

**Session:** Dairy: Feed Additives II (poster)

**# T294**

**Day/Time/Location:** Tuesday, July 17, 2012, 7:30 AM - 9:30 AM, North Hall AB

**Assessment of lysine released from rumen-protected lysine products exposed to high and low moisture TMR over 24 hours.** P. Ji\*, C. S. Ballard, R. E. Clark, B. M. Sweeney, and C. Kokko, *William H. Miner Agricultural Research Institute, Chazy, NY.*

A study was conducted to evaluate the stability of 6 rumen-protected lysine products (RPL) when incorporated into TMR diets with different DM contents. Three loads (~350 kg/load) of each of 2 TMR diets only varying in DM content (40.5% as LD vs. 51.8% as HD) were prepared with Super Data Ranger. Duplicate Ziploc bags containing RPL ( $2 \pm 0.03$  g) and no RPL (as control samples) were filled and mixed well with  $200 \pm 1$  g TMR from each load. Bags were stored at room temperature (21°C) for 0, 6, 18, and 24 h to simulate RPL exposure to TMR when mixed and delivered once per day. At the end of each time point, bag contents were transferred to strainer bags and soaked in 1 L Milli-Q water containing 500 mg Arg (as internal standard) for ~1 min to solubilize the Lys released in the TMR. Solution was filtered (0.45  $\mu$ m) and frozen (-80°C) until filtrate was analyzed for Lys using ultra performance liquid chromatography. The Lys content for samples containing RPL were corrected for background Lys measured in control samples and Lys release (LR, %) was calculated. Data were analyzed as split-plot design with PROC MIXED of SAS. Results show that all RPL exhibited increased LR when exposed to TMR over time with differing magnitudes of LR ( $P < 0.01$ ). The DM of TMR did not affect LR of most RPL; however, the overall LR of AminoShure-L was greater in TMR with LD than HD (5.9 and 3.0%, respectively;  $P < 0.01$ ). A significant interaction of TMR DM and exposure time was observed for AminoShure-L and MetaboLys ( $P < 0.01$ ). Our results indicate that less feeding frequency may result in greater Lys loss from RPL due to longer exposure in TMR before consumption by the cow.

Table 1. Lysine release (%) of RPL at 0, 6, 18, and 24 h in TMR

RPL product	0	6	18	24	SEM	P-value
AminoShure-L	0.2 <sup>ax</sup>	1.3 <sup>ay</sup>	6.4 <sup>b</sup>	9.8 <sup>c</sup>	0.47	$\leq 0.01$
LysiPEARL	6.2 <sup>a</sup>	39.7 <sup>b</sup>	47.0 <sup>c</sup>	48.4 <sup>c</sup>	1.66	$\leq 0.01$
Megamine-L	3.4 <sup>a</sup>	9.8 <sup>b</sup>	16.5 <sup>c</sup>	19.2 <sup>d</sup>	0.76	$\leq 0.01$
MetaboLys	0.7 <sup>a</sup>	0.8 <sup>a</sup>	2.2 <sup>b</sup>	3.8 <sup>c</sup>	0.25	$\leq 0.01$
USA Lysine	0.4 <sup>a</sup>	54.2 <sup>b</sup>	51.4 <sup>b</sup>	53.4 <sup>b</sup>	1.72	$\leq 0.01$
AjiPro-L	0.5 <sup>a</sup>	0.7 <sup>a</sup>	1.3 <sup>b</sup>	1.3 <sup>b</sup>	0.17	$\leq 0.01$

<sup>a-d</sup> $P < 0.05$ ; <sup>x,y</sup> $P < 0.10$ .

**Key Words:** rumen-protected Lys, TMR, lysine

**Notes:**

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