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THE EFFECTIVENESS OF THE COMPREHENSIVE PREVENTIVE MEASURES FOR GASTROENTERAL PATHOLOGY IN CALVES

У статті показано, що застосування пробіотика Бовітокс та кормової фітодобавки Гастроацид попереджує захворюваність телят на гастроентеральну патологію у 60 % тварин, у інших сприяло легкому перебігу діарейного синдрому. Під дією запропонованої схеми профілактики шлунково-кишкової патології у телят поліпшується гематологічний статус, про що свідчить підвищення загального білка на 15,8 %, неорганічного фосфору – 22,2 %, бактерицидної та лізоцимної активності крові.Окрім того, покращується клітинний імунітет, на що вказують підвищення загальної кількості лейкоцитів на 17,5 %, Т-лімфоцитів на 57,9 %, В-лімфоцитів на 54,5 %. Такий позитивний вплив пов'язаний з тим, що до складу Гастроациду входять наступні рослини: беладонна лікарська, м'ята водяна, звіробій звичайний, акація біла, коріандр посівний, солодка гола, золототисячник малий, сосна звичайна, які містять біологічно активні речовини, ефірні олії, аскорбінову кислоту, дубильні речовини, каротиноїди, трипертиноїди (переважно алеанолева кислота), жирна олія та мікро-, макроелементи (манган, купрум, ферум, цинк, калій, натрій та ін.).

Ключові слова: шлунково-кишкові розлади, кормова фітодобавка Гастроацид, пробіотик Бовітокс, фізіологічний стан, збереженість, загальна резистентність.

Statement of the problem, analysis of recent researches and publications. Now in Ukraine the problem of livestock diseases remain young, causing significant economic losses. Insufficient, defective feeding of cows, lack of exercise, the violation of zoohygienic conditions, the environmental situation is a cause of the birth of physiologically defective young animals [1, 2]. Therefore, in the current crisis situation in Ukraine, in animal husbandry the application of probiotic and feed phytoadditives with the purpose of increase of protective forces of an organism and the productivity is up to date [3–7].

The objective was to determine the effectiveness of the use of probiotic and feed phytoadditives on the results of clinical examination, morphological, biochemical and immunological studies of blood of patients and calves to justify their use in gastro-intestinal pathology and the effect on the overall resistance and productivity of calves [8–12].

Material and methods. The study was carried out in the experimental farm "Polivanivka" Magdalinovsky district, Dnipropetrovsk region. Researched newborn calves of gray Ukrainian cattle age 1 month. On the principle of steam-analogues animals were divided into two groups – control and experimental.

In the technology of rearing calves of the control group used the scheme, which includes savings and produce large volumes of milk because of switching to feeding milk replacers that contain dairy products containing soy-protein concentrate, palm and coconut oils, vitamin - mineral premix. In addition to the milk replacers calves with 4 to 10 days after birth provide unlimited access to starter feed fed salted 1% NaCl boiled and cooled to 37 - 38°C drinking water with a gradual decrease of temperature to 25°C. From 10 days of age in the diet of calves administered hay. 30 – day - juicy fodder - herbage, roots, haylage, silage.

Animals of the experimental group simultaneously with the basic diet every day individually for 30 days was administered prior to feeding colostrum probiotic Bovitox at a dose of 40-50 ml. and feed produbanco Gastroacid as follows: to 0,25 ml. Gastroacid dissolved in 50 ml. cooled boiled water within 30 minutes after feeding 3 times a day, for 14 days and with the preventive purpose 2 times a day for 16 days.

Gastroacid is the composition of water infusions and alcoholic tinctures of medicinal plants 10 are combined in a specific ratio. It consists of belladonna medicinal, mint water, hypericum ordinary, locust, coriander seed, licorice, centaury is a small, pine. It has antioxidant, monomodality, antibacterial, antispasmodic, detoksikatsii, referativnyi properties.

Before and after the test was conducted blood tests on General accepted methods. The number of erythrocytes and leukocytes was determined in a chamber with a grid Goryaeva, hemoglobin – hemiglobincyanide method; total protein of blood serum by the biuret reaction; the ratio of protein fractions by electrophoresis; the concentration of total calcium with arenacreative; inorganic phosphorus with ammonium molbdenum; bactericidal activity of blood serum – nephelometric method ltimo –

fotocopiatrici. The number of T and B-lymphocytes and their subpopulations in peripheral blood was determined by the method of spontaneous rosette [13]. Therapeutic efficacy was determined by clinical parameters, analysis of the results of hematological,biochemical and immunological studies.

