOD UNDER THE APPLICATION OF PROBIOTIC PREPARATION

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The dynamics of piglets serum blood biochemical indices under the influence of probiotic preparation Probion forte, which contains *Bacillus subtilis* and *Bacillus coagulans*, was analyzed in the article.

It was established that the prophylactic application of preparation in doses of 1 g/kg during 70 days with feed causes the intensification of free monoacid's transamination processes (the activities of ALT and AST in serum blood increase) and increasing of lipid metabolites contents (the concentration of total cholesterol increases), which were used by piglet's organism as energetic and plastic material.

These data indicate the positive influence of Probion forte on the animal's growth and development.

The obtained data specify on positive influence of probiotic preparation Probion - forte on the processes of growth and development to the sapling of pigs, as it witnessed intensification of albuminous and lipid exchange of their organism.

It is set on results biochemical researches, that application to the piglets in the doses of probiotics, recommended by a producer, of Probion-forte and Bioplus 2b together with a feed during 10 weeks did not cause by-reactions in their organism, and positively influenced on a growth and development of the sapling.

It is set that maximally effective was application of Probion-forte preparation during 10 weeks in a dose of 1,0 gs/ kg of feed, as resulted in activating of super-aminating processes of free amino acids and increase of general cholesterol content, metabolytes, that is used by the organism of pigs as power and plastic material.

There will be the continued researches of influence of probiotic Probion-forte preparation on the biochemical and immunological indexes of other animals types.

## **EFFECT OF FOOD ADDITIVE ALIOSEPT ON PARAMETERS OF HOMEOSTASIS OF PIGLETS AT T-2 TOXICOSIS**

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A substantial danger for a stock-raising presents the contamination of feed by T- 2 toxins that is produced by the mushrooms of Fusarium sort, and it belong to high-toxic micotoxins. The biological action of this micotoxin consists in an inhibition of albumen biosynthesis. It is set that chronic T-2 toxicosis is characterized by development of the immunodeficient state, here changes are observed and in the cellular, and in humoral links of immunity.

Actual for today is a search of preparations that effectively would diminish toxic influence of micotoxins on the organism of animals. For diminishing of toxic influence of T- 2 toxins on an organism it is expedient to use entero-sorbents of complex action.

The aim of our work was to investigate influence of feed addition Aliosept on the indexes of immunity, to take into account the hematological and immunological indexes of blood of piglets at the terms of T-2 toxicosiss.

Using the feed addition Aliosept to the piglets at the terms of T-2 toxicosiss in an amount of 10 kg/t feed, assists the decline of display of pathological process, caused T-2 toxins.

In particular, assists the increase of content general albumen in the serum of blood due to albumen faction, the increase of amount of red corpuscles and content of hemoglobin in blood that positively influences on the indexes of the productivity of animals and promotes reparative-regenerative potential and general resistance of organism of animals.

In the article presents the results of investigation of the effect of feed additive Aliosept on resistance of piglets at T-2 toxicosis.

It is establishe that the use of supplements in amounts of 10 kg /t leads to a decrease of pathological process and facilitate the intensification of haematopoiesis. The activation of immune processes increases resistance and improves general physiological condition of piglets.

# **THE PHARMACOTHERAPEUTIC EFFICIENCY OF APRAMYCIN AND FLUMEKIN IN A COMPARATIVE ASPECT, DURING CATARRHAL BRONCHOPNEUMONIA IN CALVES**

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The impact of apramycin and flumekin that refers to groups of amino acids and fluorquinolons on organism of calves that have catarrhal bronchopneumonia and their therapeutic effect in a comparative aspect, taking into account different ways of applying was learned.

The main aim of experiment: pharmaco-therapeutic efficiency, the state of non-specific resistance of calves' organism.

At a catarrhal bronchopneumonia of calves, flumekin and apramycin show high pharmaco-therapeutic efficiency, recovery comes, beginning from 3-4th twenty-four hours, and normalization of morphological and biochemical indexes of blood - on 6-7th twenty-four hours. It is set in experience, that for indicated period, at peroral introduction of flumekin within the limits of normal sizes there were indexes of heterospecific resistance of calves organism.

While at intramuscular introduction of apramycin their results were lower, as compared to normal sizes. It can specify on that at intramuscular introduction as well as tetracyclones (in obedience to literature data), aminoglycosides repress heterospecific resistance of organism of calves too, presumably, as a result of decline of albumen-synthesis function of liver, as on 7th time of experience a level of albumens in the serum of blood was below on 6-8 % from normal sizes.

On results of the conducted research and practical experiment on calves, patients by a catarrhal bronchopneumonia, it was set that at parenterally introduction of preparation of group of aminocyclotoles - apramycin in a therapeutic dose, it is already observed on 3-rd time of treatment, though insignificant, oppression of the immune system of organism.

At application of flumekin clinical recovery took too on 4-5th twenty-four hours, and normalization of morphological indexes of blood and heterospecific resistance of organism - on 6-th twenty-four hours.

For indicated period of researches only an index of leucocytes was on 7 % higher, as compared to clinically healthy calves, and below norms there was a level of albumens in the serum of blood of calves.

# **EFFECTIVENESS OF A NEW PREPARATIONS BASED ON SALTS OF CALCIUM, PHOSPHORUM AND MAGNESIUM FOR THE TREATMENT OF PARTURIENT PARESIS IN COWS**

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Taking into account that at postnatal paresis there is a deficit at least to the calcium and phosphorus in the organism of cows, treatment must be sent to immediate renewal of their content in blood. Perspective in this direction is application of complex preparations of minerals.

