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HEMATOLOGICAL AND BIOCHEMICAL PARAMETERS OF CALF BLOOD IN THE TREATMENT OF DYSPEPSIA WITH PHYTOPREPARATIONS

ANNOTATION

Regular consumption of nuts has a positive effect on the cardiovascular system. Studies by many scientists have shown that medicinal substances from these walnuts create conditions for maintaining vascular elasticity, lowering blood pressure and increasing the tone of the heart muscle.

The pineal hormone melatonin, which is contained in walnuts, contributes to the adaptation of the body's skin to sunlight, increases mood, and, in addition, normalizes sleep. This article discusses the norm of the digestive system of calves under the influence of phytopreparations, morphostructural features during the pathological process. During the morphological, biochemical and immunobiological studies carried out, data were obtained indicating that there are pathologies in the digestive system of cubs that affect the decrease in animal productivity. Valuable data have been obtained on the therapeutic and preventive effectiveness of phytopreparation tincture used in gastroenteral pathology of the digestive system. Immunological studies have shown that under the influence of a therapeutic drug, the activity of cell elements in immune organs increases. With pathologies of the digestive system in calves, metabolic disorders of protein, a decrease in the indicators of the form elements of blood are revealed. The drug used contributed to the normalization of blood hematological indicators, ensuring a decrease in leukocytes to $8.8 \times 10^9/L$, an increase in erythrocytes by 1.5%, total protein by 3.7%, globulins - by 8.4%.

Key words: *Performance, component, erythrocyte, leukocyte, total protein, albumin.*

Introduction. In the modern functioning of the pharmaceutical industry, many drugs are used for therapeutic purposes. Among the entire range of medicines, the group of medicinal herbal preparations occupies a special place. This category of pharmaceutical agents is distinguished by the wide therapeutic effect and the low risk of side effects. The current state of pharmaceutical science in the field of pharmacognosy is characterized by incomplete research of medicinal plants [1,2,3]. One of the reasons for this is insufficient attention of scientists in the field of pharmacognosy to new and little-studied types of plant raw materials. Representatives of the walnut family are valuable plants widely used in the food industry. However, walnut raw materials have not yet been widely used in scientific medicine.

Currently, the use of a wide range of antibiotics plays an important role in increasing the effectiveness of the treatment of diseases caused by various microorganisms [4,5]. However, antibiotic therapy also has its drawbacks. Frequent use of a group of antimicrobial drugs in medicine and veterinary medicine increases the frequency of emergence of resistant strains of microorganisms. Increasing resistance to antibiotics is currently of great socio-economic importance and is considered a threat to national security in the developed countries of the world [6,7]. In addition, taking antibiotics can lead to various side effects, including allergic reactions, decreased immunity, and an increase in fungal infections in the body. In this regard, an important and urgent problem of modern pharmacy is the search for new types of antibacterial drugs [8,9].

Veterinary medicine has a large arsenal of medicines, as well as methods and methods of treating diseases of the digestive system, however, in most cases, in practice, all measures on the problem under consideration are reduced to the use of antibacterial agents. Excessive and irrational use of antibiotics is accompanied by an increase in the resistance of microorganisms and fungi, toxic reactions develop, humoral and cellular factors of the body's immune defense are suppressed, vitamin metabolism is disrupted. The

way out of this situation is the constant synthesis of new chemotherapeutic agents with pronounced antibacterial activity, the use of complex preparations or the search for natural remedies, including herbal remedies with high therapeutic efficacy and the absence of side effects. All of the above served as the basis for choosing the presented topic.

The experience of many decades shows that in the pathology of the gastrointestinal tract in calves, the role of individual components of the complexes of drugs recommended for the pathogenetic therapy of this disease should not be overestimated. This also applies to biological agents, probiotics, which are widely used in the practice of combating gastrointestinal pathology in newborn calves. Probiotics are indispensable therapeutic and prophylactic agents, as part of their main function in the complex of pathogenetic therapy - normalization of intestinal microflora.

