DAIRY

FOCUS ON RESEARCH

ORIGINAL XP™ SUPPORTS KEY PHYSIOLOGIC PARAMETERS DURING TRANSITION PERIOD (PRODUCTION RESPONSE)

This experiment[1] was conducted to evaluate the effect of feeding various dosages of Original XP on milk production, supplement intake, and metabolic, immunologic, and inflammatory responses of transition dairy cows.

RESEARCH SUMMARY

- 45 multiparous, purebred Holstein cows were used in a randomized block design study.
- Cows were blocked by parity and randomly assigned within blocks to treatments.
  - Calving dates and previous 305-d mature equivalent values were evenly represented across treatments.
- Cows were housed:
  - Prior to calving (d -28 to -1) – in a straw-bedded freestall barn;
  - First 48 h after calving (d 0 to 1) – in the hospital pen; and
  - Post-calving (d 1 to 26) – in early-lactation pen.
- Cows were fed a corn silage, alfalfa hay, and corn based total mixed ration (TMR).
  - Prior to calving (d -28 to -1) – once daily at 0730 h;
  - In the hospital pen – twice daily at 0700 h and 1300 h; and
  - Post-calving (d 1 to 26) – twice daily at 0900 h and 1300 h.
- Treatments (Table 1) were top-dressed individually when cows were positioned in head stanchions during their morning feeding. Supplement consumption was monitored daily and recorded as completely or not completely consumed. Cows had 15 min to consume the entire supplement before the leftovers of the supplement were removed.

TABLE 1. COMPOSITION OF DIETARY TREATMENTS

	Ingredients		
Treatments	**Original XP[1]**	**Corn Meal**	**Molasses**
Control	0	168	84
56 g Original XP	56	112	84
112 g Original XP	112	56	84

[1] Original XP, Diamond V, Cedar Rapids, Iowa.

- Cows in the hospital and early lactation pen were milked 2 and 6 times per day, respectively. Milk yield, milk composition, and somatic cell counts (SCC) were collected twice per week.
- Body condition score was measured once per week prior to morning feeding.
- Data were analyzed in a repeated-measures-in-time randomized block design using PROC MIXED procedure of SAS.*
  - 42 cows were used for statistical analysis (n = 14, 15, and 13 for Control, 56 g Original XP, and 112 g Original XP, respectively);
  - In addition three cows did not complete the study because of treatment-unrelated causes (leg and feet problems pre-partum, pre-partum toxic mastitis, and torn uterus at calving, respectively).

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*These data are from a subpopulation of a larger study (Ramsing et al., 2011) and consisted of cows that finished a minimum of 4 weeks of lactation and did not calve during a major heat stress period at the end of the study.

RESULTS

Milk production and composition

- Original XP improved ($P = 0.03$) supplement intake the morning after calving regardless of dosage rate (80% and 92% for 56 and 112 g XP, respectively, vs. 51% for Control) (Figure 1).
- Cows supplemented with Original XP had greater ($P = 0.03$) milk yield and numerically greater 3.5% fat-corrected milk (FCM) (Table 2).
- Milk protein ($P = 0.05$), lactose ($P = 0.03$), and total solids ($P = 0.06$) yields were greater and milk fat yield was numerically greater for cows supplemented with Original XP (Table 2).
- Somatic cell count (SCC) was lower ($P = 0.02$) for cows supplemented with Original XP:
  - Two control cows developed clinical mastitis; and
  - No cows fed Original XP developed clinical mastitis.

FIGURE 1. ORIGINAL XP IMPROVED SUPPLEMENT INTAKE THE MORNING AFTER CALVING

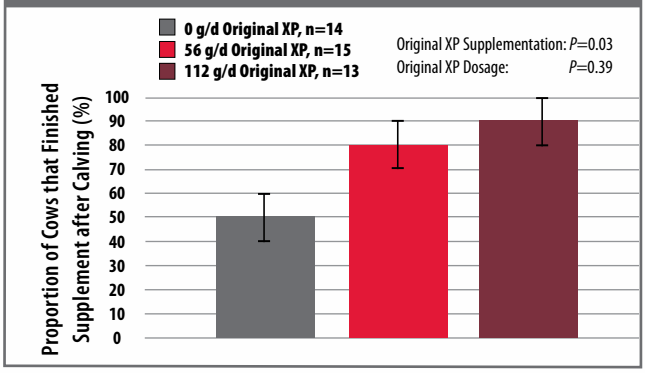

TABLE 2. EFFECT OF ORIGINAL XP ON MILK YIELD, MILK COMPOSITION AND SOMATIC CELL COUNTS

	Original XP		
	0 g	56 g	112 g
Milk, kg/d*	36.1	40.7	41.8
3.5% FCM, kg/d**	41.9	45.6	46.2
Fat, kg/d	1.62	1.73	1.73
Protein, kg/d*	1.09	1.22	1.24
Lactose, kg/d*	1.69	1.91	1.99
Total solids, kg/d**	9.69	10.70	10.93
SCC, cells/ml*	162	75	88

* $P < 0.05$

** $P < 0.11$

CONCLUSION

Results of this study provide new information on both the milk production benefits and the health and anti-inflammatory benefits of Original products used in dairy cows during the transition period. *Effects on metabolic and immunologic status of dairy cows are reported in the associated Focus on Research report ("Original XP™ Supports Key Physiologic Parameters during Transition Period [Blood Analysis Response]," FOR_DA028b_0714).*

In terms of production response, this study suggests Original XP supplementation has a dosage-independent beneficial effect in supporting a cow's physiologic adaptations after parturition, resulting in:

- Higher milk production;
- Greater milk protein, total solids, and milk fat yields; and
- Lower somatic cell count (SCC).

It is important to note that treatments in this study were top-dressed in order to assure that cows received a fixed-dose of Original XP regardless of the total mixed ration (TMR) intake. However, in early lactation, feed intake is often compromised. In practice therefore, to ensure all cows consume adequate amounts of Original XP, a higher dose of Original XP may be beneficial when fed as part of the TMR.

[1] Zaworski, E.M., C. M. Shriver-Munsch , N. A. Fadden , W. K. Sanchez , I. Yoon , and G. Bobe. 2014. Effects of feeding various dosages of *Saccharomyces cerevisiae* fermentation product in transition dairy cows. J. Dairy Sci. 97: 3081-3098.

If you would like more information on this study, please contact your local Diamond V representative.

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