ISSN 2706-6266
ISSN 3007-1062
ISSN 3007-1070

SRSTI 34.41.01 DOI: https://doi.org/10.62724/202540403

Zakirova Faruza Bakitzhanovna[1*]
candidate of Agricultural Sciences, associate professor,
Zhangir Khan West Kazakhstan Agrarian Technical University, Uralsk, Kazakhstan,
faruza_zakir@mail.ru, ORCID ID: 0000-0002-4467-5427

Yertleuova Balaussa Otargaliyevna[2]
PhD, associate professor
Zhangir Khan West Kazakhstan Agrarian Technical University,
Uralsk, Kazakhstan, aliba.87@mail.ru, ORCID: 0000-0003-1990-570X

Nurzhanova Farida Khamidulliyevna[3]
master of veterinary sciences,
Zhangir Khan West Kazakhstan Agrarian Technical University, Uralsk, Kazakhstan,
chinnur71@mail.ru, ORCID ID: 0000-0001-8700-6357

Khalidullina Aidana Samatovna[4]
master's degree student in Veterinary Medicine,
Zhangir Khan West Kazakhstan Agrarian Technical University, Uralsk,
Kazakhstan, anadia_love@mail.ru, ORCID ID: 0009-0007-0438-0118

Baktygerey Yeldar Zhanbolatuly[5]
veterinary vedicine student
Zhangir Khan West Kazakhstan Agrarian Technical University, Uralsk, Republic of
Kazakhstan, batygerey.yeldar@mail.ru, ORCID ID: 0009-0001-3739-968X

EFFECTIVENESS OF USING STARTIN IN CALF DYSPEPSIA

Abstract. The article presents the results of a study of the etiological factors contributing to the occurrence of dyspepsia in calves and the methods of its treatment in the "Uali" farm, Taskalinsky district, West Kazakhstan region. During the treatment of calf dyspepsia, the most economically efficient treatment methods used in this farm were considered. Therefore, it is important to use biologically active substances for treatment, including therapy with natural plants (phytotherapy). Such substances include triterpenoid raw materials. The term "dyspepsia" was first proposed by the Austrian physician Widerhofer in 1875. Dyspepsia is a clinical condition accompanied by impaired functional activity of the gastro-clinical tract without any pathological anatomical changes.

Twelve newborn calves from the farm were used as research material. The study focused on the age indicators of the young animals, feeding characteristics, housing conditions, and the presence of exercise. The research work was aimed at identifying the etiological causes of dyspepsia in calves on the farm and determining the effectiveness of using natural Startin in comparable dosages in calves suffering from dyspepsia. Startin is a combined preparation, a complex of powdered substances packaged in three polyethylene bags with a total weight of 550 g. Startin helps suppress pathogenic microflora in the small intestine, prevents the formation of casein bezoars in the abomasum, improves digestion, and normalizes the body's water–salt balance.

ISSN 2706-6266
ISSN 3007-1062
ISSN 3007-1070

Keywords. rehydration therapy, phytotherapy, Startin, calf dyspepsia, etiological factors, pathogenic microflora, clinical indicators

Закирова Фаруза Бакитжановна[1*]
ауыл шаруашылығы ғылымдарының кандидаты, доцент,
Жәңгір хан атындағы Батыс Қазақстан аграрлық-техникалық университеті, Орал,
Қазақстан, faruza_zakir@mail.ru, ORCID ID: 0000-0002-4467-5427

Ерлеуова Балауса Отарғалиқызы[2]
техника ғылымдарының кандидаты, доценті,
Жәңгір хан атындағы Батыс Қазақстан аграрлық-техникалық университеті, Орал,
Қазақстан, aliba.87@mail.ru, ORCID ID: 0000-0003-1990-570X

Нұржанова Фарида Хамидуллиевна[3]
ветеринария ғылымдарының магистрі,
Жәңгір хан атындағы Батыс Қазақстан аграрлық-техникалық университеті, Орал,
Қазақстан, chinnur71@mail.ru, ORCID ID: 0000-0001-8700-6357

Халидуллина Айдана Саматқызы[4]
ветеринария магистратурасының студенті,
Жәңгір хан атындағы Батыс Қазақстан аграрлық-техникалық университеті, Орал,
Қазақстан, anadia_love@mail.ru, ORCID ID: 0009-0007-0438-0118