However, due to the variety of causes of dyspepsia in calves and, to a large extent, immunological, the therapeutic use of these drugs in production conditions does not always lead to stable results. The potential of existing non-medicinal treatments, namely phytopreparation therapy for acute functional pathology of the gastrointestinal tract in productive animals, has not been studied in industrial veterinary medicine. Nuts can be classified as natural bioconcentrates by their nutritional value. With a low moisture content, nuts have a unique complex of micro- and macronutrients. Since ancient times, nuts have been believed to activate physical and mental activity, promote longevity, and provide an energy balance in the human body. The dissemination of the results of new research on the benefits of nuts, obtained at leading universities in the world, contributes to an increase in nut consumption. The international industry of nut production and processing has been actively developing in recent decades and is characterized by the highest growth rates compared to other types of agro-industrial business. Over the past 10 years, global nut production has increased by almost 40%, and sales volumes have increased by 116%.

A particularly sharp jump in demand was observed for walnuts, as the most important alternative source of basic physiologically active compounds replacing animal-derived foods. In the USA, a 2-fold increase in walnut consumption has been established over the past five years. Many experts on healthy eating agree that the healthiest nut is the walnut. Researchers have found that walnuts contain the highest content of polyunsaturated fatty acids compared to other types of nuts, walnuts also contain a large number of antioxidants, polyphenols and other biologically active substances.

The significant nutritional value of such "superfoods" as walnuts is associated with the risk of activation of oxidative processes at any stage of commodity movement. Walnuts are among the products most at risk of oxidative damage at the stages of storage, transportation and sale. It should be borne in mind that specific botanical varieties grown in different geographical regions have an individual chemical composition that determines the intensity of the ongoing oxidative processes, so nuts of different batches have different storage potential. The lack of a traceability system for purchased batches of nuts at the stages of production, logistics and sales, as well as the lack of objective methods for assessing the potential level of shelf life, leads to incorrect determination of the shelf life of walnuts, and as a result, more than 30% of walnuts with signs of rancidity are sold in retail chains.

The productivity of animals is directly related to their genetic ability to deliver nutrients to organs and tissues, convert them into nutrients, and then use them as products. The efficiency of this transformation is determined by the level of metabolism in the body. Tissues in the animal body consist of many cells in which complex metabolic processes are continuously taking place [10,11].

Most living cells are capable of long life by performing their special functions, self-regulation and self-reproduction. For this, it is necessary to continuously supply enough necessary oxygen, nutrients and biologically active substances to each cell through the blood, and to return to the blood the waste products of metabolism from the cells [12,13]. Therefore, the composition, structure and functional activity of the cell are formed depending on how regularly and in what quantity the necessary components enter the cells.

Medicinal components, vitamins and minerals in plants play a special role in the proper metabolism of the body. Their deficiency, excess or imbalance in the body is accompanied by a special pathology, characterized by a violation of metabolic metabolism, a decrease in productivity, intolerance to diseases, a slowdown in the growth and development of young animals, a weakening of the reproductive function and fertility of adult animals, and the birth of non-viable offspring [14]. The normal growth and development of the calf's body requires a large amount of minerals. Their lack leads to slow development, reduced productivity, weakening of the immune system [15].

Taking into account the above, vitamins and their preparations are widely used in practical livestock and poultry farming. Being part of coenzymes, vitamins are catalysts involved in the metabolism of many substances and necessary structural elements that have a significant impact on the functioning of all systems, including the immune system [16].

The environment is rich in natural sources of vitamins and minerals, it is, of course, plants. Recently, in the field of veterinary medicine, the use of plant-based medicines in the treatment of metabolic disorders in children has been showing results. Walnuts can be included among such properties [7]. Walnut and its products (leaves and fruits) include fat - 15%, carbon - 30 g/kg, lysine - 3.0%, multienzyme complex - 1.5%, calcium - 26.0%, phosphorus - 8, 2%, sulfur - 24 g/kg, magnesium - 35 mg/kg, zinc - 950 mg/kg, copper - 158 mg/kg, manganese - 13 mg/kg, cobalt - 44 mg/kg, iodine - 38 mg/kg, mercury - 0.9 mg/kg, vitamin A - 400000 IU, vitamin D3 - 200000 IU, vitamin E - 200 mg/kg, phospholipids - not less than 5% and essential oils [17,18]. It is clear that these minerals are very necessary for human and animal life.

In our research, on the basis of walnut tincture, which was used as a therapeutic drug, for the first time, the immune indicators of calves were studied in hematological and different functional conditions. As a result, the possibility of using the drug for functional activation of non-specific factors of the immune system was confirmed, and the optimal dosage and method of using the drug were determined.

Research results and analysis. Due to insufficient feeding of female animals, dyspepsia occurs in calves, as a result of which symptoms such as lack of quality colostrum, underdevelopment of digestive organs, and improper digestion of colostrum are formed. Detailed information about the optimal dosage and methods of using the drug is indicated in our previous articles [19].