The aim of our work was a study of efficiency of new domestic complex preparation on the basis of salts of calcium, phosphorus and magnesium at treatment of postnatal paresis for cows.

A research was carried out in one of farms in the Lviv region. Due to a clinic-diagnostic research there were found 6 cows with the clinical symptoms of sharp postnatal paresis.

Preparation of Calcenon was intravenously entered to three animals, solution for injections, produced by JSC "Galychfarm" (Ukraine), non-permanent in a dose of 100 mls on an animal, other three - with comparison preparation Calfocet, solution for injections, produced of KRKA (Slovenia), also intravenously non-permanent in the same dose. Both medicaments are complex preparations of minerals on the basis of salts of calcium, phosphorus and magnesium.

Etiologic factor bovine parturient paresis is a rapid decrease of calcium in the blood and tissues. In most cases, hypocalcemia accompanied by a decrease of phosphorus level in blood (hypophosphatemia). Treatment of parturient paresis should be directed, first of all, in a rapid recovery of these elements in the body in sick cows to physiological norms.

In the article the results of a clinical trial of a new drug of domestic production on the basis of calcium, phosphorus and magnesium in the treatment of clinically significant acute parturient paresis in cows are showed. A single intravenous administration of the drug caused a rapid increase of the concentration of total calcium and inorganic phosphorus in the blood serum of sick cows, which, in turn, contributed to the rapid convalescence of the animals.

## BREEDING AND GENETICS

### LIVE WEIGHT AND EXTERNAL CHARACTERISTICS OF COWS OF COMBINED BREEDS IN THE CONDITIONS OF THE WESTERN REGION OF UKRAINE

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Objective estimation of the repair sapling of cattle on the first stages of postnatal ontogenesis is the important constituent of plant-breeding work with a breed. To have the opportunity to take into account the biological features of individual growth and development, forecast the breed value of animals from early age to the selectionists it is necessary to know general conformities of gravimetric change law and linear parameters of organism in an age dynamics.

Taking into account it, the aim of our researches was to learn the dynamics of living mass, average daily increases, relative speed of growth, tension of growth and multipleness of increase of living mass of cows of Symmental and brown Carpathian breeds in a period of their growing, and also measuring the articles of body of full-aged animals in the conditions of western region of Ukraine.

There was studied the dynamic of live weight, daily average growth, relative growth rate, growth strain and number of live weight gain of Simmental cows and Brown Carpathian cows during their raising in the conditionals of the western region of Ukraine.

There were analyzed the body measurements and calculated the indices of body structure of full-grown animals. It was established that the standarts of experimental animals during the all analyzed age-periods by the live weight of Simmental and Brown Carpathian cows were dominated. With advancing age daily average growth, relative growth rate and increment rate of live weight marked down. The full-grown Simmentals were characterized by proportional development of barrel, deep and wide chest. They are also quite high.

The cows of Brown Carpathian were generally characterize by compact body structure, strong bone, sufficient height of shoulder and a little deficient wideness of chest, as for animals of combined direction of productivity. The cows of both breeds had dairy-and-beef type and were harmonious develop both by live weight and by body measurements.

# **SELECTION OF HIGH-PRODUCING COWS OF UKRAINIAN BROWN DAIRY BREED WITH INBREEDING**

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Ukrainian brown dairy breed is one of those plant-breeding achievements, that appeared due to purposeful work of selectionists with the use of home and world genetic fund of brown shvits breed.

On this time the ukrainian brown dairy breed has sufficient genetic potential for a further plant-breeding improvement with application of methods of breeding "in themselves" and open population through the use in the recreation of shvits breed bulls-breeder of world genetic fund.

On the modern stage of conduct of the suckling cattle breeding expediency of the use to inbreeding grows steadily. Actuality of this method of selection takes on the special significance, which is explained by the necessity of consolidation of heredity of the accrued breed of cattle.

The results of analysis of productivity and skills resistant of highly resistant brown cows of Ukrainian dairy breed, obtained by intra-line selection with purposeful inbreeding and cross lines with concomitant inbreeding are present in the paper.

It is recommended for the specialists of breeding service in the suckling cattle breeding during organization of the ordered selection to use the method of the closely-related connubiums with hard culling of the received posterity on plant-breeding signs.

Applying this type of selection is needed only in breeding economies with the high culture of conduct of stock-raising and only on prominent, strong after an exterior and constitution of animals.



# **EXTERIOR OF FEATURE AND WORKING QUALITIES OF DOGS DIFFERENT GENEALOGICAL OF LINES OF BREED THE GERMAN SHEPHERD-DOG**

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The German shepherd is the classics of world cynology, it managed to get confession and become a leading breed in the world due to the excellent working internals.

It is an animal of the refined lines, in that nobleness, force and confidence, combine harmoniously. For purebred animals deviation toward mitigating or rudeness is unacceptable.

Constitutionally a weak dog can not attack an opponent and is not enduring enough. All parts of body of the German shepherd must be in complete harmony, that, in turn, is the index of capacity.

A standard determines middle sizes and optimal for work proportions of built for this breed.

The aim of our research was a study of exterior features and working internals of dogs of different lines, that in future will assist the estimation of animals growth and improvement of their track work, protective service, manageability.

The material for research data served zootechnical account of various genealogical lines of German Shepherd breed dogs.

The estimation of dogs different genealogical of lines on measurements and indexes of a structure of a body also on their working qualities (trace work, obedience, protective service).

