

Effects of Rations with High Amount of Crude Fiber on Rumen Fermentation in Suckler Cows

Authors : H. Scholz, P. Kuehne, G. Heckenberger

Abstract : Problems during the calving period (December until May) often are results in a high body condition score (BCS) at this time. At the end of the grazing period (frequently after early weaning), however, an increase of BCS can often be observed under German conditions. In the last eight weeks before calving, the body condition should be reduced or at least not increased. Rations with a higher amount of crude fiber can be used (rations with straw or late mowed grass silage). Fermentative digestion of fiber is slow and incomplete; that's why the fermentative process in the rumen can be reduced over a long feeding time. Viewed in this context, feed intake of suckler cows (8 weeks before calving) in different rations and fermentation in the rumen should be checked by taking rumen fluid. Eight suckler cows (Charolais) were feeding a Total Mixed Ration (TMR) in the last eight weeks before calving and grass silage after calving. By the addition of straw (30 % [TMR1] vs. 60 % [TMR2] of dry matter) was varied the amount of crude fiber in the TMR (grass silage, straw, mineral) before calving. After calving of the cow's grass, silage [GS] was fed ad libitum, and the last measurement of rumen fluid took place on the pasture [PS]. Rumen fluid, plasma, body weight, and backfat thickness were collected. Rumen fluid pH was assessed using an electronic pH meter. Volatile fatty acids (VFA), sedimentation, methylene-blue, and amount of infusorians were measured. From these 4 parameters, an "index of rumen fermentation" [IRF] in the rumen was formed. Fixed effects of treatment (TMR1, TMR2, GS, and PS) and a number of lactations (3-7 lactations) were analyzed by ANOVA using SPSS Version 25.0 (significant by $p \leq 5\%$). Rumen fluid pH was significantly influenced by variants (TMR 1 by 6.6; TMR 2 by 6.9; GS by 6.6 and PS by 6.9) but was not affected by other effects. The IRF showed disturbed fermentation in the rumen by feeding the TMR 1+2 with a high amount of crude fiber (Score: > 10.0 points) and a very good environment for fermentation during grazing the pasture (Score: 6.9 points). Furthermore, significant differences were found for VFA, methylene blue, and the number of infusorians. The use of rations with a high amount of crude fiber from weaning to calving may cause deviations from undisturbed fermentation in the rumen and adversely affect the utilization of the feed in the rumen.

Keywords : rumen fermentation, suckler cow, digestibility organic matter, crude fiber

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