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ENTEROSORBENTS IN COMPLEX THERAPY OF DIARRHEAL DISEASES IN CALVES

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Annotation. The use of enterosorbents based on lignin and bentonites in the complex therapy of diarrheal diseases in calves, contributes to the elimination of diarrhea, shortening the duration of the disease, increasing the therapeutic efficiency of therapeutic measures.

Keywords: enterosorption, intoxication, diarrhea, calves, hydrolytic lignin, bentonite clays

ЭНТЕРОСОРБЕНТЫ В КОМПЛЕКСНОЙ ТЕРАПИИ ДИАРЕЙНЫХ БОЛЕЗНЕЙ У ТЕЛЯТ

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Аннотация. Использование энтеросорбентов на основе лигнина и бентонитов в комплексной терапии диарейных болезней у телят, способствует устранению диареи, сокращению сроков заболевания, увеличению терапевтической эффективности лечебных мероприятий.

Ключевые слова: энтеросорбция, интоксикация, диарея, телята, гидролизный лигнин, бентонитовые глины.

Introduction. Enterosorption is a modern effective method of treating humans and animals, which allows the use of sorbents to remove foreign microorganisms, their waste products, exogenous and endogenous toxins, allergens, xenobiotics, heavy metals, radioactive isotopes, ammonia, divalent cations from the body [3,4,7]. The therapeutic effect of the use of enterosorbents is to eliminate or weaken endotoxicosis and the degree of intoxication, providing the possibility of maintaining normal intestinal microbiocenosis, which restores the digestive process in the small intestine, normalizes motor and evacuation functions, increases the stability of the intestinal mucosa. In addition to the therapeutic effect listed above, the positive effect of enterosorbents on the functional state of the immune system, reduction of toxic load on the excretory organs - kidneys and liver, suppression of inflammatory response, improvement of the functional activity of internal organs has been proven [3,4,6]. Both synthetic compounds and natural organic compounds based on lignin, chitin, cellulose, clays (aluminosilicates, zeolites, etc.) are used as enterosorbents, however, there are also combined preparations consisting of a sorbent and additional active components (vitamin C, enzymes, probiotics, lactulose, etc.) [2,3].

The active development and spread of the method of enterosorption occurred in 1970-1980. A long period of studying this process contributed to the emergence of a new generation of sorbents. For many decades, interest in these medicines has not decreased, and the study of the effectiveness of new drugs of domestic production is relevant and of practical interest.

The purpose of our research is to study the therapeutic efficacy of the mineral feed concentrate Smectonite and the enterosorbent agent Polypham in the complex treatment of calves with dyspepsia and abomazoenteritis. Smectonite ("NorBil", RB), is a mineral feed concentrate designed to normalize the processes of digestion and eliminate diarrhea in young farm animals. The main component of smectonite is bentonite, which is a clay non-toxic mineral with hydrophilic properties. Enterosorbent agent Polypham ("Radmedtech", RB) is a drug of plant origin obtained from hydrolyzed lignin. Binds various microorganisms and their waste products.

Materials and methods. The research was carried out on the farms of the Vitebsk region. The object of research was calves from birth to 35 days of age, diseased with dyspepsia and abomazoenteritis. To reach this goal, experienced groups of calves were formed. Groups 1 and 2 included calves aged 1-10 days, diseased with dyspepsia (n-10), groups 3 and 4 - aged 20-35 days, patients with abomazoenteritis (n-10). Calves of groups 1 and 2 were prescribed diet therapy at the beginning of treatment (on the first day of the disease, colostrum drinking was replaced by a warm 1% solution of table salt, the daily rate of milk drinking was reduced by 30%, drinking in 3 doses). Calves of groups 3 and 4 were transferred to a starvation diet for 8-10 hours with the drinking of herbal decoctions.