Is proved, that on trace to work, protective service in 2 years age best were male dogs of a line Kvanto f. d. Vinerau, which haved and healthy linear growth, whereas on obedience the superiority belonged to an animal of a line Muttsa f. Pelttsteerfarm. In 3 years age this tendency was kept.

# CYTOGENETIC ANALYSIS OF DIFFERENT AGE GROUPS OF SILVER AND BIGHEAD CARPS FROM IE FISH FARM "GALYTSKIY"

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Basic direction of aquaculture on the internal reservoirs of Ukraine is a pond fish-farming that presents main reserve of further increase of production volumes. The traditional objects of fish-farming in aquaculture of Ukraine are carp fishes, in particular white and pied carp. For the receipt of quality farming material it is necessary to provide the optimal terms of existence, that directly depend on the ecological state of reservoirs.

The accumulation of genotoxins of different nature in ponds results in the increase of level of somatic mutations of fish and as a result of decline of their viability. The decline of stability of chromosomal vehicle of fish with age represents a general tendency to the accumulation of genetic load during individual development. As an index of destabilization of chromosomal organ of fish is used by cytogenetic methods, in particular, micro-kernel test.

Cytogenetic researches were executed on a representative selection of white and pied carp of State Enterprise of fisheries "Galychyna" of the Ivano-Frankivsk region.

The comparative analysis of occurrence frequency of cytogenetic indicators (erythrocytes with micronucleus, lymphocytes with micronucleus, binuclear lymphocytes and apoptosis) in the peripheral blood cells of silver and bighead carps from fish farm "Galytskiy" has been carried out.

It was established that group of silver carp was characterized higher level of cytogenetic anomalies compared with group of bighead carp. Statistically significant inter-groups differences were found by the number of EMN ( $P < 0.05$ ) and BL ( $P < 0.05$ ).

It has been established that two-years silver carps were characterized the lower level of erythrocytes with micronuclei ( $2.9 \pm 0.3 \text{ ‰}$ ) and the higher level of apoptosis ( $4.4 \pm 0.2 \text{ ‰}$ ) compared with one-years carps.

Two-years of bighead carps also were characterized the lower level of erythrocytes with micronuclei ( $2.4 \pm 0.2 \text{ ‰}$ ) and the higher level of apoptosis ( $4.6 \pm 0.3 \text{ ‰}$ ).

# MORPHOMETRY OF BULL SPERM DAIRY AND BEEF BREEDS DEPENDING ON TERM STORAGE

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The aim of work was to learn the morphometric parameters of sucklings and meat breeds bulls sperm, depending on expiration dates.

In researches 85 bulls', 9 breeds - meat, suckling and combined directions of the productivity, cryo-conserved sperm was used. An expiration dates of investigated sperm doses was presented at 10 to 45 years. Sperm of bulls was divided into three groups: first — with expiration dates 10-20 years, second — 21-30 years and third — 31-45 years.

The investigation of morphometric characteristics of bull sperm dairy and beef breeds depending on the duration of storage in liquid nitrogen.

For periods 31–45 years were obtained significantly smaller sperm, which indicates damage to the head and tail of the sperm through a process of freezing and subsequent storage. It was established that under the conditions of long-term storage sperm of bulls dairy and beef breeds observed a significant difference in the size of the sperm.

Determine the probability of a relationship between physiological, morphological parameters and the length of the different parts of the semen. For term of storage 10–20 years in bulls dairy breeds the length of sperm head is 8,4–8,8  $\mu\text{m}$ , and length of the tail is 44,1–46,7  $\mu\text{m}$ , and in bulls of beef breeds the length of head is 8,5–9,1  $\mu\text{m}$  and length of the tail is 45,5–50,0  $\mu\text{m}$ .

Reliable positive connection between the parameters of survivability, mobility and sizes of sperm ( $r=0,25$ ) ( $p<0,01$ ) was determined by a cross-correlation analysis. Reliable negative dependence is also set between the percent of the damaged acrosomes, amount of pathological and dead cells and length of different parts of sperm ( $r=-0,2$ ) ( $p<0,05$ ).

# ANALYZE OF THE GENETIC POLYMORPHISM IN RAINBOW TROUT USING MICROSATELLITE MARKERS

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Microsatellites often appear as locuses, able to rapid mutations, that allows effectively to use them for the exposure of divergences between family populations in a fish-farming. Research of sufficient amount of microsatellite locuses and the amounts of repetitions for them allows to get unique information about a genetic structure at the level of individual, define the number of allelic variants and frequency of alleles in populations, to learn the inherited copulas between individuals.

The molecular-genetic polymorphism of Rainbow trout (*Oncorhynchus mykiss*) from fish-farm ISHHAN has been investigated by using four microsatellite loci: MFW 15, MFW 23, Hmo 02 and Hmo 33. Optimal conditions of PCR-analysis were determined for everyone of the primers. Based on the calculation of allelic frequencies the main parameters of the genetic variability of investigated fish species were measured.

The values of observed hetero-zygosity using microsatellite loci were close to the expected. The highest level of observed hetero-zygosity was fixed in locus Hmo 02 (0.69), the lowest — 0.51 with locus MFW 23.

Totally at the use of four SSR- locuses for investigational individuals there were defined 43 alleles, the molecular size of that presented 924-102.

After all investigational molecular-genetic markers polymorphism was defined. The most of alleles for this type of markers were received at amplification of Hmo 02 (15) locus, the least - for MFW 23 – 4 locus.

