

Long-term measurement of rumen pH in grazing dairy cows by an indwelling and wireless data transmitting unit

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Subacute rumen acidosis (SARA) is a significant production disease of dairy cattle. The objective of this study was the continuous and long term measurement of ruminal pH in grazing dairy cows. Therefore, an indwelling system for monitoring ruminal pH and temperature, already described and evaluated by Gasteiner et al. (2009), *Veterinary Medicine Austria* 96, 188-194, was applied. Data were sampled in an internal memory chip and could be read out via radio transmission to an external receiver. The indwelling system was given orally to 6 multiparous cows, 2 of these cows were fitted with a rumen cannula. Ruminal pH was measured every 600 sec over a 40 d period. Daily mean, nadir and time ruminal pH was below 6.3; 6.0; 5.8 and 5.5 were determined. Statistical analysis was conducted using GLM (Statgraphic Plus 5.1). After a 7 d adaptation period, whilst all 6 cows were fed forage in the cow barn, animals were given pasture 10 hours/d for 10 d. Then the cows spent 20 hours/d on pasture, only interrupted twice daily for 2 hours for milking and for additional feeding. The 3 treatments (2 cows/treatment) included: continuous grazing only (G), continuous grazing plus 6 kg/d of concentrate offered in two equal rations during milking time (GC) and continuous grazing plus 6 kg/d of hay fed twice daily (GH). Due to the progressive changing of pasture nutrient components, mainly fibre, protein and sugar, no latin square design was carried out. During the period of examination > 5.800 datasets/cow for ruminal pH and temperature could be recorded. Radio transmission of data (twice daily) was trouble free. Mean ruminal pH for G, GC and GH was 6.4, 6.0 and 6.6. Nadir was 5.97, 5.58 and 6.20. pH time under 6.3; 6.0; 5.8 and 5.5 for G was 117, 0, 0, 0 min/d, for GC it was 1105, 695, 411, 114 min/d and for GH pH time was 605, 123, 27 and 2 min/d respectively. Results were significantly influenced by the treatment and show, that the presented method is a very useful and proper tool for scientific applications. The described indwelling pH measuring system will also be assembled for practical purposes in future.