Dyspepsia can be simple and toxic. Simple dyspepsia is accompanied by disturbances in the function of the stomach and intestines. Meanwhile, during toxic dyspepsia, the metabolism is disturbed and the whole body is poisoned. Toxic dyspepsia can be a consequence of simple dyspepsia. The use of medicinal plants is more effective than other synthetic drugs in the treatment and prevention of diseases of the gastrointestinal tract in newborn calves. Medicinal plants have the ability to strengthen the anti-inflammatory action, normalize the functional activity of digestive systems, and reduce exudation in the inflammatory site. In addition, it improves the functioning of motor and secretory functions, the enzymatic activity and acidic environment of the stomach, and activates the production of bile. In the treatment of gastro-intestinal diseases in calves, decoctions of plants with astringent properties, such as willow, rosehip, rosehip, sorrel, plantain, show good therapeutic properties.

To fulfill the stated goals and objectives, the main research work was carried out in the research laboratory of the department, the Kazakh-Japanese Innovation Center at KazNAIU, the biochemical and immunological laboratory of the Warmian-Masurian University (Poland), in the clinical and diagnostic laboratories of Almaty, scientific and production experiments in the conditions of the veterinary clinic of KazNAIU and the economic entities of Almaty and Turkestan region. The following scientific methods were used to achieve the objectives set in the project: 1) The prevalence of diseases of the digestive system in calves, its etiology and pathogenesis were studied in farms of the Almaty and Turkestan regions. The technology of preparation, drying, storage and preparation of drugs was carried out according to the methods described by Turishchev S.N. 2) Pharmacological properties and preclinical studies of the prepared phytopreparations were carried out according to Khabriev R.U. [13], Imran M., Rasool N., Rizwan K. Et al. [14] on laboratory animals (guinea pigs, white mice, frogs, rabbits) in the conditions of the veterinary clinic of KAZNAI animals. 3) Hematological blood tests (erythrocytes, hemoglobin, leukocytes, leukoformula) were performed in an educational and scientific diagnostic laboratory using an automatic MS 4/5 analyzer (France). 4) The amount of total protein, protein fractions, ALT and AST were determined using a comparative near-infrared spectroanalyzer "Infrapid-61" camera for horizontal electrophoresis CompactDualMini (Belgium), Agilent Technologies 6850 gas chromatograph. 5) Immunoglobulins were determined to study the immune status of animals.

Targeted use of new, promising phytopreparations requires morphofunctional and biochemical analysis of organs in the animal body. In this regard, an important element in the assessment of structural changes is the reaction of calves to pathological changes during the use of medicinal plants against diseases of the digestive system.

Since 2020, the use of walnut infusion or decoction during the dyspepsia of calves has been studied among the teachers of the department. Tools and equipment used during the research: hematological analyzer, distiller, electric water distiller, bidistillator, electric laboratory scale, weighing cabinet, electric calorimeter, pH meter, centrifuge, thermostat.

Hematological, biochemical and immunological indicators of calves were studied in the process of conducting studies on the therapeutic effect of infusion prepared from walnuts on calves suffering from dyspepsia. We determined the amount of leukocytes, erythrocytes, and hemoglobin in the blood in the BioChem Sa7 analyzer and by generally accepted methods. That is, the composition of hemoglobin and erythrocytes was determined by a photoelectric erythrohemometer based on the method of I.I. Sipko, and

the number of leukocytes was calculated in the Goryaev chamber. The level of total protein in blood serum was determined by the refractometric method RL 140, the level of protein fractions was determined by I.P. Chondrachin was determined based on the turbidimetric nephelometric method.

For this purpose, we used non-linear intact females and males of mongrel white mice with an initial body weight of 18-22g, previously quarantined for two weeks in the vivarium of the KazNAIU. A total of 20 mice were used, distributed into 2 groups of 10 animals each. The animals were included in the groups considering their equal distribution according to gender. The first EG received a walnut infusion, and the second served as a CG and received distilled water (Table 2). To inject the components of the preparation, a 1-1-10:100 reusable injection syringe was used, to which a special olive-tipped needle was attached. The biological effect of the phytopreparation on the body of laboratory mice was evaluated considering their clinical condition and responses after a single dose. The duration of the experiment was 14 days, after which they were euthanized under ether anesthesia to assess the condition of internal organs.