The AV amount of aleles on locus was in limits from 2,98 (Hmo 02) to 2,56 (MFW 23).

On the basis of calculation of allelic frequencies the indexes of hetero-zygosity are certain. Value of present hetero-zygosity after microsatellite locuses were near to expected.

**MICROBIOLOGY AND VIROLOGY**  
**PROSPECTS SEARCH FOR A NEW SCHEMES**  
**OF ANTIVIRAL THERAPY**

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Appearance of new emergent and reemergent viruses requires creation of new measures of their liquidation and prophylaxis. One of the means, that can be used in a struggle against the viral infections of animals are new antiviral preparations, searches of which last in the whole world. But they, in majority, they are based on so-called blind screening.

Many natural and chemical connections and their mixtures were tested in relation to anti-virus activity both in the cultures of cells and other biological models. Active connections or mixtures that blocked viral replication in vitro, cleared then, fractionated and tested by means of different methods and cultures of cells, and also model animals in relation to their activity and unconcern.

The paper presents the perspective of the application of new indole-containing condensed tetracyclic compounds resulting in change of infectious properties of DNA and RNA-containing viruses in vitro system to model animals inoculated cell cultures (BHK-21 SNEV, SK-6) for their use in 5 circuits.

Found that of indole derivatives are studie only in some schemes use or cell cultures, and others — different. Discovered some indole derivatives tested (from 50 studies) significant antiviral activity (reduction of virus titer in the range of  $1,51 \pm 0,06$  to  $5,38 \pm 0,09$  lg TTSD<sub>50</sub>/cm<sup>3</sup>) when used in two or more cell cultures, indicating that a significant biological effect.

Found that 18 derivatives of indole with the ability to reduce infectious activity of both groups of viruses as DNA-containing herpes-virus (for example Aujeszky's disease virus) and RNA-containing viruses (for example, transmissible gastroenteritis virus of pigs) that gives grounds for clinical trials new chemical compounds as candidates for antiviral drugs.

# DETERMINATION OF STABILITY OF BACTERIAL ENDOTOXINS

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Bacterial endotoxins carry a threat to the health and life of animals, however, data in relation to the study of their influence on safety of veterinary preparations is not sufficient.

Actually that is why our work was sent to research question of the safety of veterinary medicaments, related to contamination of them by bacterial endotoxins. Taking into account it, the aim of work was to set stability of bacterial endotoxins in sterile veterinary preparations.

Concentration of bacterial endotoxins *E. cloaceae*, *P. mirabilis*, *K. oxytoca*, *E. coli*, *Y. enterocolica* at storage at a room temperature and for the temperatures of 6 °C during two years did not diminish substantially.

The received results of researches specify on the necessity of realization of veterinary medicaments control on an index "bacterial endotoxins".

As a result of undertaken studies it was set that bacterial endotoxins of microorganisms of *Enterobacter cloaceae*, *Proteus mirabilis*, *Klebsiella oxytoca*, *Escherichia coli*, *Yersinia enterocolica* is were extraordinarily proof.

Concentration of bacterial endotoxins, depending on the type of microorganisms, in a sterile 40 % solution of glucose during two years of storage for temperatures 6 °C diminished from 1,6 to 3,3 %, and at a room temperature — from 2,1 to 4,3 %.

Control of veterinary medicinal facilities on maintenance of bacterial endotoxins is the mortgage of providing their biological safety.

# METHODICAL APPROACH IN RELATION TO ESTIMATION OF EFFICIENCY OF PROBIOTIC PREPARATIONS IN PIG BREEDING

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In the article the methodical approach to organization of efficiency determination of application with the prophylactic-curative aim of probiotic preparations in the conditions of industrial technology of pork production. During realization of proof-testing of piglets tour in the typical apartment of pigpen, as models, methodologies of visual-clinical estimation of preparation using results of "Multibacterin veterinary Bs + La" probiotic, produced by "Vidrozhennja" enterprise are worked out and tested. Results for certain proved efficiency of medical and preventive action of probiotic preparation on the population of piglets in a herd with a stationary defeat by the bacterial microflora of the associated character. For sucking period in experience groups of piglets, that got probiotic preparation, reliable reduction of pathological symptom-complex is set: presence of open wounds (gate of infection) and carpal joints skin damage on 9%, necrosis of tail skin - in 5,5 times. A presence of arthritis in control had 10% of piglets before a separation, while in experience this symptom was absent, that had testified to the system operating on immunity to the sapling saprophyte composition of living bacillic preparation of probiotic.

After oral administration to suckling piglets probiotic preparation "Multibakteryn veterinary Bs + La» reliably established regeneration of damaged skin of carpal joints, tail and no open wound surfaces (in the control symptoms present in 20 and 10%, respectively).

Established trend of display protective effect of the preparation "Multibakteryn veterinary Bs + La» on indicators in the absence of piglets experimental group symptoms of limb joints.

Application of bacillic preparation "Multibakteryn veterinary Bs+La" is recommended with a medical and preventive aim in the charts of alternative to the antibiotics for suckling piglets in economies with the stationary infectious defeat of population by the associated viral-bacterial microflora.

