TECH' INFO

ActiSaf

# Increasing feed efficiency of early lactation dairy cows

**Objective:** To quantify the effects of a 10 gram (100 billion cfu) daily supplementation of Actisaf on early lactation dairy cow performance

## Trial design:

Comparative experimental study with a continuous trial design

Location: University of Nottingham Centre for Dairy Science Innovation (CDSI), United Kingdom

## Species/Life Stage

50 Holstein-Friesian cows

## Main Criteria

Milk yield and composition, dry matter intake (DMI), rumination time, methane emissions, faecal digestibility, liveweight and body condition score (BCS), fertility, NEFA, BHB, glucose, milk progesterone and insulin

## Reference

On file

## Protocol

Control: 25 cows received base diet, plus placebo

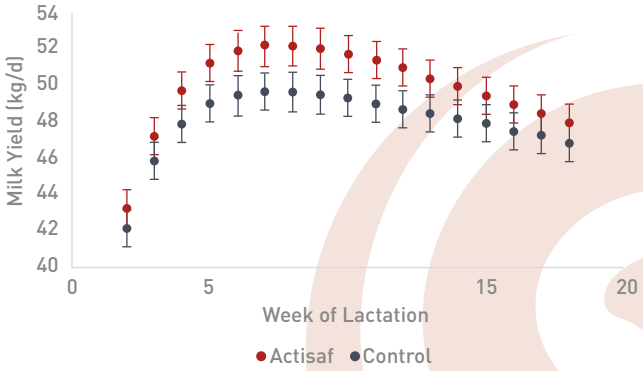
Treatment: 25 cows received base diet, plus 10g Actisaf supplementation

7 to 128 days in milk (DIM)

## Main Results

Effects of Actisaf:

- Significant 2.8kg increase in energy corrected milk yield in treatment group (+5.9%)
- Feed efficiency improved by 5.5%
- No increase in DMI
- No change in live weight or BCS
- Grams of Carbon / kg ECM reduced from 1.016 g $CO_2$ equivalent per kg ECM to 0.96 $CO_2$ equivalent per kg ECM (- 5.5%)




## Conclusion

This study demonstrates that dietary supplementation with Actisaf (10 g/day) significantly increases the yield of energy corrected milk with no associated lift in DMI thereby significantly improving feed conversion efficiency. This improvement in performance had no negative effects on body condition score, health, methane emissions or fertility whilst it resulted in a reduction of carbon emissions per litre of energy corrected milk.

Contact:
Richard Webster 07703 203686

Phileo by Lesaffre

TECH'INFO



## Introduction

This study evaluated the effect of Actisaf on cow performance of a high-performing dairy herd in early lactation. Actisaf's known effect on rumen function, NDF digestibility and production of volatile fatty acids (VFA) supported the study hypotheses that it would improve parameters for milk production and feed conversion.

## Materials and Methods

Cows were paired pre-calving according to parity and predicted milk yield and live weight, then allocated to either the control or treatment group. Both groups were fed the same base diet, with the treatment group receiving 10g/day of Actisaf.

Cows were housed in a free stall barn with sand bedded cubicles, robotic milking and ad libitum access to feed and water, compliant with best practice animal welfare guidelines

## Results and Discussion

Cows fed on Actisaf had higher yields of milk, energy-corrected milk, fat corrected milk and milk fat, with strong tendencies for higher yields of milk protein and lactose than Control cows.

| | Control | Actisaf | Diff. | p-Value |
|---|---|---|---|---|
| Milk yield, kg/d | 47.5 | 50.1 | +2.6 | 0.033 |
| Energy-Corrected Milk, kg/d | 47.7 | 50.5 | +2.8 | 0.009 |
| Fat-Corrected Milk, kg/d | 46.3 | 49.2 | +2.9 | 0.008 |
| Fat, g/d | 1823 | 1945 | +122 | 0.022 |
| Protein, g/d | 1521 | 1593 | +72 | 0.06 |
| Lactose, g/d | 2236 | 2342 | +106 | 0.066 |

Actisaf-fed cows also had higher digestibility coefficients for dry matter (0.025, p=0.580) and neutral-detergent fibre (NDF) (0.041, p=0.318).

| (kg/day) | Control | Actisaf | p-Value |
|---|---|---|---|
| DMI | 23.9 | 24.0 | <0.001 |
| PMR intake | 17.1 | 17.1 | <0.001 |
| Concentrate intake | 6.8 | 6.9 | 0.051 |

There was no effect of treatment on:

- total dry matter intake, intakes of partial-mixed rations or concentrates,
- methane production (g/d), methane yield (g/kg DMI) or methane intensity (g/kg ECM).
- live weight, body condition score, or rumination time
- blood parameters such as NEFA or BHOB
- somatic cell count
- fertility parameters

| | Control | Actisaf | p-Value |
|---|---|---|---|
| BHOB, mmol/l | 0.79 | 0.84 | 0.389 |
| NEFA, mmol/l | 0.22 | 0.21 | 0.873 |

## Conclusion

The main finding of this study was that Actisaf increased energy corrected milk yield by an average of 2.8 kg/d with no difference in dry matter intake or live-weight change and increased feed efficiency by 5.5%. This increased yield was achieved without any detrimental effect on fertility, health or methane emissions.

Dry matter intake was not affected by treatment in this study. Instead, increased milk yield can be attributed to increased digestibility, which would effectively increase metabolisable energy (ME) supply to cows.

Assuming that energy digestibility is directly proportional to dry matter digestibility, enhanced digestibility with Actisaf would be equivalent to an extra 11.1 MJ/d of ME, sufficient to support an additional milk yield of 2.25 kg/d. Because digestibility of fibre was affected differentially, however, the actual increase in effective ME supply could be greater than 11.1 MJ/d.

An increase in milk production coupled with no resulting increase in methane emissions translated into a decreased carbon footprint of the treatment group, which was reduced by 5.5% from 1.016 to 0.96g $CO_2$ /kg of Energy Corrected Milk.

This study supports the ability of Actisaf to increase milk production from forage through increased NDF digestibility. The results indicate that Actisaf has a significant role to play in helping cows reach their genetic potential, improving profitability and reducing the environmental impact of milk production.

**Keywords** Actisaf, feed conversion efficiency (FCE), early lactation, milk yield, carbon footprint, methane emissions, fibre digestibility, dairy cows, body condition scoring (BCS), live weight, dry matter intake (DMI), metabolisable energy (ME).