Бақтыгерей Эльдар Жанболатұлы[5]
ветеринария мамандығы студенті,
Жәңгір хан атындағы Батыс Қазақстан аграрлық-техникалық университеті, Орал,
Қазақстан, yeldar@mail.ru, ORCID ID: 0009-0001-3739-968X

БҰЗАУ ДИСПЕПСИЯСЫНДА СТАРТИНДІ ҚОЛДАНУДЫҢ ТИІМДІЛІГІ

Аңдатпа. Мақалада Батыс Қазақстан облысы, Тасқала ауданы, Уәли шаруа қожалығында бұзауларда диспепсияның пайда болуына ықпал ететін этиологиялық факторлар мен оларды емдеу әдістерін зерттеу нәтижелері берілген.

Бұзау диспепсиясын емдеуде осы шаруашылықтағы ең тиімді емдеу әдістері қарастырылды. Сондықтан емдеу үшін биологиялық белсенді заттарды қолдану, оның ішінде табиғи өсімдіктермен емдеу (фитотерапия) маңызды. Бұл заттарға тритерпеноидты шикізат жатады.

«Диспепсия» терминін алғаш рет 1875 жылы австриялық дәрігер Видергофер ұсынған. Диспепсия - асқазан-ішек жолдарының функционалдық белсенділігінің бұзылуымен жүретін, патологиялық және анатомиялық өзгерістерсіз жүретін клиникалық көрініс.

Зерттеуге материал ретінде шаруашылықтағы жаңа туған 12 бас бұзау алынды. Зерттеуде жас малдардың жас көрсеткіштеріне, азықтандыру, күтіп-баптау ерекшеліктеріне және оларда жаттығулардың болуына назар аударылды.

Зерттеу жұмысы шаруашылықтағы бұзаулардағы диспепсияның этиологиялық себептерін анықтауға және диспепсиямен ауыратын бұзауларға салыстырмалы дозада табиғи стартинді қолдану нәтижелерінің тиімділігін анықтауға бағытталған.

Стартин – біріктірілген дәрілік зат, жалпы салмағы 550 г, үш полиэтилен пакетке салынған ұнтақ тәрізді заттар кешені. Стартин ащы ішекте патогендік микрофлораны

ISSN 2706-6266
ISSN 3007-1062
ISSN 3007-1070

басуға көмектеседі, ұлтабарда казеиндік безоарлардың түзілуін болдырмайды, ас қорытуды жақсартады және дененің су-тұз тепе-теңдігін қалыпқа келтіреді.

Кілт создер. регидрациялық терапия, фитотерапия, стартин, бұзау диспепсиясы, этиологиялық факторлар, патогенді микрофлора, клиникалық көрсеткіштер

Закирова Фаруза Бакитжановна[1*]
кандидат сельскохозяйственных наук, доцент,
Западно Казахстанский аграрно-технический университет имени Жангир Хана,
Уральск, Казахстан, faruza_zakir@mail.ru, ORCID ID: 0000-0002-4467-5427

Ертлеуова Балауса Отаргалиевна[2]
кандидат технических наук, доцент
Западно Казахстанского аграрно-технического университета имени Жангир Хана,
Уральск, Казахстан, aliba.87@mail.ru, ORCID ID: 0000-0003-1990-570X

Нуржанова Фарида Хамидуллиевна[3]
магистр ветеринарных наук,
Западно Казахстанский аграрно-технический университет имени Жангир Хана,
Уральск, Казахстан, chinnur71@mail.ru, ORCID ID: 0000-0001-8700-6357

Халидуллина Айдана Саматовна[4]
студент магистратуры по ветеринарной медицине,
Западно Казахстанский аграрно-технический университет имени Жангир Хана,
Уральск, Казахстан, anadia_love@mail.ru, ORCID ID: 0009-0007-0438-0118

Бактыгерей Эльдар Жанболатулы[5]
студент ветеринарии,
Западно Казахстанский аграрно-технического университета имени Жангир Хана,
Уральск, Казахстан, yeldar@mail.ru, ORCID ID: 0009-0001-3739-968X

ЭФФЕКТИВНОСТЬ ПРИМЕНЕНИЯ ПРЕПАРАТА «СТАРТИН» ПРИ ДИСПЕПСИИ ТЕЛЯТ

Аннотация. В статье приведены результаты иследования этиологических факторов, способствующих возникновению диспепсии у телят и методам их лечения в крестьянском хозяйстве «Уали», Таскалинского района, Западно-Казахстанской области.