Animals of the 1st and 2nd experimental groups were injected intravenously an isotonic solution of 0,9% sodium chloride in a dose of 150 ml, an antimicrobial drug Ditrim and to increase the overall immune reactivity of the body - Vitozal. The calves of the first experimental group, in addition to the selected scheme, were administered mineral feed concentrate Smectonite in a dose of 30 g per animal (2 times a day with water). In addition to the main treatment regimen, the enterosorbent Polypham was applied to the calves of the second experimental group at 20 g per animal (2 times a day with water).

To prevent the development of dehydration, animals of the 3 and 4 experimental groups were injected intravenously with an isotonic solution of 0,9% sodium chloride at a dose of 200 ml per animal, the antimicrobial drug Ditrim and the antioxidant drug Selevet in accordance with the instructions. Calves of the third group, in addition to the selected scheme, were administered mineral feed concentrate Smectonite in a dose of 50 g per animal (2 times a day with water). For calves of the fourth group, enterosorbent Polypham was administered in 60 grams per animal (2 times a day with water).

The calves were in the same conditions of feeding and maintenance. A daily clinical study of animals was carried out in accordance with the generally accepted plan, special attention was paid to assessing the functional activity of the pancreas, intestines and liver, and the severity of signs of intoxication and dehydration in calves was assessed [1,2]. Evaluation of the therapeutic efficiency of the selected complex

treatment regimens was carried out by comparing the obtained clinical results with the results of treating animals according to the schemes accepted in farms without the use of enterosorbents. Before and after treatment, blood samples from the jugular vein were taken in compliance with the rules of asepsis and antiseptics to assess morphological parameters [5]. The disappearance of clinical symptoms of the disease was conventionally taken as a sign of recovery in animals.

Research results and their discussion. Dyspepsia was registered in 20% of calves from birth, in 33% - from 2-3 days, in 47% of animals - from 4 days to 10 days of age. The main causes of this disease are violations of the principles of feeding, in particular, the use of milk from cows with mastitis for feeding newborns, stress, deficiency of vitamins A, E, Zn, Se antioxidants, violation of microclimate parameters and crowding of animals. Depression, decreased reaction to external stimuli, decreased or loss of appetite, increased thirst, increased pulse rate and shallow, frequent breathing were recorded in calves with dyspepsia. The urge to defecate in the studied animals was frequent, the feces were liquid, with an admixture of mucus and undigested feed particles, with air bubbles. Palpation of the abomasum and intestines in animals' revealed anxiety, flatulence, periodic colic, with intestinal auscultation – sounds of increased peristalsis. Signs of dehydration were recorded in animals (dryness of mucous membranes, reduction of skin turgor, thirst, tachycardia, etc.).

In the blood of sick calves of the first and second groups, a significant increase in the content of erythrocytes by 26% ($P<0,05$), hemoglobin by 5% ($P<0,05$), hematocrit value by 4% was recorded ($P\leq0,05$), erythrocyte sedimentation rate by 24%, leukocytes by 41% compared to healthy animals.

By the fourth day of treatment, the clinical condition of the calves of the first experimental group improved, the animals became more active, willingly took food, thirst decreased, feces became more solid, intestinal peristalsis was moderate, painfulness during intestinal palpation was not detected, flatulence was absent. The improvement of the clinical condition in calves was confirmed by the results of laboratory blood tests. Thus, the number of red blood cells significantly decreased by 26% by the 5th day of treatment ($P <0,01$), leukocytes - by 17% ($P<0,05$), hemoglobin - by 4%, the rate of erythrocyte sedimentation by - 20% ($P<0,01$) compared with the beginning of treatment. The number of white blood cells significantly decreased by 27% ($P<0,01$), the rate of erythrocyte sedimentation - by 12% compared to healthy animals.

The calves of the second group, which were treated with Polypham, also showed signs of recovery. The act of defecation became less frequent, the feces were more solid, and the abdomen was not tense during palpation. Complete absence of diarrhea was recorded in calves on average for 5 days. In the animals of the second experimental group, the number of erythrocytes significantly decreased by 15% on the 5th day of treatment ($P<0,01$), leukocytes - by 22% ($P<0,01$) compared with the start of treatment, a decrease in hematocrit value occurred by 5% compared with the indicators of healthy animals.

