ADAPTATIONAL FEATURES OF COWS IN CASE OF EXPERIMENTALLY PROVOKED ACIDOSIS

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After examination of the cattle that were brought to the clinic of Lithuanian Veterinary Academy with evident clinical signs of digestive disturbances, it was observed that sometimes the process of recovery in cows overfed concentrates starts without any therapeutic measures. The investigations were aimed to study diurnal changes of biochemical and microbiological parameters in the rumen fluid of Lithuanian Black & White cows, when they were fed balanced ration and in case of experimentally provoked acidosis, overfeeding the cows barley meal.

2 groups of experimental cows were formed according to the principle of analogous. The cows of the I group (n=3) were fed balanced ration formed according to the standards generally accepted in Lithuania. The cows of the II group underwent 24-hour starvation period and then were overfed barley meal. The cows of the IIA group (n=3) had eaten about 22 kg of barley meal. The cows of the IIB group (n=5) had eaten about 13 kg of barley meal. The rumen fluid was sampled by the stomach tube 3 hours after morning feeding and every three hours during 24-hour period. The following parameters were studied: the number of infusoria, total bacterial count, reduction activity of bacteria, glucose fermentation, rumen fluid pH, total amount of free fatty acids (FFA) and the amount of D- and L-lactic acid isomers. The amount of DL-lactic acid was counted summing up the amount of D- and L-isomers.

Microbiological and biochemical parameters in the rumen fluid of the I group cows fluctuated in the ranges of physiological norm during 24-hour period. Reduction activity of bacteria, glucose fermentation, the number of infusoria, pH and FFA in the rumen fluid of the IIA group cows were constantly decreasing all that time. The same parameters of the rumen fluid (except FFA) in the IIB group of cows were decreasing for 6 - 12 hours after overfeeding. The number of bacteria in the rumen of the IIA group of cows after 24 hours it was 359 times ($P<0,001$) as many as in the I group. The same tendency was observed in the IIB group: total number of bacteria 7,7 ($P<0,001$) times as many as in the I group of cows. 100,7 mmol/l DL-lactic acid was produced in the rumen of the IIA group. The concentration of DL-lactic acid in the IIB group reached only 4,1 mmol/l. With increasing amount of concentrates, the concentration of D-isomer went up and became prevailing. The highest concentration of D-isomer in the IIA group of cows was reached 12 hours after overfeeding, it was 168,5 times ($P<0,001$) as higher as in the I group. The prevalence of D-isomer was observed in the IIB group of cows 9 hours after overfeeding and the amount of this isomer was 7,6 times ($P<0,001$) as many as in the I group of cows.

In the case of provoked rumen acidosis the syndrome of "acidotic state" is observed during 3 - 24 hours period, and it depends on the amount of barley meal consumed. We think, that certain adaptational abilities are characteristic to the microflora and microfauna of the rumen and they are able to adapt to the changing conditions of the medium and retain required level of the fermentation process activity. Higher activity of microbiological process was observed in the IIB group of cows and it might have determined the recovery of fermentation process during 24-hour period.