

RELATIONSHIP BETWEEN THE CONTENT OF RUMEN DEGRADABLE PROTEIN IN DAIRY COW DIETS AND EMISSION OF EXCRETED AMMONIA NITROGEN

Allan Kaasik, Meelis Ots, Ragnar Leming

Institute of Veterinary Medicine and Animal Science, Estonian University of Life Sciences, 51014, Kreutzwaldi 62, Tartu, Estonia, tel: +372 73 13 706, e-mail: allan.kaasik@emu.ee

Summary. The current study investigated the effect of concentration and efficiency of use of rumen degradable protein (RDP) on the nitrogen content of excreta and urea content of urine, as well as on ammonia emissions. Ammonia emission from excreta is mainly affected by the urea concentration in urine which, in turn, mainly results from protein degradation and the efficiency of use of protein in the rumen. The variable component in diets with equal crude protein content ($13.2 \pm 0.13\%$) was the type of protein, which was either highly rumen degradable barley (B) or slowly rumen degradable maize (M). The urine dry matter contained a significantly higher concentration of nitrogen ($P = 0.0015$) and urea ($P = 0.0012$) when the barley diet was fed. In conditions of similar ambient temperature ($^{\circ}\text{C}$) and humidity (%) the average ammonia emission from excreta also increased ($P = 0.0001$). The results reveal that, from the viewpoint of reducing emissions, in addition to the crude protein content, the amount, efficiency of use and precise rationing of rumen degradable protein play an important role when diets containing low levels of crude protein are fed.

Key words: dairy cattle, ammonia emission, rumen degradable protein, urine, urea.