Table 1 – Elemental composition of the walnut phytopreparation

Indicator (element)	Unit of measurement	Quantity
Macronutrients		
Potassium	mg/100mL	70.1
Calcium	mg/100mL	20.0
Magnesium	mg/100mL	1.2
Sodium	mg/100mL	76.0
Micronutrients		
Mercury	mg/100mL	0.23
Iron	mg/100mL	0.5
Cadmium	mg/100mL	0.0002
Manganese	mg/100mL	0.091
Copper	mg/100mL	0.59
Molybdenum	mg/100mL	less than 0.001
Lead	mg/100mL	0.075
Zinc	mg/100mL	0.19
Cobalt	mg/100mL	0.5
Nickel	mg/100mL	0.148
Chrome	mg/100mL	0.26

Table 2 – Experiment design to determine the acute toxicity of the phytopreparation when administered per os to mongrel white mice (n=10)

Group	Tested component	Sex of the animal	Number of animals	Method of introduction	Dose, mL
experimental	Walnut leaves infusion	Male	5	Per os	0.5
		Female	5	Per os	0.5
Control	Distilled water	Male	5	Per os	0.5
		Female	5	Per os	0.5

For a more objective assessment of the general condition of calves, when the phytopreparation was included in the treatment regimen, hematological blood parameters were studied on the first day of the experiment, and then on the 7th and 11th days after the start of the experiment. The indicators of the hematological status of clinically healthy calves (the intact group) were regarded as the norm.

For a comparative assessment of therapeutic measures against dyspepsia in calves in the early postnatal period, two groups of animals from the EG were formed and given the decoction daily from the first day of life at a dose of 250-300mL per day. The CG consisted of animals treated according to the scheme used in the farm Ig determination.

Determination of the M class Ig. In a measuring flask per 1 liter, 0.28g of veronal, 0.21g of medinal, and 0.024g of zinc sulfate were dissolved in redistilled water. Before the final solution was brought to the mark, the pH was checked, which should be 7.5. 0.1mL of the test serum was added to 6mL of zinc solution

and nephelometric analysis was performed. The amount of class M Ig (macro globulins) was determined by optical density.

To determine class A Ig, a reagent was prepared, 1 liter of which contained 189.0g of ammonium sulfate and 29.3g of NaCl. This reagent can be stored for a long time in a closed container.

The determination process. 0.1mL of the test serum was added to 6mL of zinc solution and nephelometric analysis was performed. The amount of class A Ig was found from the obtained optical density and using a calibration graph. Reference immune sera of human and animal blood with a known concentration of Ig were used to plot the graph. For example: one ampoule (1mL) of the reference serum contains the following amounts of Ig of the corresponding class:

G: 11.94mg/mL or 1,194mg%

M: 1.33mg/mL or 133mg%

A: 1.88mg/mL or 188mg %

One standard ampoule of serum was taken, and 1mL of distilled water was added and dissolved without foaming. Then nine test tubes were taken, each previously filled with 1mL of saline solution. 1mL of the serum solution was transferred to the 1st tube, and thoroughly mixed, then 1mL of this solution was taken and transferred to the second tube. In the 9th tube, 2mL was obtained after mixing. Thus, the required amount of dilution of the standard solution with a predetermined amount of protein was achieved. The optical density of the solution was measured with a color density meter (CDM) at a wavelength of 400h using 10mL cuvettes. The test tubes with the same solutions, but without serum, were the control variant. The determination of class G Ig was conducted in two test tubes. For the first test tube, a zinc-salicylic reagent of high ionic strength was prepared, which contained 1.875g of zinc sulfate and 57.14g of salicylic sodium. The pH value of such a solution should be 7.3. In the reaction of the first test tube, serum was used in which B-lipoproteins were removed since they are also precipitated by zinc-salicylic solution and increase the indicators. To remove them, 2mL, 0.025M of calcium chloride was poured into a test tube, and 0.2mL of the test serum and 0.04mL of 1% heparin solution were added to it. The mixture was stirred, while the solution became cloudy from the precipitation of B-lipoproteins. This mixture was placed in the refrigerator for 30 minutes to improve the flocculation reaction, then the precipitate was separated by centrifugation for 20 minutes at 4000rpm. The resulting supernatant was used for the reaction in an amount of 1.1mL. A quantity of 1.1mL of supernatant was added to 5mL of zinc-salicylic reagent, while class G Ig precipitated intensively. Nephelometric changes also occurred, and the amount of Ig was determined by the optical density.