При лечении диспепсии телят были рассмотрены наиболее экономически эффективные методы лечения в данном хозяйстве. Поэтому для лечения важно использовать биологические активные вещества, в том числе лечение естественными растениями (фитотерапия). К таким веществам можно отнести тритерпеноидное сырье. Впервые термин «диспепсия» был предложен австрийским врачом Видергофером в 1875 году. Диспепсия – это клиническое проявление, сопровождающееся нарушением функциональной деятельности желудочно-клинического тракта, без каких-либо патолого-анатомических изменений. В качестве материала исследования было взято 12 голов новорожденных телят в хозяйстве. При исследовании уделялось внимание возрастным показателям молодняка, особенностям кормления, содержания и наличие моциона у них. Научно-исследовательская работа была направлена на выяснение

ISSN 2706-6266
ISSN 3007-1062
ISSN 3007-1070

этиологических причин возникновения диспепсии у телят в хозяйстве и определение эффективности результатов использования натурального стартина в сопоставимых дозировках на телятах, больных диспепсией.

Стартин – это комбинированный препарат, комплекс порошкообразных веществ, расфасованных в три полиэтиленовых пакета, общей массой 550 г. Стартин способствует подавлению патогенной микрофлоры в тонком отделе кишечника, предупреждает образование казеиновых безоаров в сычуге, улучшает пищеварение, нормализует водно-солевой баланс организма.

Ключевые слова. регидратационная терапия, фитотерапия, стартин, диспепсия телят, этиологические факторы, патогенная микрофлора, клинические показатели

Introduction. At present, the prevention of gastrointestinal diseases among animals is becoming socially significant. Specifically, the increase in contamination by diseases leading to food poisoning in humans when consuming products of animal origin, including pork and poultry, is associated with the detection and presence of pathogenic microflora such as Salmonella, Escherichia, Yersinia, and others. As these microorganisms accumulate in the organs and tissues of animals and poultry and as the resistance of the body decreases, translocation of intestinal microorganisms occurs in the organism (replacement of healthy cells with pathogenic ones).
Currently, as clinical practice demonstrates, the frequent occurrence of toxic dyspepsia among young animals, including calves, has the most negative impact on their physiological growth and development.

However, no specialized radical methods for the prevention and treatment of this disease currently exist. Therefore, ways to solve this problem are being comprehensively studied in the scientific field.

When treating dyspepsia in young animals (calves), it is necessary to consider methods of administering therapy that is maximally harmless to the body. Therefore, treatment with natural plants (phytotherapy), namely the use of biologically active substances for the organism, becomes important [1]. Three types of raw materials can be attributed to such substances. They possess anti-inflammatory, mineralocorticoid, hepatoprotective, and spasmolytic effects in diseases and activate the activity of the pancreas, although these substances are used less frequently in veterinary medicine. The simplest method of obtaining triterpenoid raw materials is large-scale industrial birch bark. As for its composition, birch bark contains up to 40% of such substances by volume [2,3,4].

Research objective. To study the etiological factors contributing to dyspepsia and to determine the effectiveness of using modern natural-based preparations for the prevention and treatment of calf dyspepsia in the “Uali” farm of the Taskali district, West Kazakhstan region.

Materials and methods. The research methodology consists in determining the effectiveness of the results obtained when using the natural plant-based preparation Startin in comparable doses through conducting scientific research on calves suffering from dyspepsia in the studied farm.

The term “dyspepsia” was first proposed by the Austrian physician Widerhofer in 1875. “Dyspepsia” refers to a clinical condition manifested by functional disorders of the gastrointestinal tract, in which no pathological anatomical changes are observed [5,6]. Dyspepsia is a disease that arises under the influence of various etiological factors. It is known that dyspepsia in newborn calves causes significant damage to farms. Reducing the high mortality of newborn calves, the productivity of affected animals in dairy and beef production,

ISSN 2706-6266
ISSN 3007-1062
ISSN 3007-1070

their precocity, and the costs of veterinary measures all decrease the profitability of dairy farming [7,8,9].

According to many researchers, the primary causes of this disease include, first of all, weak newborn offspring and violations of cow management technology during the second half of pregnancy. The occurrence of dyspepsia is influenced by complex causes, and this disease is polyetiological.