## **TOXICOLOGY, PHARMACOLOGY AND ECOLOGY**

### **CONTENT OF SATURATED FATTY ACIDS OF COMMON LIPIDS IN THE TISSUES OF THE BEE THORAX TAKING INTO ACCOUNT DIFFERENT LEVELS OF TECHNOGENIC LOAD ON THE ENVIRONMENT**

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The amount of Iron, Zinc, Copper, Nickel and Lead decreases in the tissues of the thorax of bees which are farmed in the places with middle or low techno-genic load compared to the tissues of the bee thorax which are farmed in the places with high techno-genic load. At the same time, the thorax tissues undergo the reduction of content of saturated fatty acids of common lipids, but the amount of non-saturated and polysaturated fatty acids increases.

Moreover, the intensity of changes in linoleic acid into its more long-chained and more unsaturated derivatives rises in the thorax tissues of the bees which are farmed in the places with middle or low technogenic load.

In fabrics of breasts of melliferous bees, that are hold out on territories with the middle and low level of the technogenic loading, comparatively with fabrics of breasts of melliferous bees, that are grown on territory with the high level of the technogenic loading, content of the saturated lipid acids diminishes with the pair and odd amount of carbon atoms in to the chain, but grows — monounsaturated lipid acids of  $n - 7$  and  $n - 9$  families and poliunsaturated lipid acids of  $n - 3$  and  $n - 6$  families.

Intensity of transformations of linolic acid in its more long-chained and more nonsaturated derivatives grows in fabrics of breasts of melliferous bees, that are hold out on territory with the low level of the technogenic loading, and linolenic - on territories with the middle and low technogenic loading.

Above-mentioned specifies on that with reduction of the technogenic loading on territory grows activity of desaturases in fabrics of breasts of melliferous bees.

Most content of lipid acids of general lipids and heavy metals changes in fabrics of breasts of melliferous bees, that are hold out on territory with the low level of the technogenic loading.



# DETERMINATION OF AMINO ACID COMPOSITION OF BIOLOGICALLY ACTIVE VETERINARY MEDICAL PRODUCT

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The article presents the results of studies of amino acid composition of biologically active product containing peptidoglycan and probiotic "Probiol". The research found that to their composition is set irreplaceable and replaceable amino acids, which are very important in ensuring biological activity of veterinary medical product. Among irreplaceable amino acids in the experimental samples detected the highest percent of leucine + isoleucine, lysine and conditionally irreplaceable — arginine. Replaceable amino acids consist mainly of alanine, proline and serine.

For determination of amino acid composition of the investigated standards a gauge chart was built and its stability is tested by means of control solution, analysing not less than two times in terms corresponding to the analysis.

The width of window of authentication is set and on the received electrophorogrammes automatic authentication of amino acids was tested.

In the probiotic "Probiol" concentration of amino acids leucine+isoleucine and folded 0,97 a lysin and 0,46 %, accordingly, however a percent of valine was some below and presented 0,36 %. Least among irreplaceable amino acids deduced to the methionine and histidin for 0,16 and 0,08 %, accordingly.

From the conditionally irreplaceable amino acids of arginine it appeared anymore on 0,25 %, than in bioactive means on the basis of peptide-glycane.

From replaceable amino acids deduced at most arginine 0,61 %, at least - glycine 0,17 %. An amount of serine was on 0,27 %, proline on 0,23 % more than in bioactive means on the basis of peptide-glycane, however alanine on 0,14 % less than.

Analysing the results of researches it is possible to draw conclusion, that biological activity of pre-production models is predetermined by the unicity of amino acid composition and correlation of separate amino acids.

# TOXITY DETERMINATION OF NEW ANTIMICROBIAL PREPARATION DANOFLOXACIN

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Fluorchinolones, due to absence of analogues in a natural environment, provide relatively high activity in relation to the poli-resistant stamms of microorganisms.

In connection with development of microorganisms resistance to the action of Fluorchinolones, that passes considerably slower than to the antibiotics of other groups, for a prophylaxis and treatment of bacillosiss of cattle and pigs new preparation of "Danofloksacyn" is worked out, with the operating substance of Danofloksacyn mesilate.

One of basic stages of new preparations producing is an all-round study of toxicness, cumulation, indirect action and remote consequences.

Carrying out a sharp test, is the first stage, the aim of which is a receipt of information on the danger of the investigated substance in the conditions of the short-term action and as a result of realization of which the receipt of data is envisaged about the received effects and prospects of realization of further researches.

Therefore the aim of our researches was to conduct the toxicological estimation of medicinal preparation "Danofloksacyn", solution for an injection, at non-permanent introduction (sharp toxicness) to the maximal doses on laboratory animals.

The sharp toxicness of preparation was studied on white mice 3-4 monthly age, with body weight 19-22 g, and white rats 3-4 monthly age, by body weight 165-180 g.

"Danofloksacyn" was entered once in doses: hypodermic to the mice - 1142, 1427, 1712, 1997, 2282, 2567 mg/kg of the body masses; to the white rats - 1115, 1515, 1915, 2315, 2715, 3115 mg/kg of the body masses.

The article presents the results of toxic parameters antimicrobial danofloxacin in laboratory animals. LD<sub>50</sub> of danofloxacin at subcutaneous administration to mice and rats is equal to 1973 and 1980 mg/kg, respectively, of body weight

## PARASITOLOGY

### EFFECT OF IMMUNIZATION ON LEUCOCYTE PROFILE AND BIOCHEMICAL PARAMETERS OF BLOOD OF CHICKENS INFESTED WITH EIMERIA

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Researches were conducted during 2014 on the base of poultry factory LTD "Agidel" from the Volyn region on the chickens of "Ross 308" cross-country race. During the last times this cross-country race is spreading on the territory of Ukraine for the receipt of high-quality meat. For research there was formed two experience and one control group of seven chickens of 6-day age in each. The chickens of the first experience group were immunized by the vaccine of Parakoks-8 by the method of watering in a dose a 0,1 cm<sup>3</sup>/ind. At 20-day age of chickens of experience groups had been infected with the culture of *Eimeria of tenella*, *E. of maxima*, *E. brunetti*, *E. necatrix* infested oocytes. Blood for researches was selected for 21th, 35th and 70th day after a vaccination, from an under-wing vein. In blood there were determined: basophilies, eosyn-philies, granulocytes, lymphocytes, monocytes, general albumen, albumen,  $\alpha$ -,  $\beta$ - and  $\gamma$ -globulins.