The content of hemoglobin and red blood cells was determined by a photoelectric erythrohemometer using the method developed by Danilevskaya et al. (2005) and the number of white blood cells was calculated in the Goryaev chamber. The total protein levels in the blood serum were determined by the RL 140 refractometric method according to the refractive index of the substance, the levels of protein fractions were determined based on the turbidimetric nephelometric approach developed by (Kondrakhin et al. 2004). Gas chromatography-mass spectrometry allowed us to identify disturbances of the intestinal microbiota in conditions of insufficient information capacity of routine bacteriological research and obtain an individual detailed microbiological passport.

Treatment is carried out taking into account the severity of the disease. Treatment measures should first of all be aimed at elimination of the etiology of the disease, maintenance of water exchange, acid-alkaline balance. In a mild form of animal disease, a dietary ration for therapeutic purposes is sufficient. It is very necessary to carry out comprehensive treatment measures in the severe course of the disease. In the course of the research, 20 calves suffering from simple dyspepsia in "Azat" farm, Almaty region, Rayymbek district, were selected and divided into 10 experimental and control groups. Calves in the experimental group were treated with 250 ml of walnut infusion twice a day, while calves in the control group were treated with medicinal preparations used in the farm (Table 1).

Hematological studies have shown that walnut infusion has an effective effect on the amount of red blood cells and hemoglobin in the blood of animals. As can be seen from the table, the concentration of erythrocytes in the cubs of the experimental group was $6.02 \times 10^{12}/l$ in the first days of the study, and at the end of the study it was $8.12 \times 10^{12}/l$, which corresponds to the physiological norm of the animals and is 14.8% higher than the cubs in the control group ($P < 0.05$). Data are presented in tables.

Table 3 – Treatment pattern

Group	Number of calves	Administered medications	Input method	Amount of drug	Input frequency
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I	10	Walnut infusion	In the form of tincture	250 ml	2 times a day for 3 days in a row
II	10	Bicillin 3	For muscle meat	5-7 thousand IU/kg	1 time a day for 5 consecutive days
Note: I - experimental group; II - Control group					

The results of the study show that the hemoglobin level in the blood of the control group animals was 96.60 ± 4.15 in the first days of the study, and at the end of the study it was 100.30 g/l, while in the experimental group these changes were 98.47 ± 5.25 - 106.22 g/l. was. The observed changes indicate that erythropoiesis, protein metabolism and other metabolic processes were strengthened due to the increase in hepatoprotective functions of the liver in the animals of the experimental group under the influence of the used drug.

Table 4 – Morphological parameters of the blood of calves when using walnut tincture

Indicators	Control	Experience	Compared to control %	Normal size
Early days of research				
Erythrocytes, 10×12	$6,36 \pm 0,42$	$6,02 \pm 0,61$	94,6	5-7,5
Leukocytes, 10×9	$15,32 \pm 1,19$	$14,79 \pm 1,64$	97,3	4,5-12
Hemoglobin, g/l	$96,60 \pm 4,15$	$98,47 \pm 5,25$	101,9	90-120
Last days of research				
Erythrocytes, 10×12	$7,07 \pm 0,63$	$8,12 \pm 0,89$	114,8	5-7,5
Leukocytes, 10×9	$13,87 \pm 2,10$	$12,06 \pm 1,86$	86,9	4,5-12
Hemoglobin, g/l	$100,30 \pm 5,78$	$106,22 \pm 6,05$	105,9	90-120

The concentration of leukocytes decreased to $12.06 \times 10^9/l$ compared to the first day of the experiment and the values of control group animals ($P < 0.05$), that is, it corresponded to the physiological norm. This data is evidence of the absence of pathological changes in the body of animals, the formation of cellular factors of non-specific protection of the body, and the strengthening of the immune system.

In the control group, the level of leukocytes was higher than the physiological norm, that is, $13,87 \times 10^9/l$ ($P < 0.05$). The presence of leukocytosis, the deviation of the leukocyte amount from the physiological level is a manifestation of the presence of a pathological process in the body, and the improper formation of the immune system.

During the analysis of the indicators of immunobiological reactivity (table 3), the concentration of total protein in the blood of both groups ($62,42$ g/l in the control and $61,79$ g/l in the experimental group) and the amount of albumin (in the animals of the experimental group the indicator was at the level of $24,77$ g/l, while the control group $25,34$ g/l) was at the same level during the first days of the study.