These factors may act simultaneously and in close interaction, and in most cases serve as a trigger mechanism for the onset of dyspepsia. Naturally, such complex etiology complicates the diagnosis and treatment of the disease. The following classification of dyspepsia based on etiological factors has been proposed:

1. Organic dyspepsia — occurs in calves with congenital hypotrophy. Congenital hypotrophy is a specific manifestation of genetic or developmental abnormalities of the fetus during intrauterine development.

2. Functional (reflex-stress) dyspepsia — arises due to strong exposure to various environmental irritants.

According to clinical progression, dyspepsia is divided into:

1. simple (mild) dyspepsia,
2. severe dyspepsia,
3. toxic dyspepsia.

According to many researchers, the occurrence of different forms of dyspepsia primarily depends on the physiological condition of the cow during pregnancy. Improper feeding and inadequate care of cows during gestation lead to the birth of weak calves prone to dyspepsia immediately after birth [10,11,12].

Feeding pregnant cows poor-quality feed results in metabolic disturbances and an increase in ketone bodies in the blood, which, when the detoxifying function of the liver is impaired, pass into the fetus through the placental barrier along with other non-oxidized metabolic products. This affects fetal sensitivity and may result in intrauterine intoxication.

Studies have shown that impaired digestion in newborn calves may be caused by cold colostrum. Colostrum at a temperature of 31–39°C enhances the secretory function of intestinal glands. When the colostrum temperature drops to 14–16°C, this function decreases, and the amount of colostrum entering the duodenum is reduced, which leads to diarrhea and dyspepsia. At the same time, it has been noted that sudden changes in air temperature in the cowshed negatively affect the bodies of newborn calves, and dyspepsia develops in such conditions [13].

Thus, in the poorly ventilated part of the cowshed, 40% of calves suffered from dyspepsia and 25% died, whereas in artificially ventilated and heated facilities only 10% of calves became ill and 2% died [14,15].

According to research data, severe diarrhea during dyspepsia leads to the loss of water, electrolytes, proteins, gamma-globulins, and vitamins. Thus, along with liquid fecal mass, large amounts of water, sodium, chlorides, potassium, and magnesium are eliminated from the calf's body; tissue dehydration occurs, metabolism is disrupted, and the blood thickens. The number of formed elements in the blood increases, while the liquid parts of the blood and lymph decrease.

Studies have established that dehydration is the main clinical sign of dyspepsia. A protective reaction of the body to chyme in the lumen of the duodenum and intestines is observed when the intestinal contents are diluted with water containing large amounts of endogenous sodium. During this process, the remaining cations—potassium, calcium, magnesium—and chloride anions are absorbed into the bloodstream. At the same time, sodium does not have time to be absorbed in the posterior parts of the intestine due to strong irritation.

ISSN 2706-6266
ISSN 3007-1062
ISSN 3007-1070

As a result, the high osmotic pressure created in these areas retains part of the water and digestive juices [16,17,18,19].

Incoming potassium fills the extracellular fluid of tissues and blood serum, creating a risk of hyperkalemia. Excess ionized potassium in the extracellular fluid increases the tone of smooth muscles, which in turn intensifies intestinal peristalsis. In addition, a response is noted in the higher levels of neuroendocrine regulation of physiological processes. The hypothalamus begins to secrete vasopressin, triggering a stress response in the body, resulting in increased water reabsorption from primary urine, decreased urine output, and the spread of toxins throughout the body due to catabolic products.

Let us consider in more detail the development of factors that provoke dyspepsia in calves. The balance of nutrition in calving cows and heifers is not maintained due to incomplete or poor-quality rations. The main causes of disruption in the biological complex “cow–fetus–newborn” include: imbalance of nutrients; consumption of coarse, mold-damaged feed; lack of active exercise; and stress caused by technological processes in livestock production. The deficiency of vitamins and microelements during the winter stall period reaches 30–70% of the animals’ normal requirements.

The risk of diarrhea in calves can be predicted if, during the calving period, cows have a total blood protein content below 71 g/L and gamma globulins below 22 g/L. If blood glucose levels in cows deviate beyond 2.05–2.94 mmol/L, the incidence of dyspepsia in calves increases by 4.5 times and mortality by 7.5 times. Biochemical urine tests show ketone bodies and protein. In the blood, decreases are observed in carotene to 0.275±0.012 mg%, sugar to 2.36±0.208 mmol/L, and total protein to 69.8±1.0 g/L. These findings indicate acidosis and latent disturbances of vitamin, carbohydrate–lipid, protein, and other metabolic processes [20].

