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Diagnostics of Rumen Acidosis: Evaluation of Rumenocentesis and Oro-Ruminal Probes as Routine Techniques

Dzmitry VORANAU[1], Hlieb TUMILOVICH[2]
[1]Department of Obstetrics and Therapy, EI "Grodno State Agrarian University", Belarus
[2]Department of Anatomy of Animal, EI "Grodno State Agrarian University", Belarus
dvvoronov@tut.by

Objectives: Rumen acidosis in cows involves the change of rumen fluid pH to acidic side (less than 5.8-6.0). Samples of ruminal fluid are collected for diagnostic, therapeutic and scientific purposes. Their examination is routine diagnostics of clinical and particularly subclinical forestomach disorders in dairy cattle. The aim of this study was to compare rumenocentesis versus oro-ruminal probe for measurement of rumen pH.

Materials and Methods: Ten Holstein dairy cows in the dairy farm (Belarus, Brest region, "Otechestvo" OJSC) were selected for the study. The experiment was conducted in two stages: 1) identification of animals with signs of acidosis of rumen; 2) sampling of the rumen fluid in sick animals for measurement of pH. Cows suffering from rumen acidosis have the following clinical signs: loss of appetite, atony of rumen, muscular tremor, diarrhea, hypersalivation, tachycardia, polypnea. 2.5 to 3 hours following feeding and after clinical examination, ruminal fluid collection was carried out by means of oro-ruminal probe and rumenocentesis. The puncture site was located 12-15 cm caudal to the costochondral junction of the last rib, on a horizontal line level with the top of the patella. Before sampling, the puncture site was disinfected. The puncture was done using a 120 mm long, 1.5 mm gauge needle with mandrin. Another sample was taken immediately; we used the oral probe "Drench-Mate". In total, 10+10 samples of ruminal fluid were collected. The pH level was measured by means of a portable pH meter Piccolo by Hanna (model HI-1290). Pre-filtration and centrifugation of the samples were not carried out.

Results: A small local inflammatory reaction around the puncture was observed in 1 of the sampled cow. No other case of inflammation and abscesses formation was observed. Breach of skin integrity of 9 in every 10 animals disappeared within 3-5 days. After rumenocentesis the average pH of ruminal fluid was 5.83±0.46. The value of pH after oro-ruminal probe was 5.97±0.29. The difference made up 0.14 or 2.3 %. In some cows the rumen pH results differed by 0.6. The sampling by oro-ruminal probe had higher ruminal pH. The use of ruminocentesis seems to neutralize the effect of continuously coming saliva on pH of the surface layer. Both methods of sampling didn't change the blood indices greatly (no more than 10 %). But we didn't study the influence of the sampling methods on productivity of dairy cows. In our opinion, routine monitoring of rumen pH by rumenocentesis is the most efficient and accurate way to recognize subclinical forestomach disorders at an early stage.

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