The concentration of α - and β -globulins in the blood of calves was higher in the control group than in the experimental group and was $11,23$ and $11,44$ g/l, while in the experimental group these indicators were $11,01$ and $11,22$ g/l. appeared at the level. The results of the study show that the amount of γ -globulin fractions in the blood was somewhat higher in the animals of the experimental group ($12,39$ g/l), while in the control group this indicator was $11,05$ g/l.

Table 5 – Biochemical parameters of the blood of calves when using walnut tincture

Group	Protein	Albumin, g/l	α -globulin, g/l	β - globulin, g/l	γ - globulin, g/l
Early days of research					
Control	$62,42 \pm 3,43$	$24,77 \pm 2,13$	$11,23 \pm 0,76$	$11,44 \pm 0,69$	$11,05 \pm 0,79$
Experience	$61,79 \pm 2,86$	$25,34 \pm 2,72$	$11,01 \pm 0,66$	$11,22 \pm 0,73$	$12,39 \pm 0,89$
Last days of research					

Control	63,46±3,28	26,71±0,59	11,56±0,36	12,30±0,48	12,09±0,52
Experience	66,48±3,90	24,07±0,59*	12,58±0,47*	12,89±0,31	15,77±0,73*

* —P<0,05 ** —P<0,01

By the end of the research, it was observed that the total protein concentration in the blood serum of the animals of the experimental group increased by 5.2% compared to the control. Along with an increase in total protein, there is an increase in globulins in the blood of animals of the experimental group, but on the contrary, we can observe a simultaneous decrease in the concentration of albumin. Thus, the amount of α -globulins in the experimental group increased by 11.2%, β -globulins by 5.6%, and the concentration of γ -globulins by 30.4%. These indicators in the control group are 12.09±0.52.

A decrease in serum albumin is very common. We think that the decrease in the indicator is due to the increased permeability of the capillaries and the release of albumin into the lymph and intercellular space. According to the research, we can see that the number of albumins decreased from 26.71±0.59 in the control group to 24.07±0.59 in the experimental group. Thus, the use of walnut infusion during dyspepsia in calves has an effective effect on the normalization of the level of protein and protein fractions. Indicators of intestinal microflora of calves are shown in Figure 1.

To understand the effect of walnut decoction on the state of immune protection in calves of the early postnatal period, an immunological study of animal blood serum was conducted, which included the study of the following indicators: IgA, IgM, IgG. The results of the study of blood immunological parameters after two weeks of the experiment are presented in Table 4.

Table 6 – Immunological parameters of calves' blood serum (M±m; n=5)

Indicator	Group	
	Control	Experienced
IgA, g/l	1,55±0,20	1,75±0,50
IgM, g/l	0,59±0,03	0,65±0,20
IgG, g/l	1,16±0,32	1,0±0,10

The IdA and IdM values in animals of both groups had no significant differences at 30 days of age ($P>0.05$) and amounted to 1.58±0.4 g/l, 0.55±0.02 g/l and 1.62±0.40 g/l, 0.45±0.04 g/l, respectively. IgG values in calves of the experimental group were significantly higher ($P<0.05$) than these values in animals of the control group, and respectively amounted to 2.65±0.70 g/l and 1.85±0.40 g/l. Based on the data obtained, it can be concluded that the use of phytopreparation has a positive effect on the main indicators of immunity (IgA, IgM, IgG) of calves of the early postnatal period. A similar situation was observed with respect to IgA, IgM, IgG, the concentration of which in the blood of calves receiving the drug at two weeks of age was 1.55±0.20 g/l, 0.59±0.03 g/l, 1.16±0.32 g/l, respectively, and in calves of the control group 1.75±0.50 g/l, 0.65±0.20 g/l, 1.0±0.10 g/l. However, there were no significant differences in immunoglobulin levels in the calves of these groups. Thus, the inclusion of walnut decoction in the treatment regimen makes it possible to increase the effectiveness of therapeutic measures by reducing the recovery time of calves with bronchopneumonia.

Conclusion

One of the main tasks of any branch of animal husbandry is to obtain and maintain healthy offspring. However, the health of animals of all ages can be weakened due to the conditions of keeping, feeding and using animals, as well as the widespread use of antibiotics in animal husbandry in recent years, which leads to a lack of symbiotic microflora in the animal body, which participates in the digestion of food, the synthesis of amino acids and vitamins, and has a positive effect on immunity. also has an antagonistic effect on pathogenic and conditionally pathogenic microflora.

