865 Nitrogen flow estimations in the duodenum of steers fed concentrate and roughage diets: total collection vs markers R. C. Wanderley*, and C. B. Theurer.
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Four steers fitted with duodenal re-entrant cannulas were used to compare the effect of diet (concentrate vs roughage) on the ruminal nitrogen outflow reaching the duodenum. Digesta flow markers (Cr_2O_3 and lignin) were compared with automated total collection (ATC) for estimating duodenal N flow over 3 to 6 day collection periods. Estimations of N flow based on Cr_2O_3 and lignin were about 10 to 15% greater ($P < .05$) than direct flow measurements by ATC. Lignin estimations were more variable (CV = 21%) than Cr_2O_3 estimations (CV = 11%) in steers fed the concentrate diet. Conversely, Cr_2O_3 estimations were more variable (CV = 32%) than lignin estimations (CV = 18%) in the same steers receiving the roughage diet. Variabilities of ATC measurements were similar for both diets (CV = 15%). Daily duodenal N flow (measured by ATC) was about 30% greater than the daily N intake (91g) in steers fed the concentrate diet. In contrast, duodenal N flow (measured by ATC) was similar to daily N intake (86g) in the roughage diet. Although differences in dietary crude protein concentrations (12.6% in the concentrate diet vs 14.9% in the roughage diet) may have accentuated observed differences between the two diets, the data suggests more ruminal N outflow by increasing dietary non-structural carbohydrates (ie, starch). Further studies are necessary to establish the value of the structural:non-structural dietary carbohydrate ratio versus the source of dietary protein in optimizing protein ruminal outflow reaching the duodenum.

KEY WORDS Duodenal nitrogen, automated digesta collection, beef cattle, flow markers