The research results and their discussion. In determining the clinical status of experimental animals established that the General condition of the calves was satisfactory. The reason for the existence of gastroenteral pathology of calves on the farm was delayed colostrum feeding of newborn calves and of substandard and defective (unbalanced) feeding, especially pregnant cows. In calves after feeding colostrum almost on day 2 of life were noted following clinical signs: loss of appetite, the reluctant consumption of colostrum, intestinal peristalsis strengthened slightly, frequent defecation, feces liquefied, the body temperature within normal limits. Based on this, to prevent the development gastroenteral pathology and the increasing resistance of the organism calves inside asked Bovitox probiotic and feed additive plant origin Gastroacid. For the entire period of the studies the animals were monitored. So, after the application of the probiotic and phytoadditives almost 2-3 days in animals has improved the general condition, the better calves consume colostrum, the act of defecation and the stool normalized. By analyzing blood parameters established that the application of probiotic Bovitox and feed phytoadditives contributed to the increase in total protein 15,8 %, total inorganic phosphorus 22,2 %.

Table 1 – **Influence of Bovitox and Gastroacid on biochemical parameters the blood serum of calves** (M±m, n=10)

Indicators	Before treatment, groups		After treatment, groups	
	control	experimental	control	experimental
Total protein, g/l	58,9±3,60	59,4±2,30	60,3±3,20	68,8±2,60* °
Calcium, mmol/l	1,35±0,36	1,4±0,30	1,4±0,22	1,6±0,40
Inorganic phosphorus, mmol/l	1,9±0,09	1,8±0,06	2,1±0,40	2,2±0,10*
Reserve alkalinity, about, % CO2	40,4±0,28	37,6±0,32°	41,1±0,28	39,8±0,19* °
Immunoglobulins, %	21,1±2,12	21,6±1,80	20,9±2,33	22,8±1,72
Bactericidal activity, %	30,45±2,80	24,4±3,66	40,0±2,78*	46,4±3,48**
Lizocidal activity, %	8,4±0,90	9,6±0,60	9,6±0,83	17,2±0,51*** °°°

Notes: °- p<0,05; °°° - p<0,001 relative to control;

*-p<0,05; ** - p<0,01; *** - p<0,001 comperafively the beginning of the test according to the same group (control or experimetal).

According to the table, it should be noted that the use of Bovitox and Gastroacid in calves of the experimental group contributed to the increase in the content of general protein, general calcium (the tendency), inorganic phosphorus, reserve alkalinity, bactericidal in 1,9 and lizocidal activity in 1,79 times, the content of immunoglobulins not changes, but these indicators fluctuated within the physiological norm.

The results of the effect of probiotic and feed phytoadditives on the parameters of the total number of leukocytes, absolute number of lymphocytes and content of populations of immunocompetent cells in the peripheral blood of calves experimental and control groups (table 2, 3) show that the absolute number of lymphocytes in the experimental group at the end of the experiment increased by 27,8 %, and the quantitative content of a population of B-lymphocytes was significantly increased 1,4-fold, namely: 12,0±0,01 at the beginning of the experiment up to 17,0±0,01% on its completion against the same indicator of 12,0±0,01% in calves of the control group. At the same time, in the control group of calves was observed a tendency to increase the absolute number of lymphocytes only 5 %. Comparative analysis of the absolute number of lymphocytes in the experimental and control groups confirms the positive impact of probiotic and feed phytoadditives on the development of red blood cells in calves of early age.

Table 2 – **Effect of phytoadditives and probiotics on hematological and immunological parameters of peripheral blood of calves** (M±m, n=10)

	Indicators	Groups	
		control	experimental
	The number of animals heads. (n)	10	10
leukocytes	all leukocytes, 10^9/l	5,8 ± 0,06	5,7 ±0,06
	the number of lymphocytes (%)	63,5 ± 0,65	69,3 ± 0,40°
	the absolute number of lymphocytes, 10^9/l	3,7 ± 0,08	3,95 ± 0,122
Lymphocyte T-	all, %	19,0 ± 0,03	19,0±0,03

populations	B-	all, %	12,0 ± 0,01	12,0±0,11
	O-	all, %	69,0 ± 0,50	69,0±0,03

Note: °- p<0,05 relative to control.

In calves of the experimental group indicated a faster and more stable growth rates of populations of immunocompetent cells (T and B-lymphocytes) in contrast to the control group. It is established that at 30 and 60 days from start of experimental studies in calves of the experimental group was observed a growth in the number highlyavidli T-ARMS (more than 5 red blood cells attached to the immune female) from 0,85±0,001% of the total amount to 1,25±0,001% at the end of the experience. However, in calves of the control group highlyavidli T is not detected during the entire period of research. All this shows a positive influence of feed phytoadditives and probiotics on the quantitative growth of immune cells humoral immunity.

