

# Long-term effect of feeding a potentiated ZnO source on milk profile and serum Zn in dairy cows

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## INTRODUCTION

Zinc is an essential trace mineral for ruminants. It is well established that deficiencies in zinc can cause problems in animal health and performance. However, from an environmental perspective, it is desirable to reduce zinc levels in cattle feeds to limit fecal excretion.

## OBJECTIVE

To evaluate the supplementation effect of potentiated ZnO (HiZox®, Animine, France), fed below the EU max limit (120 ppm zinc), on feed efficiency, milk composition, milk fatty acids (FA) profile, serum Zn concentrations and health status in lactating dairy cows for a period of 84 d.

## MATERIALS AND METHODS

### Animals and treatments

- 23 primiparous and 30 multiparous Holstein cows distributed in different pens and fed one of the following ZnO doses as a supplement mixed with soybean in the milking parlour:
- **T40:** basal diet (no supplement) 41 mg/kg DM Zn
- **T60:** + 20 mg/kg DM Zn supplement
- **T90:** + 50 mg/kg DM Zn supplement
- **T120:** + 80 mg/kg DM Zn supplement (EU max limit)
- All animals were fed the same basal diet (1.62 Mcal ENI/kg DM, 13.1% CP, 37.5% NDF) and 1-kg of soybean supplement in the milking parlor.

### Recording and sampling

- Daily: individual feed intake, milk yield and composition, BW, feed efficiency
- Initial/final serum Zn concentration (5 cows/treat)
- Final: milk FA profile (10 cows in T40 and T120)
- Quarters with mastitis during the study

### Statistical analysis

- Intake and performance were analyzed in proc MIXED for multiple comparisons
- Zinc serum with Wilcoxon Rank test
- Logistic regression considering quarters affected by a mastitis event during the study in each cow

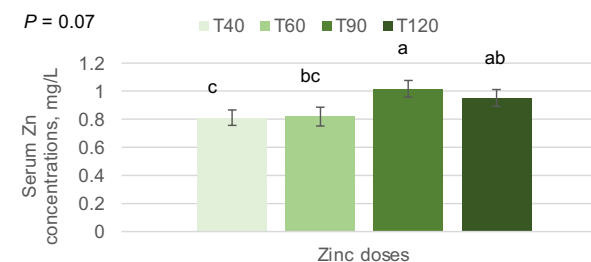
## RESULTS

- No differences in performance nor in milk FA profile were observed among treatments.

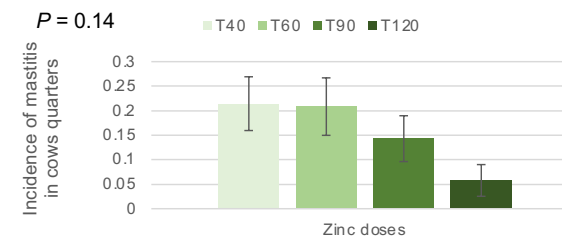
**Table 1.** Milk FA profile of T40 and T120 cows.

g/100 g FA	T40	T120	SEM	P-value
Saturated	71.0	70.5	1.50	0.87
Monounsaturated	25.1	25.2	1.35	0.96
Polyunsaturated	3.9	4.10	0.19	0.35

**Figure 1.** Serum Zn concentration of cows supplemented with different ZnO doses



**Figure 2.** Mastitis incidence in quarters of dairy cows supplemented with different ZnO doses



## CONCLUSION

Zinc supplementation tended to increase serum Zinc concentrations without negatives effect on performance and milk FA profile.

The study pointed that reducing zinc supplementation below EU max limits in lactating dairy cows diet might be harmful for animals, due to a potential increase in the risk of mastitis events.