The main cause is an imbalance between normal and conditionally pathogenic microflora. Violations of zooveterinary rules of feeding and caring for newborn calves lead to functional disorders of the gastrointestinal tract, but these are not the primary causes of the onset and development of duodenal inflammation, colibacillosis, and other conditions. Such disorders serve as prerequisites and a favorable environment for the activation of conditionally pathogenic microflora, thereby contributing to the occurrence of pathology in calves on the farm. If, against the background of these factors, favorable conditions exist for the inactivation (lack of disinfection, sanitation, etc.) and accumulation of conditionally pathogenic microbes, the severity of the disease increases and the number of sick animals rises.

Both in early studies and today, medicinal herbs are recommended for the treatment of newborn young animals. Depending on the etiology, clinical manifestations, and other factors, medicinal herbs are used separately or combined with other therapeutic agents, significantly reducing treatment costs.

The use of antimicrobial agents together with medicinal herbal infusions reduces the incidence of dyspepsia in calves by 100 percent.

In carrying out scientific research, the biological characteristics and pharmacological properties of several medicinal plants have been presented. Nettle belongs to the flowering plants of the Urticaceae family. It is a medicinal herb with very high therapeutic potential for both animals and humans. Nettle is a valuable polyvitamin medicinal plant rich in vitamins K, E, A, and various microelements. Owing mainly to its high content of silicon and organic acids, nettle enhances the body’s ability to resist bacteria, toxins, and harmful radiation, and also prevents oxygen deficiency.

In dyspepsia in young animals, nettle prevents harmful microorganisms and toxins—underlying causes of the disease—from entering the body. Thus, by strengthening the body’s resistance, it helps prevent and treat the disease through its rich vitamin and microelement composition.

ISSN 2706-6266
ISSN 3007-1062
ISSN 3007-1070

Licorice is a medicinal plant, the root of which serves as the active part. Licorice root contains organic acids, saponins, starch, glucose, sucrose, vitamins, and minerals. Its active components exhibit anti-inflammatory effects on inflammatory processes. Additionally, licorice has antimicrobial and antipyretic properties.

Results and discussion. The research work was carried out at the "Uali" farm, located in the Taskalinsky district of the West Kazakhstan region. The "Uali" farm is primarily engaged in animal husbandry and cattle breeding. The total cattle population consists of 100 head, including 60 brood cows, 6 bulls, and 34 calves.Twelve calves from the farm were selected as research material. During the study, attention was paid to the age characteristics of the young animals, their housing conditions, feeding, grazing, and availability of exercise.

At this farm, all cows are inseminated manually. The livestock is kept in stalls both in summer and winter. Straw bedding is used. According to the study, in 2025 the average incidence of dyspepsia among the herd was 10%.

The results showed that dyspepsia most often affects calves born in the spring months (March–May). This is explained by the fact that during the summer grazing season, the nutrients accumulated in the mother's body are often depleted by spring. Calves born from such cows are called hypotrophic. They are physiologically underdeveloped, with low vital functions, and predisposed to various diseases.

The 12 calves selected for the experiment were divided into three groups of four animals each-two experimental groups and one control group. The calves were grouped according to the principle of analogs.

During the experiments, each calf received 250 ml of the herbal preparation Startin diluted in 0.5–0.7 ml of water.The first experimental group (calves with symptoms of dyspepsia) received Startin daily for therapeutic purposes until treatment results were obtained. The second group of animals (clinically healthy calves) received Startin daily for preventive purposes; these data are presented in Table 1.

All groups of calves were fed monthly according to a ration developed in accordance with practical requirements. Feeding norms for lactating calves were calculated based on BMI (VIZh) recommendations (2003).

Although the third group (calves with dyspepsia) served as the control group, they were given a rehydration solution to prevent deterioration of their condition. The rehydration solution is necessary to replenish water and macroelements and to stimulate intestinal motility and improve digestion; Rehydral-tan was used as the basis of the solution. This solution was prepared directly on the farm.