Acute course of abomazoenteritis was recorded in calves mainly aged 25-30 days, who had dyspepsia. The disease was manifested clinically by dryness of the nasal mirror, decreased skin elasticity, decreased or lack of appetite, sometimes subfebrile fever, frequent defecation with liquid faeces, increased intestinal motility, painfulness during palpation.

Abomazoenteritis in calves was accompanied by acute inflammation, intoxication and dehydration of the body, which was confirmed by laboratory blood analysis. In the blood of sick calves, an increase in the number of erythrocytes by 19% ($P<0,05$), leukocytes - by 37% ($P<0,05$), hemoglobin - by 8% ($P<0,05$), hematocrit value - by 6%, ESR - by 7% compared with the indicators of healthy animals was revealed.

In calves of the third experimental group, which were treated with the use of Smectonitis in a complex scheme, abomazoenteritis manifested in a milder form. The disease in calves of this group was accompanied by apathy, dry mucous membranes, tachycardia, and diarrhea with the release of liquid feces with an admixture of mucus. Diarrhea stopped by 4-5 days from the moment they were administered treatment. Improvement of the clinical condition in animals was confirmed by normalization of blood parameters. By the 5th day of treatment in animals of the 3rd group there was a significant decrease in the content of erythrocytes by 29% ($P<0,05$), leukocytes - by 22% ($P<0,05$), hemoglobin - by 11%, hematocrit value - by 39% ($P<0,05$) compared with the indicators at the beginning treatment.

In calves of the fourth group, diseased with abomasoenteritis, at the beginning of the disease, the increased peristalsis, frequent diarrhea, soporosis, decreased appetite, muscle trembling, increased sensitivity of the abdominal wall during palpation were recorded. The disappearance of clinical signs of the disease occurred by the 5 days after the start of treatment. At the end of treatment, the number of erythrocytes significantly decreased by 18% ($P<0,05$), leukocytes - by 19% ($P<0,05$), hemoglobin - by 10%, hematocrit value - by 43% compared with the indicators before the start of treatment.

A comparison of the results obtained when determining the therapeutic efficacy of the enterosorbent Polypham and the concentrate of mineral feed Smectonite shows that the inclusion of these drugs in animal treatment regimens allows to increase the therapeutic efficiency of medical measures. Treatment regimens adopted on farms without the use of enterosorbents show low efficacy, the duration of treatment of animals is 7-8 days with cases of disease recurrence and in severe cases ended in loss, the clinical picture of diseases is characterized by prolonged depression, decreased appetite, prolonged diarrhea.

Conclusion (conclusions). Based on the conducted studies, it was established that the enterosorbent Polypham and the mineral feed concentrate Smectonite have a high therapeutic efficacy in the treatment of calves with gastrointestinal diseases accompanied by diarrhea. The inclusion of mineral feed concentrate Smectonite and enterosorbent Polypham in the complex treatment regimen of calves with dyspepsia and abomazoenteritis makes it possible to eliminate diarrhea, restore the functions of the gastrointestinal tract faster, reduce intoxication and reduce the cource of a

treatment in calves with dyspepsia and abomazoenteritis up to 5 days, which is confirmed by the results of laboratory blood tests.

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ЛАЗЕРЫ В ВЕТЕРИНАРНОЙ ХИРУРГИИ

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Аннотация. Самым значимым изобретением прошлого века является изобретение лазера. Сейчас он используется почти повсеместно. Сегодня известны три направления ветеринарной медицины, в которых используются лазеры – это хирургия, терапия и диагностика. Важнейшим из них является ветеринарная хирургия. Этому направлению и посвящена данная статья.

Ключевые слова: лазер, хирургия, терапия, диагностика, ветеринарная медицина

LASERS IN VETERINARY SURGERY

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