Invasion of chickens by *Eimeria of tenella*, *E. of maxima*, *E. brunetti* and *E. necatrix* was accompanied for non-vaccinated chickens by the increase of amount of basophilies, eosyn-philies, granulocytes, lymphocytes, monocytes and  $\gamma$ -глобулінів on different days of research. For vaccinated chickens there was set decline of general albumen and albumens on all days of research, and also increase of  $\alpha$ -глобулінів. Insignificant oscillation of index  $\beta$ -глобуліну both for vaccinated and non-vaccinated chickens was determined.

The paper present the results of the impact of immunization on leukocyte profile and biochemical parameters of blood of chickens that were experimentally infested with various species of eimeria. It is established that the number of mast cells, eosinophils, lymphocytes, segment-nuclear granulocytes and monocytes increased relative to control on various days of the experiment. It was also revealed that the number of  $\alpha$ -,  $\beta$ - and  $\gamma$ -globulins increased. The number of total protein and albumen was lower relative to the control. The growth and decline of the parameters under study took place in both the former and the latter experimental groups of chickens.

# STUDY OF OPTIMUM INSEKTOAKARICID PROPERTIES OF WATER SOLUTIONS OF IVERMEKTIN IN VITRO

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In the article the results of establishment of insektoakaricid properties of different concentrations of ivermektin are indicated in water solutions in the conditions of in vitro on imago of red chicken mite *Dermanyssus gallinae*, abstracted from cellular batteries in poultry houses at the industrial breeding of laying chickens and imago of malofag type of *Menopon gallinae*, collected from a poultry in private economies at the small-scale conduct of industry.

At the use of different methods of laboratory research of insektoakaricid activity of ivermektin the high degree of sensitiveness of imago of ektoparasitis, both mite was set and malofag, to the probed mean, since concentrations 0,01 mg/ml. Display of insecticide activity on imago of malofag, in the conducted series of experiments with the different breeding of ivermektin, came in a sentinel interval before, than akaricid effect on imago of red chicken mite.

At comparison of acaricidal activity establishment results of different concentrations of ivermectin in laboratory terms for the use of immersion and impregnation on the filtration scraps of paper methods, there was not marked substantial errors in frequency of death of experimental arthropods for the use of the first or second methods of influence on claws.

Beginning from a 0,01 mg/ml of ivermaktin concentration, that corresponded to dillution 1: 200, immersion of claws in work solutions of means, resulted in gradual death of all experimental arthropods. Stove deaths was on the end of first - begining of the second time of experience, arriving at 100% on a 72-nd hour of supervision.

At the same time ivermektin in a concentration 0,0025 mgs/ml during all experiment caused death of only about 25% claws. The gradual strengthening of concentration of preparation resulted in the increase of display of acaricid effect : ivermektin in a concentration 0,005 mgs/ml brought to death only about 60 % claws.

**LEVEL OF LIPID PEROXIDATION PRODUCTS AND ENZYMES  
OF ANTIOXIDANT SYSTEM ACTIVITY IN THE LIVER OF GRASS CARP  
INFESTED *DACTYLOGYRUS LAMELLATUS* AND *GYRODACTYLUS  
CTENOPHARYNGODONIS***

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In connection with out-of-control transportations of fish and failure to observe the veterinary-sanitary measures, in the last few years purchased wide distribution the monogenoidoses affection, and especially by daktilogirosis and girodaktilos. In separate economies affection of fish measures at 60-80%. Thus, daktilogirosis and girodaktilos cause considerable economic losses to the pond fish-farming as a result of loss of fish productivity, commodity kind and death of fish and that is why needs a further study.

Experimental studies were undertaken in the fish-farming economies of SE "Fish-farming Galychina" and "Dobrotvir" in the Lviv region. Material was received by the method of clinical review and parasitic research of carp fishes. For research there were the selected underyearlings of white carp, from which 6 copies were clinically healthy (control) and 18 copies (experience) - spontaneously infested by *Gyrodactylus ctenopharyngodonis* and *Dactylogyrus lamellatus*.

On results of infection level determination of last group, they were divided into three experience groups - for six fishes in each. First experience group - fishes were infested by *Dactylogyrus lamellatus*, second – by *Gyrodactylus ctenopharyngodonis*, third – by *Dactylogyrus lamellatus* and *Gyrodactylus ctenopharyngodonis*.

The data about the content of lipid peroxidation products (diene conjugates, TBA-active products) and antioxidant enzymes (superoxide dismutase, catalase) in the liver of grass carp under the *Dactylogyrus lamellatus* and *Gyrodactylus ctenopharyngodonis* have been presented.

It has been shown that this fish disease is accompanied by increasing the content of lipid peroxidation products and decreasing the enzymatic activity of antioxidant defence system in hepatopancreas. These changes were more pronounced in the liver of fish under the mixed infestations *Dactylogyrus lamellatus* and *Gyrodactylus ctenopharyngodonis*.

