EFFECT OF *L. PLANTARUM*, *PEDIOCOCCUS ACIDILACTICI*, *ENTEROCOCCUS FAECIUM* AND *L. LACTIS* MICROBIAL SUPPLEMENTATION OF GRASS SILAGE ON THE FERMENTATION CHARACTERISTICS IN RUMEN OF DAIRY COWS

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Summary. Trials were conducted at the Lithuanian Institute of Animal Science to determine metabolism changes in the rumen and blood profile of Lithuanian Black-and-White dairy cows fed different fermented silages. First cut 8 to 10 h wilted grass- legume sward (20% *Festuca pretense*, 30% *Trifolium pretense*, 50% *Lolium perenne*) with DM content – 348.3 g kg^{-1} was made in round bales either untreated (C) or treated with inoculant (a bacterial mixture of *Lactobacillus plantarum* Milab 393, *Pediococcus acidilactici* P6 and P11, *Eterococcus faecium* M74, and *Lactococcus lactis* SR3.54) at rate 5 × 10^5 colony forming units g^{-1} of fresh herbage (L). Treatment had no effect on chemical composition, digestible value of nutrients. Both ordinary made and inoculated silages were well fermented at opening with pH values 4.58 and 4.17, respectively. Addition of bacterial mixture resulted in a significant ($P<0.05$) increase in lactic acid concentration and markedly decreased the concentration of acetic acid in silage. Treatment had an effect on protein breakdown as measured by ammonia-N concentration, with values of 45.7 and 35.19 g kg^{-1} N for untreated and inoculated silages respectively.

The silages were offered *ad libitum* with a standard concentrate suplementation at a flat-rate (280 g for 1 kg milk) for ten Lithuanian Black-and-White dairy cows divided in two analogous groups for a period of 100 days. Inoculated silage led to higher infusoria count in rumen fluid during entire experiment compared to controls and at the end of the experiment, infusoria count in the rumen of the cows fed treated silage was by 13.9 % higher than in controls. Treated with the bacterial mixture silage had no effect on the rumen pH value and VFA concentration, however, at the end of the experiment the ratio of acetic acid to propionic acid was lower (on 1.19 %) in the rumen of cows offered treated silage compared to cows fed ordinary silage. Silage treated with microbial mixture was beneficial to rumen protein synthesis, whereas the content of protein nitrogen and that of total nitrogen were, respectively, by 5.17 mg l00 ml^{-1} ($P<0.01$) and by 3.37 mg l00 ml^{-1} ($P<0.01$) higher compared to controls. The content of ammonia-N was lower in the rumen fluid of cows offered inoculated silage during all experimental period. Blood metabolite content was unaffected by treatment and blood of animals of both groups corresponded to the physiological level.

Key words: silage, rumen contents, infuzoria count, volatile fatty acids, nitrogen, blood.