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USA Lysine: Protection Without Waste, Innovation You Can Afford

Innovative technology from Kemin changing the way dairy cows are fed, improving dairy's bottomline

Comparing Rumen Protected Lysine Products

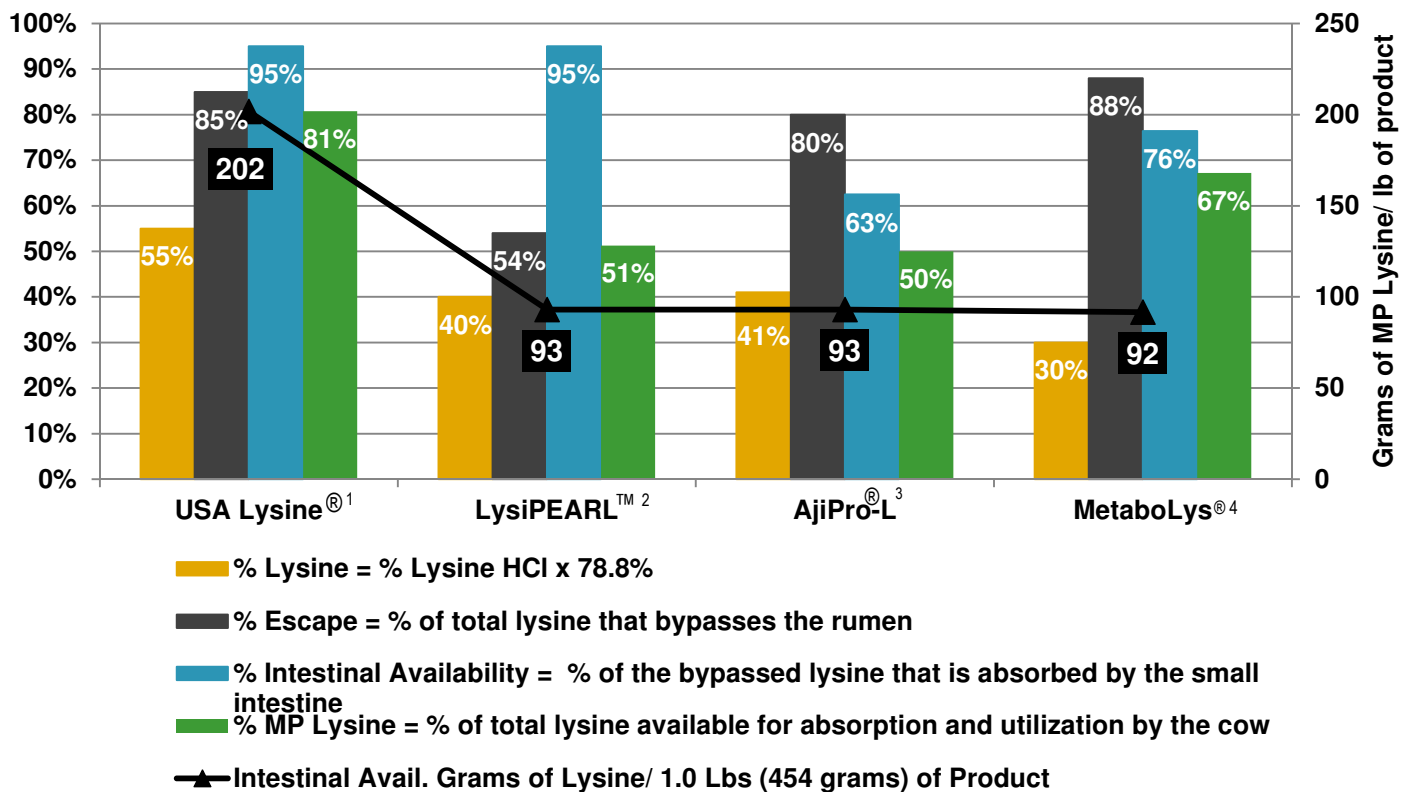
Making a purchase decision in today's economic climate requires an in-depth examination of a product's features and benefits. From functionality to price, focusing on one or two characteristics doesn't provide the complete picture - this is especially true when comparing rumen protected lysine products. While it appears some products may have advantages (e.g. % bypass or price per pound), it is important to gauge a product's efficacy on the sum of all of its characteristics.