Symptoms of dyspepsia in the calves of the farm where the experiments were conducted were observed in 80.0% of the studied calves. The most common causes of the disease are: violation of the regime of feeding and housing and, as a result, a decrease in resistance in calves born prematurely. Clinically, dyspepsia in sick calves is manifested by a general depressed state, the animals often lie down, do not pay attention to their surroundings, periodically tremble, and lick their sides. There is an increase in intestinal peristalsis, during auscultation of the intestine, it is characterized by such symptoms as loud and

constant rumbling, increased defecation acts, stool mass dilution, sharp sour-rotten smell, change in the color of stool. Immunological studies show that under the influence of walnut tincture, the activity of immune cell elements in the organs of the digestive system increases.

Due to the development of dyspepsia and dehydration in the morphological composition of blood, sick calves have clear erythrocytosis, hyperchromia and an increase in hematocrit. Pathology of the digestive system, i.e. protein metabolic disorder during dyspepsia, abnormalities in morphological indicators were detected. Use of phytopreparation results in reduction of hematological parameters of blood, including leukocytes by 7.8%, erythrocytes by 1.5%, total protein by 3.7%, albumins by 2.0%, globulins by 8.4%. formed an increase to.

In the calves of the experimental group, the level of the disease is characterized by a low level. Complete elimination of disease symptoms was registered on the 9th day of treatment. Clinical recovery of calves in this group was 7 days on average, therapeutic efficiency was 90.0%. The amount of pathogenic microflora increased in calves in the control group, which contributed to gastrointestinal disorders. This shows that the used egg preparation creates favorable conditions for the development of representatives of normal flora and prevents the rapid development of pathogenic microflora. Calves that did not receive the drug were significantly behind the body weight of the animals of the experimental group. The weight of the calves treated with phytopreparation was 13.0% ($p < 0.01$) more than the calves in the control group. The average daily weight gain of animals in the control group was 24.0% less in 15 days after birth, and 31.0% ($p \leq 0.05$) in 1 month, compared to animals receiving the drug. We recommend using a complex of therapeutic measures for calf dyspepsia of various etiologies 2 times a day for 5 days in the amount of 250 ml with food.

A comparative analysis of the two treatment regimens showed that in calves of the experimental group, the duration of the disease was on average 2.5 ± 0.3 days with phytotherapy, while in animals that did not take the drug, the signs of the disease persisted on average up to 5.2 ± 0.5 days from the start of treatment according to the scheme adopted by the farm. Thus, it can be concluded that the use of walnut decoction is a more effective remedy in the treatment of calf dyspepsia in the early postnatal period. The results of an immunological study of blood serum after treatment of calves showed that the level of IdM and IgG in animals treated with phytopreparation was significantly higher than in animals treated according to the traditional farm scheme. The levels of IgM and IgG in the calves of the experimental group were significantly higher ($P < 0.05$) than in the animals of the control group by 27.0% and 48.0%, respectively. The main research results achieved by us in the implementation of the tasks set are reflected in the following conclusions:

1. A technology has been developed for the production of phytopreparation (infusion and extract) from plant raw materials in liquid dosage form for parenteral use. The product is a composition of walnuts, includes tannins, alkaloids, flavonoids, terpene compounds, higher hydrocarbons, as well as 16 macro- and microelements.

2. The phytopreparation is low-toxic for warm-blooded animals when administered orally and parenterally in doses of 20.0 ml / kg body weight. LD50 and LD100 have not been established and, in accordance with the classification of chemical compounds according to GOST 12.1.007-76, belongs to hazard class IV – low-toxic substances. The product does not have subchronic, chronic toxicity, local irritant, allergenic, embryotoxic and teratogenic effects.

3. An additional three-time application of phytopreparation in a dose of 250-300 ml to the main treatment of calves with dyspepsia reduces the recovery time by an average of 2.3 days.

4. In calves with dyspepsia, exposure to phytopreparation leads to a reduction in the normalization time of hematological and biochemical parameters of the blood. In the range of blood test dates established for experiments, according to hemograms, protein metabolism, this is possible on the 5th day after the start of treatment.

