



The beneficial effect of Actisaf® supplementation in the transition period on subclinical ketosis and dairy cow performance during lactation

Objective: Evaluate the effect of feeding Actisaf® yeast probiotic during transition period on subclinical ketosis (SCK) and zootechnical performances in the beginning of lactation.

Trial design

Comparative field trial
Location: France, 120-cows dairy farm

Species/life stage

Dairy cows in transition period
Breed: Holstein

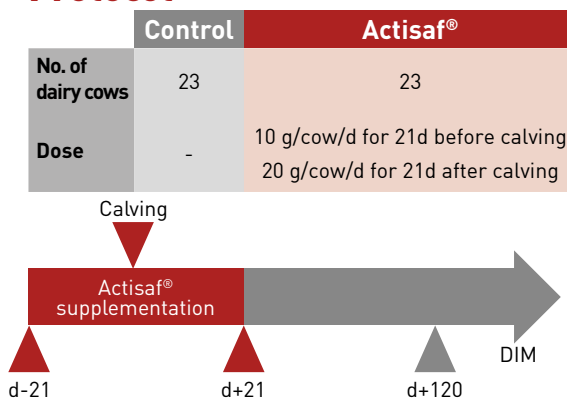
Main criteria

Beta-hydroxybutyrate (BHB), body condition score (BCS), rumen fill score (RFS), milk yield, success rate of first insemination.

Reference

Julien et al. 2017. ASAS-CSAS Annual Meeting & Trade Show, Baltimore, USA.

Protocol



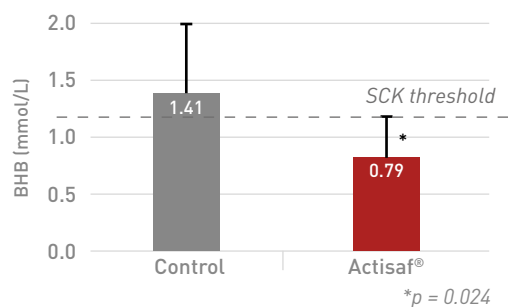
Conclusion

This study demonstrates that dietary supplementation with Actisaf® Sc 47 yeast probiotic during the transition period (21 days before calving to 21 days in milk) helps to reduce negative energy balance (NEBAL) and SCK risk while increasing milk production throughout early lactation. It also helps to improve the overall condition of the cow (RFS, BCS) and the success rate of the first insemination after returning to breeding.

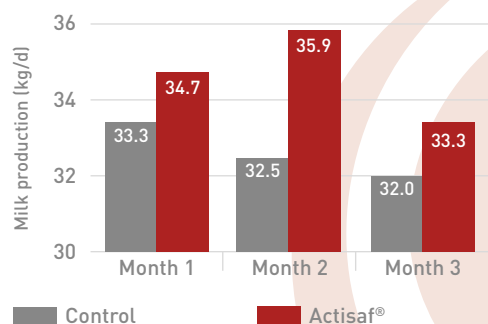
Main results

- ↓ BHB concentration in the blood at d22 after calving
- ↑ Milk yield in the first 3 months of lactation: + 2.0 kg/d
- ↑ Rumen fill score and body condition score
- ↑ Success rate of first insemination: +22%

Concentration of BHB in the blood at d22



Milk yield in the first 3 months of lactation





Introduction

The transition to lactation is the most stressful period for dairy cows and it is critical for milk production during the whole lactation period, reproductive success, and health. Most cows suffer from NEBAL during the early lactation period. The dose-effect relationship of Actisaf® Sc 47 has already been demonstrated in several previous studies, so the aim of this particular study was to investigate the effect of a dose adaptation of Actisaf® fed during the transition period on subclinical ketosis prevention and performances of dairy cows.