Table 3 – **The Effect of phytoadditives and probiotics on hematological and immunological parameters of peripheral blood of calves in 30 days**

		Indicators	Groups	
			control	experimental
		The number of animals heads. (n)	10	10
leukocytes		all leukocytes, 10^9/l	6,1± 0,31	6,7 ±0,29**
		the number of lymphocytes (%)	34,0± 2,12***	74,7 ± 0,24*** °°°
		the absolute number of lymphocytes, 10^9/l	3,9± 0,12	5,05 ± 0,07*** °
Lymphocyte populations	T-	all, %	23,0 ± 0,18***	30,0±0,12 *** °°°
	B-	all, %	13,0 ± 0,15***	17,0±0,01 ** °°
	O-	all, %	64,0 ± 1,16**	53,0± 3,14 *** °

Notes: °- p<0,05; °° - p<0,01; °°° - p<0,001 relative to control;

** - p<0,01; *** - p<0,001 comperafively the beginning of the test according to the same group (control or experimetal).

The analysis of researches shows the positive effect of the feed phytoadditives Gastroacid and probiotic Bovitox on the productivity of animals. So, the average daily body weight gain in calves of the experimental group after one month of administration of the probiotic and feed phytoadditives was higher, namely: 460±20,0 g/day vs. 410±10,0 calves in the control group. Such dynamics was observed throughout the experiment. Thus, in the process of the conducted researches it is established that the use of phytoadditives in the feed Gastroacid and Bovitox individually, daily, oral method improved indicators of leukopoiesis, positive influence on blood biochemical parameters, relative and absolute number of lymphocytes increase in the quantitative content of populations of T and B lymphocytes. This scheme contributed to the improvement of physiological condition of calves that ensure 100 % safety, due to the fact that the composition of Gastroacid includes the following plants: belladonna medicinal, mint water, Hypericum ordinary, locust, coriander seed, licorice, centaury is a small, Scotch pine, which contain biologically active substances, essential oils, ascorbic acid, tannins, carotenoids, tripartite(mostly oleanolova acid), fatty oil, and micro -, macro elements (manganese, copper, iron, zinc, potassium, sodium, etc.)

Conclusions: 1. For gastrointestinal disorders in calves notes: oppression, suleimania, reduced reaction to external stimuli, (dull hair, profuse diarrhea, involuntary discharge of feces, dehydration, muscle tremors).

2. The use of the feed phytoadditives Gastroacid and probiotics Bovitox prevents gastro-intestinal diseases, positively affects the general condition of the animals and improves the resistance of newborn calves.

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Эффективность проведения комплексных превентивных мероприятий при гастроэнтеральной патологии у телят

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В статье показано, что применение пробиотика Бовитокс и кормовой фитодобавки Гастроацид предупреждает заболеваемость телят на гастроэнтеральную патологию у 60 % животных, у других способствовало легкому течению диарейного синдрома. Под действием предложенной схемы профилактики желудочно-кишечной патологии у телят улучшается гематологический статус, о чем свидетельствует повышение общего белка на 15,8 %, неорганического фосфора на 22,2 %, бактерицидной и лизоцимной активности крови. Кроме того, улучшается клеточный иммунитет, на что указывает повышение общего количества лейкоцитов на 17,5 %, Т-лимфоцитов на 57,9 %, В-лимфоцитов на 54,8 %. Положительный эффект достигнут благодаря наличию в составе Гастроацида следующих компонентов: растений – беладонна лекарственная, мята водяная, зверобой обыкновенный, акация белая, кориандр посевной, солодка голая, золототысячник малый, сосна обыкновенная (содержат биологически активные вещества, эфирные масла, аскорбиновую кислоту, дубильные вещества, каротиноиды, трипертиноиды, преимущественно алеанолевая кислота), жирных масел, макро- и микроэлементов (калий, натрий, манган, купрум, ферум, цинк и др.).

Ключевые слова: желудочно-кишечные расстройства, кормовая фитодобавка Гастроацид, пробиотик Бовитокс, физиологическое состояние, сохранность, общая резистентность.

The effectiveness of the comprehensive preventive measures for gastroenteral pathology in calves

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The article shows that the use of probiotic Bovitox and feed phytoadditives Gastroacid prevents the incidence of calves in gastroenteral pathology in 60 % of animals, others contributed less severe diarrhoeal syndrome. Under the effect of the proposed scheme of the prophylaxis of gastrointestinal diseases in calves improves hematologic status as evidenced by increased total protein 14 %, total calcium 13,47 %, biochemical composition and immune reactivity, this is indicated by the growth lsike and bactericidal activity of blood also improves cellular immunity, as indicated by the increase of T-lymphocytes 37 %, lymphocytes 30 %, it is confirmed by the fact that the composition of Gastroacid includes the following plants: belladonna medicinal, mint water, Hypericum ordinary, locust, coriander seed, licorice, the small centaury, pine, which contain biologically active substances, essential oils, ascorbic acid, tannins, carotenoids, tripartite(mostly oleanolova acid), fatty oil, and micro-, macro-elements (manganese, copper, iron, zinc, potassium, sodium, etc.)

Key words: gastrointestinal disorders, feed phytoadditives Gastroacid, probiotic Bovitox, physiological condition, safety, General resistance.

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