5. In industrial conditions, the use of phytopreparation expands the practical therapeutic possibilities of combating dyspepsia in calves, this method, in combination with conventional pathogenetic treatments, can achieve therapeutic effectiveness of the order of 20-25% and reduce mortality by an average of 30%. Veterinary measures when using phytopreparation are, in experience, 20% more effective than using antibiotics.

The results obtained from this study are used in the creation of educational materials, scientific articles and methodical guidelines related to diseases of the gastrointestinal tract of calves, as well as in the educational process, including conducting laboratory-practical classes and lectures in the «Veterinary» specialty.

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ТҮЙІН

Жаңғақ мәдениеті ежелгі дәуірден басталады және керемет дәмі мен жоғары тағамдық құндылығы бар тұқымдарды (дәндер, "жаңғақтар") қамтиды және әр түрлі тағамдар, халвалар, кәмпиттер, торттар, торттар және басқа да тәттілер жасау үшін табиғи түрде мол жейді. Кавказда жаңғақ әсіресе танымал, ол ежелден қасиетті ағаш болып саналған. Кавказда жаңғақ жемістерін жеуге арналған көптеген рецепттер бар.

Жапырақтары ұзақ уақыт бойы жараларды емдейтін және витаминдік агент ретінде қолданылған. Халықтық медицинада жапырақтары мен перикарпының қайнатпалары мен инфузиялары асқазан мен гинекология, бүйрек және қуық аурулары, стоматит және тонзиллит кезінде қолданылады, сонымен қатар витамин тапшылығы, сарқылу, атеросклероз кезінде метаболизмді жақсартатын және қалпына келтіретін құрал ретінде ішеді. Жапырақтарда ащы және хош иісті заттар бар, олардың булануы кейбір адамдарда бас ауруын тудырады. Олар Закавказьеде тау өзендерінде ақымақ балық аулау үшін қолданылады (форель).

Оңтүстік аймақтарда жаңғақ сәндік өсімдік ретінде кеңінен өсіріледі. Піспеген жемістер витаминдік концентраттар мен витаминделген тағамдарды (Джем) дайындау үшін қолданылады. Піспеген жемістер жоғары қоректік, жағымды дәмге ие және диеталық тамақтану мен кондитерлік өнімдерді дайындау үшін қолданылады. Алайда, витаминдік препараттарды өндіру үшін тағамдық құндылығы жоғары жемістерді емес, перикарпты (жаңғақтарды алғаннан кейін), сондай-ақ С дәрумені 100 г-ға 4,500 мг жететін жапырақтарды қолданған жөн.

Жаңғақ қабығында көптеген таниндер бар. Перикарпты теріні илеу үшін қолдануға болады. Жапырақтар, қабықтар мен перикарптар маталарды, жүнді, кілемдерді, сондай-ақ шашты бояу үшін қолданылған.

РЕЗЮМЕ

Культура грецкого ореха началась с древнейших времён и семена (ядра, «орехи»), обладающие замечательным вкусом и высокой питательностью и повсюду в изобилии употребляемые в пищу в натуральном виде, идут на приготовление различных блюд, халвы, конфет, тортов, пирожных и других сладостей. Особой популярностью орех пользуется на Кавказе, где он издавна считался священным деревом. На Кавказе существует множество рецептов употребления плодов грецкого ореха.

Листья издавна применялись как ранозаживляющее и витаминное средство. Отвары и настои листьев и околоплодников в народной медицине применяют при желудочных и гинекологических заболеваниях, болезнях почек и мочевого пузыря, стоматитах и ангинах, а также пьют как улучшающее обмен веществ и общеукрепляющее средство при авитаминозах, истощении, атеросклерозе. Листья содержат горькие и ароматические вещества, испарения которых причиняют некоторым людям головную боль. Они употребляются в Закавказье для одурения рыбы (форели) в горных речках.

В южных районах грецкий орех широко культивируют как декоративное растение. Незрелые плоды используют для изготовления витаминных концентратов и витаминизированных продуктов (варенье). Незрелые плоды высокопитательны, обладают приятным вкусом и используются для диетического питания и приготовления кондитерских изделий. Однако, для производства витаминных препаратов целесообразнее использовать не сами плоды, имеющие большую пищевую ценность, а околоплодники (после извлечения орехов), а также листья, в которых содержание витамина С достигает 4.500 мг на 100 г.

Кожура орехов содержит много дубильных веществ. Околоплодники можно использовать для дубления кожи. Листья, кору и околоплодники употребляли для окраски тканей, шерсти, ковров, а также волос.