CHANGES OF CALF RUMEN QUALITATIVE AND QUALITATIVE MICROFLORA CONTENT UNDER THE INFLUENCE OF AMINO ACIDS METHIONINE AND CYSTINE

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Features of metabolism in ruminant necessitate more detailed study of the needs of these animals in amino acids. For a long time it was thought that rumen microorganisms can synthesize sufficient amount of microbial protein to meet the needs of the organism in replacement and essential amino acids.

Methionine – sulfur-containing amino acid that is active in the metabolism. It stimulates the growth and development of animals involved in the synthesis of tissue proteins, reduces the hydrolysis of proteins. With the participation of methionine synthesized epinephrine, choline, creatinine. It has a methyl group (CH3), which can move in DNA structure is a universal source of methyl groups for all nucleic acids. In addition, methionine and cystine with vitamin A is involved in the formation of feathers in birds, protects the liver from obesity, participates in hemoglobin formed and regulation of fat metabolism, a source of sulfur. Established that the methionine used in the synthesis of important hormones such as growth hormone.

Cysteine is part of many proteins, especially the epidermis of the skin, hair, horns, hoves. Much of this amino acid is composed of enzymes. Cysteine helps neutralize some toxic substances and protects the body from the negative effects of radiation. He is one of the most powerful antioxidants, and its effect is enhanced by simultaneous application together with vitamin C and selenium. Thanks to a highly reactive cysteine part of SH-groups in the tissues easily carried enzymatic redox reaction between cysteine and cystine.

Cysteine – amino acid whose biological function is to maintain the state of reduced SH groups and bioregulators many enzymes, including through glutathione synthesis. In the experiment, calves fed amino acids methionine and cystine in doses of 2,9 and 11 g/goal of the country and the multiplicity of research methods we reported earlier.

Proventriculus ruminants populated by different types of microorganisms that play a key role in enzymatic processes scar. To study the impact of sulfur-containing amino acids on rumen inner environment we studied changes in quantitative and qualitative composition of its flora and microfauna. Analysis of the results indicates that the addition to the diet of animals methionine and cystine contributes significant increase of the number of bacteria in the rumen ciliates and calves. In the experimental group, sulfur-containing amino acids which fed a daily dose of 9 g. on the 20th day of the experiment, the number of ciliates increased from 628,3 ± 6,41 to

719,2 ± 12,74 thousand/ml, and bacteria from 9,5 ± 0,51 to 12,9 ± 0,61 billion/ml, 14,1 and 25,4% higher than in the control.

After 40 days the number of ciliates research was 834,2 ± 13,38 thousand/ml bacteria – 12,9 ± 0,61 billion/ml, 31,2 and 34,8%, more than in the control group. A slightly different trend was observed in calves, which methionine and cystine asked at a dose of 11 g. On the 20th day of the experiment grew to control only the number of ciliates by 11,3%. The number of bacteria in rumen contents was only a tendency to increase 40 day research ciliates number averaged 743,3 ± 14,06 thousand/ml (16,9% more than in the control), and bacteria – 11,8 ± 0,82 billion/ml (24,0% more than control). It is interesting to note that in addition to the growth of protozoa, change the number of ciliated infusoria. Thus, in the first experimental group of calves, which fed methionine and cystine at a dose of 9 g, 20-day experiment increased from 77,6 ± 0,93% (of the total number of ciliates) to 83,1 ± 1,22%, and on the 40th day increased to 85,3 ± 0,59%. The stimulating effect of methionine on the growth of microorganisms is marked in experiments Tarakanov. In our opinion, the stimulating effect of methionine and cystine the number of rumen microorganisms is to meet their needs in sulfur. High sodium sulfide ability to stimulate the growth of microorganisms scar indicates the presence of enzyme systems, can use the recovered sulfur in the synthesis of amino acids.

One indicator of synthesizing the properties of microorganisms nitrogen fractions are changes in the rumen. Additional input from feed calves sulfur synthetic amino acid contributes significant changes in total, and the remaining protein nitrogen in the rumen. When feeding calves sulfur amino acids in a dose of 9 g on the 20th day of the experiment the content of total nitrogen and protein to control increased by 7 and 16,8% respectively. Also noted the reduction of residual nitrogen by 15,2% (from 41,4 ± 0,93 to 34,2 ± 0,89 mg/%. On the 40th day of the experiment and protein content of total nitrogen was 153,2 ± 2,27 and 120,5 ± 1,55 mg/%, which is by 10,8 and 21,0% respectively higher than in the control, and the concentration of residual nitrogen decreased by 15,4% and totaled. Feeding calves methionine and cystine at a dose 11 g. caused a significant increase versus control at the 20-day study protein nitrogen content of 9,7% (from 102,4 ± 2,39 to 112,1 ± 3,42 mg/%), and reducing the residual nitrogen 9,4% (from 41,2 ± 1,11 to 36,6 ± 1,02 mg/%).

On the 40th day of research concentration of total nitrogen was 149,8 ± 3,16 mg/%, and protein – 115,5 ± 3,78 mg/%, which is significantly more than in the control at 8,4 and 16,0%. Instead, the content of residual nitrogen decreased against the control by 11,1%. Depending on the composition of the diet, physiological state, activity of rumen microorganisms concentration of nitrogen compounds varies considerably. It is known that the concentration of ammonia nitrogen and to some extent the level of non-protein nitrogen. More intense concentration increase protein

nitrogen contributed to the growth of total nitrogen in the rumen. In our opinion, based on these changes is to increase the number of microorganisms and their enzymatic properties by the impact of sulfur-containing amino acids.