Table 1 – Experimental design scheme

Group	Number of calves, n	Indications for use
First experimental group (calves with symptoms of dyspepsia)	4	Startin, 250 ml
Second experimental group (clinically healthy calves)	4	Startin, 250 ml
Control group (calves with symptoms of dyspepsia)	4	Rehydration solution

During the experiment, clinical studies were conducted according to standard methods using morphological and biochemical analyses. Morphological and biochemical blood analyses

ISSN 2706-6266
ISSN 3007-1062
ISSN 3007-1070

were performed at the Regional Veterinary Laboratory. Blood composition was examined on the 3rd and 7th days of the experiment. Blood samples were taken from the jugular vein before morning feeding.

For morphological analysis, the automated blood analyzer BC-2800 Vet was used. Total protein content was determined using a refractometric method with a PLU refractometer. The principle of the method is based on measuring the refractive index of the serum. Since the degree of refraction of a solution directly depends on the number of particles it contains, the refractive index of the serum provides accurate information about its protein content. The percentage of protein was calculated based on the serum refractive index.

Total calcium content was determined by the complexometric method. This approach is based on direct titration of calcium ions in an alkaline medium with disodium ethylenediaminetetraacetate (EDTA) using murexide as an indicator. Calcium ions bound to the indicator react during titration with EDTA, releasing the indicator, which colors the solution violet.

Inorganic phosphorus was determined in a protein-filtered blood sample using a vanadomolybdate reagent. This method is based on the formation of a lemon-yellow complex, and the degree of color development is measured with a photoelectric colorimeter.

Glucose content was determined using the glucose oxidase method. The principle of the method is based on the oxidation of D-glucose by oxygen in the air under the catalytic action of glucose oxidase, producing an equimolar amount of hydrogen peroxide. In the presence of peroxidase, hydrogen peroxide reacts to form a reddish-colored compound, which is photometrically measured by oxidation of 4-aminoantipyrine with phenol.

Vitamin A was determined by a colorimetric method. This approach is based on the interaction of vitamin A with antimony trichloride, forming a blue-colored compound, the intensity of which depends on the vitamin A concentration.

Data on the clinical indicators of body temperature, respiratory rate, pulse, and rumen contraction in calves receiving treatment are presented in Table 2.

Table 2 – Clinical indicators of body temperature, respiratory rate, pulse, and rumen contraction in calves

Parameter / Treatment days	Calf groups											
	1st experimental group				2nd experimental group				3rd control group			
	T°C	RR / min	Pulse / min	Rumen contraction / 2 min	T°C	RR / min	Pulse / min	Rumen contraction / 2 min	T°C	RR / min	Pulse / min	Rumen contraction / 2 min
Before treatment	38,4	16,0	68	9	38,7	16,0	70	5	38,4	16,0	68	9
Day 3 of treatment	38,8	19,0	71	7	38,7	16,0	69	4	38,5	16,0	66	9
Day 7 of treatment	39,2	23,0	75	5	38,9	21,0	72	5	38,4	16,0	68	8
Normal values:	Temperature: 38.5–40.0°C Respiratory rate: 12–25 per minute Pulse: 70–80 per minute Rumen contractions (per 2 minutes): 3–5 times											

ISSN 2706-6266
ISSN 3007-1062
ISSN 3007-1070

Analyzing the data presented in the table, one can clearly observe an improvement in the general condition of the animals in the 1st and 2nd experimental groups receiving Startin. To prevent deterioration in the general condition of the control group animals, a rehydration solution was administered. However, the therapeutic effect of this solution was lower than that of Startin.

Startin improved the motility and motor function of the intestines in calves with dyspepsia.

Conclusion

1. It was established that the cause of dyspepsia in calves at the "Uali" farm is a disruption in the relationship between the presence of protein in the blood of cows and newborn calves and the content of vitamin A, carotene, calcium, and inorganic phosphorus, as well as the presence of carotene and vitamin A in the colostrum protein. In most cases, calves that received the first milking of colostrum (rich in serum proteins, carotene, and vitamin A) rarely developed dyspepsia.

2. Administration of Startin to calves at a dose of 250 ml per day produced a positive therapeutic effect, characterized by improvements in general clinical, morphological, and biochemical parameters of the calves.

REFERENCES

1. Rodionov R.V., Krasnikova E.S., Belyakova A.S. Application of a new medicinal composition for the treatment of dyspepsia in calves born from BLV-infected cows // Bulletin of Krasnodar State Agrarian University. – 2019. – №2. – P.77–79.