The four product characteristics necessary to effectively evaluate rumen protected lysine are:

- **Lysine concentration** = Percent (by weight) of the product that is lysine.
- **Rumen escape** = Percent of the lysine contained by the product that is undegraded in the rumen.
- **Intestinal availability** = Percent of the undegraded lysine available for absorption by the intestines and available for use by the animal.
- **Metabolizable Lysine (MP lysine)** = Percent of the total lysine contained in the product available and utilized by the animal ($100\% \times \text{Bypass \%} \times \text{Intestinal Availability \%} = \text{Metabolizable Lysine \%}$).

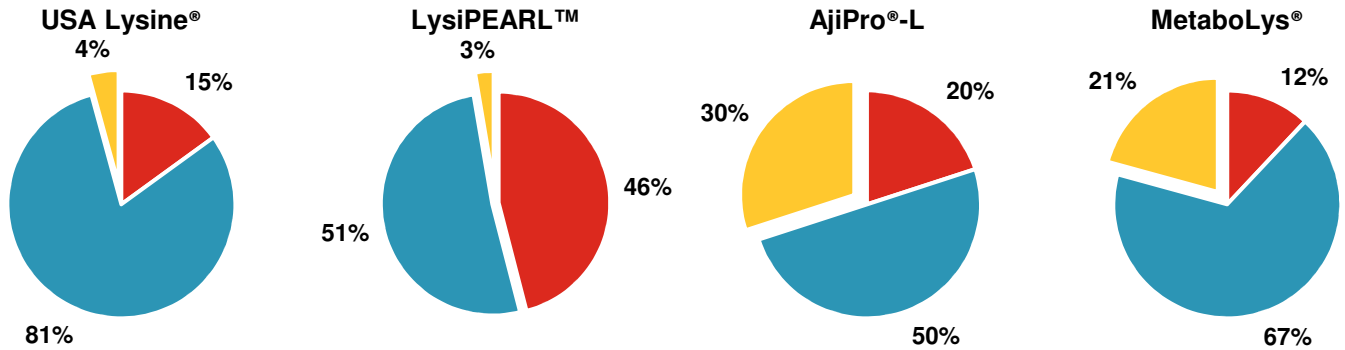
Comparisons of the commercially available rumen protected lysine products are shown in Figure 1.

Figure 1. Rumen Protected Lysine Product Characteristics



If the product does not release the lysine after passing through the rumen, the lysine is wasted. Most importantly, neither the rumen microbes nor the cow benefit if the lysine is excreted in the feces. Only 4 percent of the lysine contained in USA Lysine® is excreted compared to 30 percent of the lysine excreted from AjiPro®-L (Figure 2).

Figure 2. Destination of the Lysine Contained in the Various Products



■ % of Total Lysine Degraded in Rumen ■ % of Total Lysine Intestinally Available ■ % of Total Lysine Excreted

Lysine concentration, rumen bypass and intestinal availability determine which product is the most efficient at delivering MP lysine to the cow. To determine which product is the most cost-effective source of MP lysine, a comparison highlighting price is shown in Table 1.

Table 1: Price Comparison of Rumen Protected Lysine Products

	Grams of MP Lysine/ lb of Product	Product Cost (\$/lb)	MP Lysine Cost (\$/gram of MP lysine)	Cost of 10 grams of MP lysine
	454 grams of product x % lysine x % MP lysine		\$/lb of product / grams of MP lysine	\$ per gram of MP lysine x 10
USA Lysine®	202	\$3.15	\$0.016	\$0.16
LysiPEARL™	93	\$2.50	\$0.027	\$0.27
AjiPro®-L	93	\$1.75	\$0.019	\$0.19
MetaboLys®	92	\$2.60	\$0.028	\$0.28

Conclusion

Many in the market want you to believe high rumen bypass delivers an adequate volume of available lysine. On the contrary, high rumen bypass isn't enough to ensure your cows receive the MP lysine needed to reap the production or nutritional benefits. When selecting your lysine source, review each characteristic of a rumen protected lysine product to determine which product provides the most cost-effective supply of MP lysine. A price comparison indicates USA Lysine is the most cost-effective source of MP lysine available on the market.

References

1. Kemin Internal Document, 15-00008.
2. Kemin Internal Document, 12-00011.
3. CNCPS Model Inputs for AjiPro-L Generation 2.
4. MetaboLys Nutrient Composition CNCPS v5.0.

AjiPro®-L is a registered trademark of Ajinomoto Heartland, Inc., Chicago, IL.
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