ABSTRACTS
* Author Presenting Paper

58 Estimating forage protein degradation in the rumen.
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Forage proteins are rapidly degraded by rumen microorganisms and therefore supply relatively small quantities of undegraded intake protein (UIP) to cattle. Young growing cattle with high metabolizable protein requirements and lactating beef or dairy cows responded to UIP supplementation when fed high forage diets, even though degradable intake protein (DIP) was adequate. Purines have been used for the past 15 years as a marker for microbial protein. Microbial protein must be accounted for in duodenal samples or in situ incubations in order to measure forage UIP. Recent reports suggested that the commonly used procedure has interfering compounds and that differential centrifugation may be inappropriate for obtaining clean samples of rumen microbes. Reanalysis of samples indicated 3 to 4 times the purine values in duodenal samples and in microorganisms attached to NDF incubated in situ. A modification of the in situ procedure is to remove the microorganisms with neutral detergent solution after incubation. This procedure is highly correlated to the in situ procedure using purine correction for attached microbes, but it is less variable and simpler to perform. Enzyme analysis shows some promise as a procedure where ruminally fistulated cattle are not available. NIRS has been reported to be useful as a predictor of UIP by two groups but not by a third. Hopefully NIRS can be developed for commercial use, at least with monocultures. Rate of passage is used to calculate UIP values along with the in situ rate of degradation. We propose that passage lag time needs to be added to that calculation. Lag times may range from 5 to 15 h. Degradation with no passage markedly reduces UIP values. Forage proteins are highly degraded and for nutritionists to accurately balance diets for metabolizable protein, it is necessary to measure UIP values accurately. NDIN after in situ incubation appears to be a simple and acceptable method for UIP determination.

Key Words: Forages, Protein Degradation, Methods