2. Vorobyev A.V., Zhukov A.P., Sharafutdinova E.B. Comprehensive treatment of dyspepsia using biological preparations // Veterinary. – 2014. – P.73–76.

3. Sinelnikova D.I., Kletikova L.V. Dynamics of immunoglobulins in cows under the use of biologically active supplements // Proceedings of Orenburg State Agrarian University. – 2021. – №2(88). – P.217–219.

4. Gavrilov Yu.A., Gavrilova G.A. Therapeutic and prophylactic effectiveness of a preparation in digestive disorders of autoimmune origin in newborn calves // Far Eastern Agrarian Bulletin. – 2019. – №2(50).

5. Fomina V.D., Arslanian G.G., Mal G.S., Makurina O.N. The impact of motor activity in newborn calves with dyspepsia on correction efficiency of hypercoagulation state using Gamavit // Bulgarian Journal of Agricultural Science. – 2019. – Vol.25, No.1. – P.177–182.

6. Afanasyev V.A., Elenshleger A.A. Comparative assessment of clinical, biochemical, and morphological status of calves at different stages of dyspepsia // Bulletin of Altai State Agrarian University. – 2017. – №4(150). – P.116–121.

7. Vinnikova S.V. Protective functions of newborn calves // Medical Immunology. – 2015. – Vol.17, №4. – P.375–382.

8. Walter M., Guterbok. Principles of raising calves // Vetpharma. – 2013. – №1. – P.48–55.

9. Velikanov V.I., Kharitonov L.V., Klyapnev A.V., Chechet I.V., Chechet O.Yu. Effect of synthetic estrone analog and recombinant interleukin-2 administration to late-pregnant cows on colostral immunity and nonspecific resistance in newborn calves // Problems of Productive Animal Biology. – 2018. – №4. – P.56–64.

10. Moshkina S.V., Zarubin A.N., Gagarina O.Yu. Physiological indicators and productive qualities of replacement dairy cattle using various milk replacers // Bulletin of Meat Cattle Breeding. – 2017. – №1(97). – P.93–99.

ISSN 2706-6266
ISSN 3007-1062
ISSN 3007-1070

11. Poimanov M.A., Sharafutdinova E.B., Zhukov A.P. Metabolic status of pregnant cows under different reproduction methods // Proceedings of Orenburg State Agrarian University. – 2021. – №2(88). – P.220–224.

12. Ivager O.V. Influence of natural feed additives on commercial and sanitary indicators of cow milk // Proceedings of Orenburg State Agrarian University. – 2021. – №2(88). – P.228–230.

13. Lebedev P.T. Prophylaxis and treatment of dyspepsia in calves // Veterinaria / AGRIS. – 2013. – P.69–70.

14. Suleimanov S.M., Ageev V.A. Pathogenesis of dyspepsia in newborn calves // AGRIS. – 2013. – Vol.1979. – P.161–164.

15. Young Y.J., Bang C.S., Baik G.H. et al. Prokinetics for the treatment of functional dyspepsia: Bayesian network meta-analysis // BMC Gastroenterology. – 2017. – 17:83. – https://doi.org/10.1186/s12876-017-0639-0

16. Kharitonova O.V., Kharitonova L.V., Velikanov V.I., Klyapnev A.V. Study of the effectiveness of different methods for enhancing colostral immunity in newborn calves // Problems of Productive Animal Biology. – 2018. – №2. – P.81–93.

17. Elenshleger A.A., Tarasov D.S. Effect of the probiotic “Vetom 1.1” on metabolic levels in newborn calves with dyspepsia // Bulletin of Altai State Agrarian University. – 2016. – №7(141). – P.134–138.

18. Zukhrabov M.G., Ivanenko O.Yu., Zukhrabova Z.M. Results of using prebiotics in the treatment of calves with dyspepsia // Kazan State Academy named after N.E. Bauman. – 2014. – P.53–58.

19. Elenshleger A.A., Akimov D.A. Effect of the probiotic “Vetom 15.1” on biochemical blood parameters of calves with diarrhea // Bulletin of Altai State Agrarian University. – 2014. – №8(118).

20. Pleshkov A.V., Mironova I.V., Nigmatyanov A.A., Khabibullin R.M., Fakhretdinov I.R. Biochemical blood parameters of cows fed with the energy supplement Tanrem // Proceedings of Orenburg State Agrarian University. – 2021. – №2(88). – P.213–216.

+