Materials and methods

46 dry Holstein cows were divided into two groups: a Control group and an Actisaf® group. The treatments were as follows:

- **Control group:** cows were fed a basal diet
- **Actisaf® group:** cows were fed the same basal diet and supplemented daily with 10 g of Actisaf® Sc 47 during the close-up phase (21 days before calving) and 20 g for 21 days after calving.

The mean lactation rank of the cows was 2.11, with no difference between the Control group and Actisaf® group ($p > 0.9$).

Individual milk yield was recorded daily, and fat and protein levels were measured monthly.

Blood BHB was measured at d22 after calving (using a FreeStyle Optium from Abbott).

At 7 days before calving, BCS in both groups was 3.13, with no significant difference between groups. This parameter was then measured again at d8 after calving.

BCS and RFS was evaluated at d7 before calving, and d8 after calving. RFS was evaluated on a scale of 1–5.

Means were compared by Student's t-test or Chi² test and a significant difference of $p \leq 0.05$ was reported and the possibility of a trend was discussed for $0.05 < p \leq 0.15$.

Basal diet composition	Close-up cows	Lactating cows
Corn silage (35% DM)	15 kg	32 kg
Corn gluten feed pellets	1 kg	1.5 kg
Grass silage (25% DM)	-	13 kg
Soybean meal	0.5 kg	-
Rapeseed meal	0.5 kg	2 kg
Hay	<i>ad libitum</i>	2 kg
Mineral-vitamin mix	-	250-300 g

Both groups of lactating cows also received concentrate in the milking robot.

Conclusion

The effect of Actisaf® Sc 47 yeast probiotic supplementation in dairy cows during the transition period is more than simply nutritional. Circulating BHB is reduced and BCS increased, suggesting that less body fat is mobilized in the first weeks of lactation, preventing subclinical ketosis and improving fertility. It also has a positive effect on milk yield during the first 3 months of lactation.

Keywords Actisaf®, milk yield, subclinical ketosis, body condition score, rumen fill score, fertility.

Reference Julien *et al.* High dosage of live yeast for transition dairy cows: nutrition and health benefits. ASAS-CSAS Annual Meeting & Trade Show, 2017 July 8-12, Baltimore, USA.

Results and discussion

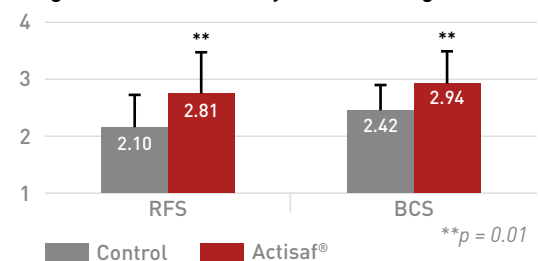
- Average milk yield during the first 3 months of lactation was numerically higher for the Actisaf® group than the Control group. Milk fat and protein levels were not affected by the treatment, which eliminates any possibility of the yeast probiotic having some kind of dilution effect on the milk.

	Control	Actisaf®	p-value
Milk production, kg/d	32.6	34.6	0.364
Fat, %	42.5	42.5	0.964
Protein, %	30.8	30.7	0.968

- Blood BHB concentration at 22 days after calving was significantly lower ($p = 0.024$) in the Actisaf® group: 0.79 mmol/L vs. 1.41 mmol/L. Cows in the Actisaf® group therefore had a BHB concentration below the threshold value of 1.2, above which cows are generally considered to be suffering from subclinical ketosis (Enjalbert *et al.*, 2001 ; Nielen *et al.*, 1994).

- RFS and BCS were significantly higher ($p < 0.01$) for cows in the Actisaf® group than cows in the Control group 8 days after calving.

Average RFS and BCS 8 days after calving



- First artificial insemination was at 120 DIM on average for cows in both the Control and Actisaf® groups. Actisaf® supplementation after calving tends to improve reproductive performance, particularly the success rate of AI1.

Success rate of first insemination (at 120 DIM on average)

Control	Actisaf®	p-value
27.8%	50.0%	0.13