# FEATURES OF RESIDUAL EFFECTS OF WORKING CONCENTRATIONS OF A NEW DRUG MUKHO MAUR IN THE EXPERIMENT WITH LABORATORY CULTURE OF FLIES OF THE CALLIPHORIDAE FAMILY

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The aim of work was determination the insecticide activity of the accrued insecticide Muho-Mor on the different objects of tests.

Researches were conducted on LTD "Akro Vet Lab". As objects of tests there were used glass and wooden surfaces that at the beginning of experience had been processed with the suspension of preparation Muho-Mor and placed in the special gardens. Each time, after adding the laboratory culture of flies of *Lucilia sericata* type after one hour was conducted the review of their state.

The amount of living ones had been determined, dead ones and in the state of "knock-down effect" califorid. On 60th day the display time was prolonged to 3 hours. In every group three repetitions had been used. In all during an experiment there was used 2700 individuals of laboratory culture of flies of *Lucilia sericata* type.

In the article the results of residual effects of working concentrations of a new drug Muho-Maur on glasses and wooden surfaces are presented. This medical product showed 100% efficiency of laboratory cultures of flies *Lucilia sericata* species on the sixtieth day of research after the exposure of insects in gardens with insecticide on both test objects for 3 hours. By the exposition of one hour till the 40th day of the experiment the lethal effect of medicinal product on glass test objects was better.

The residual effect of the experimental drug Muho-Maur on a wooden surface on the 60<sup>th</sup> day of such exposition was better for 6.6% than on the glass ones. Whereas a "knockdown effect" was recorded in 76,67–86,67% of the laboratory insects.

Veterinary preparation Muho-Mor shows a proof insecticide action in relation to the laboratory culture of *Calliphoridae* family insects during 60 days.

For the displays of one hour the lethal action of preparation folds up to 20%. 100% insects that contacted with Muho-Mor on inflicted glass and wooden objects of tests, perish in three hours.

## IMMUNOLOGY AND MORPHOLOGY

### HEMATOLOGICAL PARAMETERS OF BLOOD QUAILS ON THE BACKGROUND OF APPLYING FEED ADDITIVE «HUMILID» AND SYNBIOTIC «BILAKSAN»

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Humic substances are the totality of biologically active connections that appear in the process of time-table and transformation of vegetable and animal bits and pieces under the action of microorganisms and oxygen.

At treatment of these substances preparations of various spectrum of action are received that gives an opportunity to conduct the correction of the functional state of organism. They provide constancy of homoeostasis on all levels of structural organization of organism, assisting proceeding in physiology functions.

Synbiotics are the preparations that are received as a result of rational combination of probiotics and prebiotics. It is a new generation of bacterial preparations of complex action, that contain the useful stamms of microorganisms, lactulose, vitamins, sorbents, antioxidants, lipid acids, immune stimulants.

Properties of constituents of synbiotics create the multicomponent system of organism resistance taking into account individual violations of constancy of internal environment.

These preparations assist the improvement of exchange processes, increase of suction of nutritives and releasing of toxic agents from the intestine.

Addition to the diet of quails feed additive Humilid in an amount 2.0 mg/kg body weight contributes to significant increase of blood hemoglobin poultry 41- and 71- day age, lowering blood hematocrit values in all of these critical periods of ontogenesis and reduces the number of leukocytes on 41 and 71 day, compared with the control. In applying synbiotic Bilaksan to the diet of quail at the rate of 0.01 g / head significantly increased hemoglobin levels at 41 and 71 day of life on 15.06% and 22.15% compared with the control.

# **MORPHOLOGICAL CHARACTERISTICS OF STRUCTURAL COMPONENTS USED FOR MANUFACTURE OF MEAT PRODUCTS**

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In many products of processing of meat and prepared sausages, with the aim of improvement of their taste properties and increase of content squirrel (structural and gel creators elements) apply different vegetable additions. Such addition the isolated soya-bean albumen, that improves the structure of product, has subzero viscosity, retains moisture and it easily soluble, is, for example. He forms stable emulsion that can retain loosely-coupled water and fat at heating also, allowing maintenance of traditional technological processes thus.

The isolated soya-bean albumen has a characteristic histological structure of the rounded particles of different size.

The microstructural (histological) method of meat foods research allows to set and identify their real composition. A histological technique also allows determining the use of unsolved components in foods.

Except of a soy-bean albumen, seasonings are added to meat foods, with the aim of granting them characteristic taste and aroma. As natural seasonings there are used various plants and their parts. To the mostly used seasonings belong: bow, garlic, pepper (red, black, white), carnation and others like that. Plants differ in sizes and structure of cells, which allows their authentication under a microscope. Except of natural applications to provide the desired flavor meat products are also added synthetic fragrances that are difficult to be identified. In this case only organoleptic research allows identifying them.

On the basis of researches that were conducted in different scientific and research establishments, and also from own experience, with the aim of exposure of the falsified multi-component meat foods, State Standard 7063: 2009 "Meat ready-to-cook and meat-vegetable foods cutting. Determination of micro-components method" worked had been worked out in Ukraine and introduced. In addition the illustrated methodical recommendations were given out "Examination of Meat ready-to-cook and meat-vegetable foods cutting with a microstructure method", that allow you to identify adulterated meat products.



