



Added Lysine Can Fortify Soybean Meal Soy Best PEARL Lactating Cows & Plasma Study

Background

Soy Best PEARL is Soy Best fortified with Kemin LysiPEARL™ rumen-protected lysine in the gums. Previous studies have shown that the lysine in Soy Best PEARL 1) Behaves as one pool of lysine in the rumen, 2) Has the same rumen bypass value as the native lysine in Soy Best and 3) Has greater intestinal digestibility than the native lysine in Soy Best.¹

Soy Best PEARL contains one and a half times more rumen undegraded lysine (RU-lysine) than Soy Best (9.37% versus 6.26% RU-lysine as a % of lysine for Soy Best PEARL and Soy Best, respectively).

Question

Does Soy Best PEARL deliver one and a half times more lysine to the cow's blood than Soy Best, in line with its RU-lysine content?

Study

A study was conducted at South Dakota State University as reported in the Journal of Dairy Science.² Eight lactating Holstein dairy cows were fed a lysine adequate ration. A plasma lysine baseline was established by collecting serial blood samples at 2-hour intervals for 20 hours. The cows were randomly assigned to one of two treatments: 2.27 kg of either Soy Best PEARL or Soy Best. Treatment diets were fed for 8 days and serial blood samples were collected again.



Figure 1.
Increase in plasma lysine
from feeding Soy Best or
Soy Best PEARL to
lactating Holstein cows

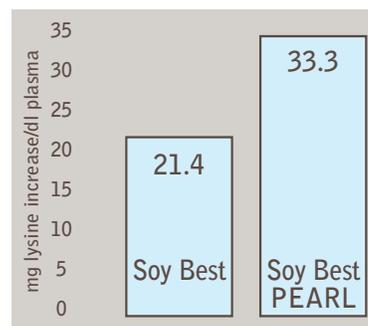


Table 1.
Intestinally absorbable dietary lysine in Soy Best and
Soy Best PEARL

| Product | | Soy Best | Soy Best PEARL |
|------------------------|-------|----------|----------------|
| Crude Protein | % DM | 49.120 | 48.817 |
| RUP | % CP | 73.3 | 73.3 |
| Lysine | % RUP | 6.26 | 9.37 |
| Lysine | % DM | 2.254 | 3.353 |
| Plasma Lysine Increase | mg/dl | 21.4 | 33.3 |
| IADL* | Ratio | 9.495 | 9.932 |

IADL Dif. 0.437, Improvement 4.6%

* IADL (Intestinally absorbable dietary lysine) is the ratio of plasma lysine increase/lysine % DM

Results

Plasma lysine data were expressed as a change from baseline. The increase in plasma lysine for cows fed Soy Best PEARL (33.3 mg/dl) was 1.56 times greater ($P < 0.10$) than for cows fed Soy Best (21.4 mg/dl) (Figure 1).

Intestinally absorbable dietary lysine ratios are calculated in Table 1. Soy Best PEARL IADL is 4.6% greater than Soy Best IADL. This agrees with a previously published study using an *in vitro* model in which lysine intestinal digestibility was 83.0% for Soy Best and 89.9% for Soy Best PEARL (Figure 2).¹

Conclusions

1. Plasma lysine in cows fed Soy Best PEARL was one and a half times greater than in cows fed Soy Best. This is in line with the lysine content of the two products; Soy Best PEARL contains one and a half times more RU-lysine than Soy Best (Table 2).
2. Soy Best PEARL is a source of intestinally available dietary lysine (IAD-lysine) that is absorbed into the plasma of lactating dairy cows. IAD-lysine in Table 1 is the ratio of plasma lysine increase/lysine % DM. The 4.6% improvement for Soy Best PEARL IADL is due to greater digestibility of LysiPEARL lysine in the small intestine.
3. Intestinal digestibility of RU-lysine in Soy Best PEARL is significantly greater than in Soy Best, apparently due to the high digestibility of the RU-lysine from LysiPEARL.¹
4. Soy Best PEARL can be used to help meet a cow's lysine requirement (Table 3).

Footnotes:

1. Macgregor, C. A., K. Kalscheur and D. Sapienza. Added lysine can fortify soybean meal. *Feedstuffs*. Vol. 84, No. 29, July 16, 2012.
2. Weich, W.D., K.F. Kalscheur, F.R. Valdez, C.A. Macgregor, Jr. 2013. Effects of feeding LysiPEARL™ and rumen-protected lysine sources on plasma lysine concentration in lactating dairy cows. *J. Dairy Sci.* Vol. 96, Suppl. 1, Abstract W71.

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Figure 2.
Intestinal digestibility of rumen undegraded lysine in Soy Best and Soy Best PEARL

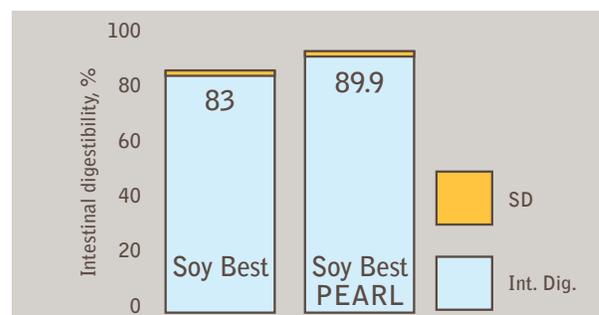


Table 2.
Soy Best PEARL contains 1.5 times more RU-Lysine than Soy Best and increased plasma lysine by that amount compared to Soy Best.

| Product: | Soy Best PEARL | Soy Best | Ratio |
|--------------------------------------|----------------|----------|-------|
| RU-Lysine, % of Lysine: | 9.37 | 6.26 | 1.50 |
| Plasma Lysine, Change From Baseline: | 33.3 | 21.4 | 1.56 |

Table 3.
How does Soy Best PEARL Compare to Blood Meal?

| | Lysine (as % of rumen undegraded protein) | Methionine |
|-------------------------|--|------------|
| Soy Best | 6.26% | 1.57% |
| Soy Best PEARL | 9.37% | 1.53% |
| Blood Meal ¹ | 9.34% | 1.07% |

¹ Values are from CPM Dairy



SOY BEST[®]
High Bypass Soybean Meal
with Fresh Soy Gums

For information on Soy Best and Soy Best PEARL, go to www.soybest.com or call us at **1-800-422-4697**.