

COMPARISON OF HEALTH INDICES OF NEWBORN CALVES FED DIFFERENT DOSES OF COLOSTRUM USING NIPPLE OR OESOPHAGEAL FEEDER

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INTRODUCTION. Getting colostrum into a newborn calf as soon as possible is critical for a good resistance to diseases. After six hours, the ability of the gut walls to absorb immunoglobulins (Ig) decreases by one third. After 24 hours, the gut walls can absorb only 11% of what could originally be absorbed. Refractometric total serum protein (TP) values above 5 g/dl in neonates at 24-hour-age has been used to indicate colostrum Ig absorption. The standard recommended feeding system is: first, two liters of high quality colostrum from the bottle with a nipple (nipple) in a two-hour-period after calf's birth. Then, in next 12 hours, the calf needs to get two liters of colostrum. American and German advisers recommend the following: first time the calf needs to be fed 4 liters of colostrum by oesophageal feeder (tube) two hours after birth. The aim of our study was to compare indicators of health to newborn calves fed different doses of colostrum using tube or nipple.

MATERIALS AND METHODS. The experiment was performed in the calf shelter of the 275 dairy cows herd in February 2014. The calves were kept in individual cages and were fed two times a day. In the control group (C), 10 calves were fed as usually: the first time calves were fed 2.4 ± 0.2 liters of colostrum from the nipple as soon as possible (1–6.5 hours) after birth. In the experimental group (E), 10 calves got 3.6 ± 0.1 liters of colostrum by tube in the period of 0.5–7.0 hours. The health indices were controlled every day during 15 days. On Day 1 (D1) and Day 15 (D15), the live weight of calves was calculated from the measures of the chest perimeter, blood samples were collected from *v. jugularis* for hematological and biochemical analyses. The intensity of diarrhea was scored in 3 point system. The data were statistically analyzed by software "Stata 12.2".

RESULTS. On D1, the live weight of calves in group E was 42.1 ± 1.4 kg significantly ($p < 0.05$) lower than in group C 47.1 ± 1.3 kg, but on D15 there were not significant ($p > 0.05$) difference between both groups (48.4 ± 1.7 kg and 53.2 ± 1.7 kg, respectively). On D1, in group E TP and globulins were significantly higher ($p < 0.05$) than in group C (TP 62.6 ± 1.5 g/l and 56.5 ± 2.2 g/l and globulins 41.7 ± 1.8 g/l and 34.9 ± 2.4 g/l, respectively). It means that the group E calves have got more Ig within 24 hours of life. The calves of group E had less expressed signs of diarrhea (mostly on D5–D10). On D15, a significant negative correlation between TP level and severity of calves' diarrhea ($r = -0.47$; $p < 0.05$) were detected. It was associated with restriction of milk in nutrition of ill calves and protein loss during diarrhea. Feeding restrictions as well as fluid, electrolyte and protein loss during diarrhea made it difficult to interpret the significant correlations between clinical signs, hematological and biochemical data on D15.

CONCLUSIONS. The newborn calves fed with 3.6 liters of colostrum by oesophageal feeder 24 hours after birth have more total serum proteins and globulins in the serum, have better live weight gains during 15 days period and have lighter diarrhea signs than calves fed 2.4 liters of colostrum by a bottle with nipple.