## **DEVELOPMENT OF VETERINARY PREPARATIONS AND METHODS OF THEIR CONTROL**

### **NEODES-EXTRA – NEW HIGHLY EFFECTIVE POLY FUNCTIONAL DISINFECTANT WITH PROLONGED EFFECT FOR VETERINARY MEDICINE**

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In agro industrial complex taking into account the variety of economies of different form of property and speciality, animal and poultry husbandries, guarantee of their epizootic welfare the special attention should be paid to the measures of preventive and forced, if necessary, disinfection. These measures disrupt the epizootic chain of infections by the influence on the most important link – the factor of disease agent transmission from infection to host organism. The veterinary sanitary enterprises pay great attention to disinfection to provide animal welfare, its productivity increase, the quality of products, raw material and feeds of animal origin. Nowadays many disinfectants with different active substances are developed and implemented. More than 30 disinfectants of home production and 40 disinfectants of foreign production are present on the market of Ukraine. They are different due to efficacy, safety and expenses for their usage. That is why it is justifiable to develop new disinfectants that would guarantee their high efficacy and provision of stable epizootic welfare in the sphere of animal and poultry husbandries.

"Neodez-extra" is disinfective means of the prolonged action, that after efficiency exceeds home and imported analogues. By advantages of disinfective mean "Neodez-extra" there is its poly functionality, unconcerning-process, stability at storage, well water-soluble, ecologically safe. It shows high efficiency of disinfection at tuberculosis and spore forms, wide spectrum of its action against all types of pathogenic microorganisms, viruses, micro-bacteria. At the using of disinfection mean "Neodez-extra" there was absent corrosive and irritating action, due to formation on the disinfected surface of polymeric polygeksametylenbiguanidin means provide washing and disodirative action. After an economy means are substantially lean, by comparison to disinfective facilities that is presented at the market of Ukraine.

Undertaken productive, clinical studies it had been confirmed, that for the achievement of ideal result expenditure moist desinfection of a dose 2 ml/m<sup>3</sup> by a 0,3% solution "Neodez-extra".

## **DETERMINATION AFLATOXIN CONTENT IN SAUSAGE PRODUCTS**

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ELISA method used in conjunction with immune-affinity column for the determination of aflatoxins in sausage products in accordance with Standard Documents Ukraine. The data obtained in assessing the suitability methods for various samples of sausages on the criteria set out in the Commission Decision (2002/657 / EC) of 12 August 2002 concerning the performance of analytical methods and the interpretation of the results, Recommendations EU reference laboratories in the control of residual amounts (CRLs) 20/1/2010 to assess the suitability of screening methods for the determination of residual amounts of veterinary drugs and laws of Ukraine.

With the aim of providing control laboratories with methodology that answers all above-mentioned requirements and is suitable for the tests of sausage products by the method of immune-enzyme analysis that is used at the analysis of other matrices for a screening analysis in accordance with the requirements of Directive 2002/657/EC and can provide authenticity of results not below 95% within the limits of erroneous accordance at expected level, was offered by us.

New methodology of preparation of standards of different types of sausage products is worked out for determination of aflatoxin B<sub>1</sub> with the use of immune-affinity columns for realization of screening researches.

According to validation, conducted on the brief chart, this methodology can be used for control of different types of sausage products with the aim of determination general content of aflatoxins and the aflatoxin B<sub>1</sub> content by a screening method.

The using of immune-affinity columns that are specific also for the aflatoxins B<sub>2</sub>, G<sub>1</sub> and G<sub>2</sub> will allow determining general content of aflatoxins in the marked products.

# **FITNESS ASSESSMENT METHOD FOR DETERMINATION OF RESIDUES SULFONAMIDES SCREENING TEST**

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The article highlights the issue of suitability screening ELISA method for the determination of residual amounts of sulfonamides (sulfaguanidine, sulfadiazine, sulfatiazole, sulfamerazine, sulfamethazine, sulfamethoxy pyridazine, sulfamethoxazole, sulfadimethoxine, sulfahloropyrazine) in honey. The conclusions of this method of compliance with EU: European Commission Decision (2002/657 / EC) and the Recommendations of the EU reference laboratories (CRLs) in the control of residual amounts of 01.20.2010 on the assessment of the suitability of analytical methods and the interpretation of the results.

Standards of honey, additionally tested with the use of method of high-efficiency liquid chromatography on absence for them having a special purpose analite were used as a material for researches. Enriching of control standards to the level of having a special purpose concentration of screening conducted standard solutions. In-process used the certificated substances of Sulfonamides: Sulfaguanidine (SGD), Sulfadiazine (SDZ), Sulfatiazole (STZ), Sulfamerazine (SMR), Sulfamethazine (SMZ), Sulfamethoxy pyridazine (SMP), Sulfamethoxazole, (SMX), Sulfadimethoxine, (SDM) and Sulfahloropyrazine (SCP), got from a firm Sigma Chemical Co. (St. Louis, MO. USA).

According to the got results, a screening-methodon determining the remaining amounts of Sulfatiazole answers the requirements of Decision of EC 2002/657 on next parameters: rightness (exactness, reliability), specificity and can be recommended for work in the productive laboratories of firms-exporters of honey.

Validation of screening methodologies of ELISA are conducted for determining the remaining amounts of sulfonamides in the standards of honey.

Accordance of validation parameters of the worked out methodology is set: rightness (exactness, reliability) and specificity concordantly to the requirements of Decision of EC 2002/657. The fitness of her application is confirmed for screening aims.

The increase of level of self-control of Sulfatiazole is shown in 2,1 times.