TECH' INFO

ActiSaf

Heat stress management in mid-range producing dairy cows

Objective: Evaluate the effect of Actisaf® supplementation on performances and physiological variables of dairy cows in heat stress conditions.

Trial design

Comparative experimental study.

Species/life stage

Lactating dairy cows in heat stress conditions.

Main criteria

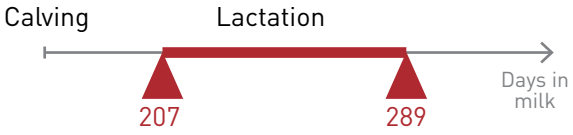
Milk yield, milk solids, feed efficiency, plasma niacin, plasma glucose, respiratory rate.

Reference

J. Dairy Sci., 2015: 98: 1-2.

Protocol

	Control	Actisaf®
Lactating cows	14	14



Main results

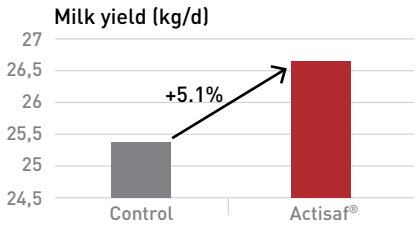
Milk Yield: +5.1 %

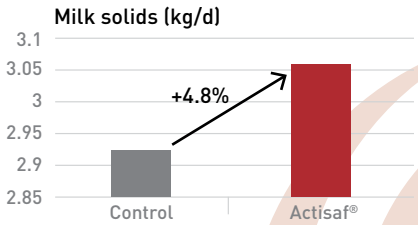
Milk solids: +4.8 %

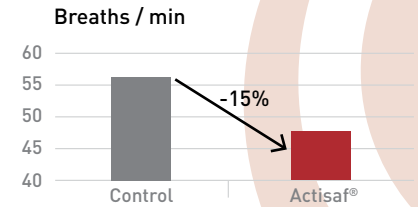
Breaths /min: -15 %

Plasma glucose: +9.7 %

Plasma Niacin: +7.3%







Conclusion

Actisaf® reduces the negative impact of heat stress on milking cows, by increasing the glucose and niacin levels in blood, which leads to increase milk production.

137, rue Gabriel Péri - BP 3029 -
59703 Marcq-en-Baroeul Cedex - France
Tel.: 00 33 3 20 81 61 00 - Fax: 00 33 3 20 99 94 82 -
contactlfa@phileo-lesaffre.com.

phileo-lesaffre.com

Phileo
LESAFFRE ANIMAL CARE

R1502

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Introduction

Heat stress negatively affects productivity and dry matter intake (DMI) of dairy cows. Reduced DMI seems to account for only 35 to 50% of the reduction in milk yield under heat stress, whereas the remainder could result from alterations in endocrine profiles and energy metabolism of heat-stressed cows. During heat stress, cows are more dependent on glucose as an energy source (Rhoads *et al.*, 2009) and despite the negative energy balance (NEBAL), the mobilization of adipose tissue seems to be reduced in comparison with cows experiencing NEBAL at a thermo-neutral temperature.

Protocol

The experiment was conducted, in an open-walled, sand-bedded, tie-stall barn with fans and high-pressure sprinklers. 28 Holsteins (207 ± 87 days in milk) were fed a standard diet for 14 days. After this period cows were paired blocked based on calving order and milk yield, and assigned to 1 of 2 treatments for 10 weeks.

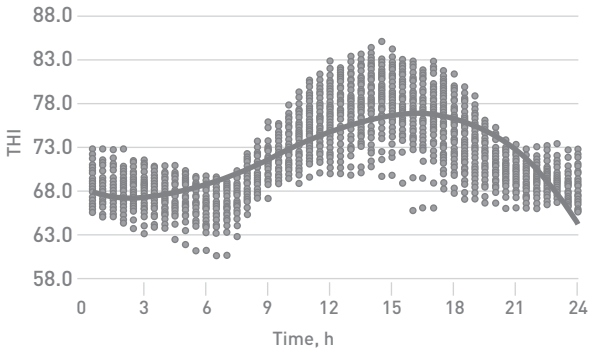
The treatments were as follows:

- **Control group**: cows were fed a basal diet
- **Actisaf® group**: cows were fed the basal diet and supplemented daily with 10 g of Actisaf®.

The confinement housing system did not eliminate the occurrence of summer heat stress.

Throughout the experiment, THI values ranged from 60.5 to 85.1, with a mean of 71.8. Cows were subjected to THI of 68 or greater for 75.6% of the trial.

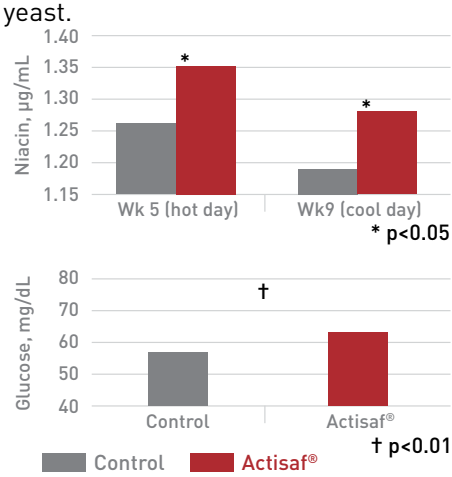
Daily temperature-humidity index (THI) variation during the experiment



Indicator	Control	Actisaf®	p
Milk, kg/d	25.4	26.7	0.03
ECM, kg/d	23.0	24.4	0.05
FCM 4%, kg/d	21.7	23.1	0.05
Fat, kg/d	0.777	0.824	0.09
Protein, kg/d	0.801	0.828	0.06
Solids, kg/d	2.921	3.062	0.05
Lactose, kg/d	1.135	1.187	0.03

ECM: Energy Corrected Milk - FCM 4%: Fat Corrected Milk at 4%

- Plasma niacin and plasma glucose contents were increased in cows supplemented with yeast.



The increase in plasma niacin content of cows supplemented with Actisaf® approached similar magnitude to the increase of cows supplemented with rumen-protected niacin (Zimbelman *et al.*, 2010; Rungruang *et al.*, 2014).

Results and discussion

- Yeast supplementation increased milk yield by 1.3 kg/d and milk solids by 0.14 kg/d. The positive response in lactation performance was apparently driven by increased lactose secretion. Milk yield response to yeast supplementation was consistent for the duration of the experiment.

- Yeast supplementation apparently facilitated heat dissipation because similar body temperature was observed at lower respiratory frequency: average breaths per min for the control group were 56 versus 48 for the Actisaf® group (p=0.02). This trend was consistent through the whole trial period.

Keywords *Saccharomyces cerevisiae*, heat stress , niacin , plasma glucose , respiratory frequency

Reference G.G. S. Salvati, N. N. Morais Júnior, A. C. S. Melo, R. R. Vilela, F. F. Cardoso, M. Aronovich, R. A. N. Pereira, and M. N. Pereira. 2015. Response of lactating cows to live yeast supplementation during summer. J. Dairy Sci.: 98 :1–12.

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