



# Abstracts of the 2020 American Dairy Science Association® Annual Meeting Journal of Dairy Science®

## Volume 103, Supplement 1

### 316 In situ rumen degradability and intestinal digestibility of rumen-protected lysine products.

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The objective of this study was to determine and compare rumen degradation and in vitro intestinal digestibility of 3 ruminally protected (RP) lysine products: LysiGEM™ and LysiPEARL™ (Kemin Animal Nutrition and Health); and AjiPro (Ajinomoto). Ruminant degradability and intestinal digestibility of different RP-Lys sources were studied using the in situ nylon bag technique and the modified 3-step in vitro technique, respectively. The RP-Lys products consisted of Lys coated with rumen-stable compounds. Samples ( $0.38 \pm 0.01$  g) of each RP product were weighed into nylon bags and incubated in the rumen for 0, 2, 4, 8, 16, 24 and 48 h in duplicate bags for each incubation time in 2 consecutive experimental periods. An empty bag was also included as a correction factor for each sample at each incubation time. Ruminant degradability was calculated with a simple exponential function ( $Y = a + b \cdot (1 - \exp(-ct))$ ), where  $a$  was the amount of N disappearing from the bag at 0 h;  $b$  was the potentially degradable fraction; and  $c$  was the degradation rate of the potentially degradable fraction. The effective degradability of N (EDN) was calculated as:  $EDN (\%) = a + [(b \cdot c) / (c + k)]$ ; where  $k$  (0.10/h) is the estimated rate of outflow from the rumen, and  $a$ ,  $b$ , and  $c$  are the same as described earlier. Treatment effects adjusted by period were analyzed using the GLM of SAS (Cary, NC) and significance declared at  $P < 0.05$ . Solubility (%) was higher in LysiGEM (20.9) and LysiPEARL (26.8) compared with AjiPro (2.6). Rate of degradation (/h) was higher in LysiPEARL (0.048) compared with AjiPro (0.015) and LysiGEM (0.013). Effective degradation (%) was highest in LysiPEARL (49.2), intermediate in LysiGEM (21.4) and lowest in AjiPro (9.2). However, intestinal digestibility (%) was lowest in AjiPro (47.9) compared with LysiGEM (87.3) and LysiPEARL (95.3). Bioavailability (%) was highest in LysiGEM (63), intermediate in LysiPEARL (48.7) and lowest in AjiPro (44.5). There are relevant differences in ruminal degradability and intestinal digestibility of Lysine among different RP-Lys that have an important impact on overall bioavailability.

#### KEYWORDS:

protected lysine, ruminal degradability, intestinal digestibility