

EFFECT OF RUMEN PROTECTED METHIONINE (RPM) ON NITROGEN METABOLISM IN LACTATING MEDITERRANEAN BUFFALOES FED A REDUCED-PROTEIN DIET

Pace V., Chiariotti A., Contò G., Carfi F., Di Giovanni S., Mazzi M., Terramoccia S.
CRA-Research Centre for Animal Production, via Salaria 31, 00015 Monterotondo (Rome) Italy

OBJECTIVES

The aim of the research was to evaluate the effect of supplementing rumen protected methionine (RPM) on nitrogen metabolism and rumen microbial growth in lactating buffaloes fed a amount of crude protein (CP), in order to optimize the nitrogen utilization and reduce the polluting excretions.

METHODS

Sixteen multiparous Mediterranean buffaloes (*Bubalus bubalis* L.), homogeneous for number and lactation stage, milk production traits and body condition score, were divided in two groups (A and B) and fed (Tab.1) for 120 days on two isoenergetic diets (0.90 MilkFU/kg DM) containing, on DM basis:

-A 44% corn silage, 13% soybean meal, 15% corn meal, 26% alfalfa hay (CP 15.53%)

-B 44% corn silage, 9.5% soybean meal, 18,5% corn meal 26%, alfalfa hay (CP 14.16%) with supplementation of RPM (12 g/head/d).

Blood and urine samples from each animal were collected every two weeks, for the detection of urea and insulin in plasma and total-N, urea-N and creatinine, in urine. Samples of whole rumen content were collected from four cannulated animals, fed the same diets, one hour before the morning feed, for the estimation of total and cellulolytic bacteria, fungi and protozoa. The differences between groups were tested using a monofactorial model (ANOVA).

RESULTS AND DISCUSSION

In the plasma the urea level resulted significantly higher in group A with respect to B: 7.42 vs 6.19 mM/L ($P<0.01$) (fig.1). No differences were found in the insulin content. Urea-N in urine was also higher in group A: 153.5 vs 131.5 g/head/d ($P<0.05$). The amount of total organic nitrogen detected in urine was 207.5 in group A vs 179.2 g/head/d in B ($P<0.01$) (fig.2) and in the faeces 135.8 and 151.1 g/head/d respectively. The total N-manure resulted also higher in the group A 358.6 vs 314.7 g/head/d ($P<0.01$) (fig.3) and the apparent N-digestibility 67.7 and 59.9% respectively. As far as the microbial growth is concerned, no differences were detected in bacteria and fungi, but protozoa resulted significantly lower in group B (1.7×10^8 vs 7.2×10^7 , $P<0.01$).

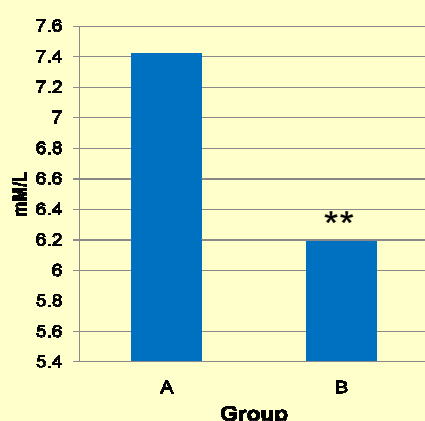


Fig. 1 Levels of plasma urea

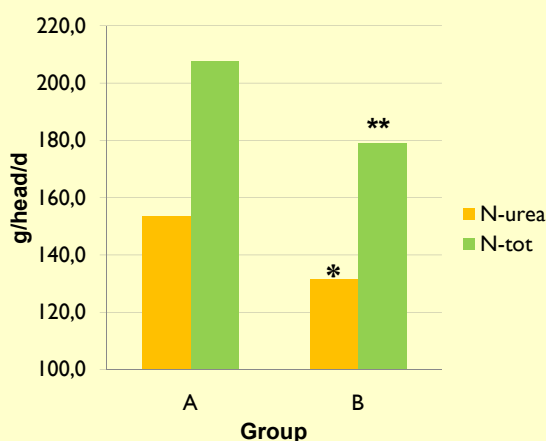


Fig. 2 N-urea and N-tot in urine

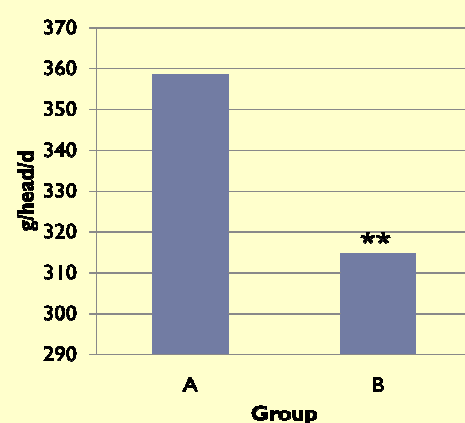


Fig. 3 total N-manure

CONCLUSIONS

The reduction of protein level in the diet supplemented with RPM seems to negatively affect the growth of some rumen microorganisms, that are unable to utilize RPM, but it exerts a positive effect lowering the urinary and fecal nitrogen excretion, so contributing to reducing the impact of buffalo herds on the environment.