

Comparison of two recombinant bovine somatotropin products on milk yield and metabolic parameters

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INTRODUCTION

Recombinant bovine somatotropin (rbST) is used mainly to increase the productivity of dairy cattle. The mechanisms by which this hormone induces galactopoiesis are complex. For instance, among its effects, it produces a homeorhetic effect involving metabolic shifts mainly in the adipose, hepatic, and mammary gland tissues.

OBJECTIVE

The study aimed to compare the efficiency of two commercial rbST products on productive and metabolic parameters of mid-lactation Holstein cows.

MATERIALS AND METHODS

A total of eighteen cows were randomly allocated to two treatment groups to be treated with two different injectable rbST-based products. The "rbST-Fast" group received a formulation of rbST containing lecithin and vitamin E (Boostin®, MSD Saúde Animal, SP, Brazil). The "rbST-Slow" group received a formulation of rbST containing sesame oil and zinc (Lactotropin®, Agener União Saúde Animal, SP, Brazil). Animals in each treatment group were treated subcutaneously with their respective rbST product at a dose of 500 mg of rbST every 14 days, resulting in a total of 5 administrations throughout the course of the study. Blood samples were collected at each cycle to assess metabolic markers, such as nonesterified fatty acids (NEFA). Milk yields were measured daily using the DelPro™ software (DeLaval®). Milk samples were collected weekly to analyze milk composition and somatic cell count.

Cows in the "rbST-Fast" group showed significantly higher milk yield and serum NEFA concentrations as compared to the cows in the "rbST-Slow" group.



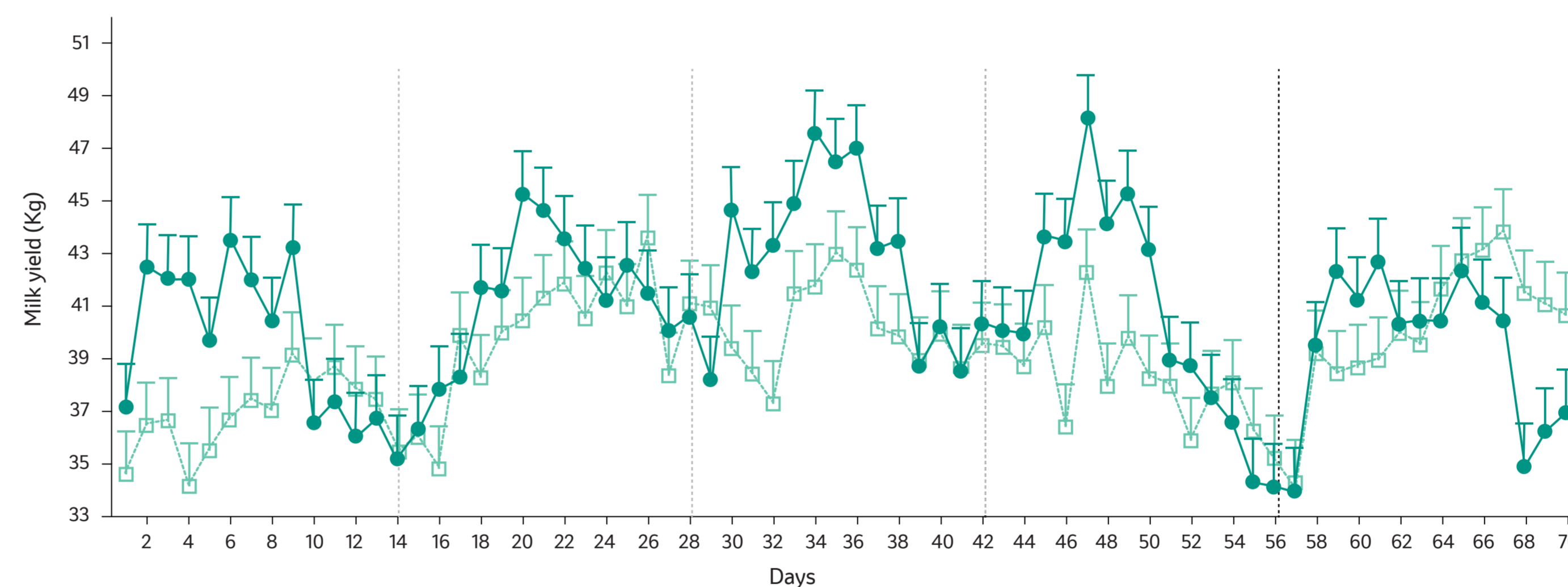
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RESULTS

The "rbST-Fast" group had a significantly higher milk production ($p = 0.03$) (figure 1) than the "rbST-Slow" group.

FIGURE 1. Means \pm standard errors for milk yield in animals treated with 500 mg of two commercial rbST formulations every 14 days for 70 days.

● rbST-Fast 40.75 \pm 0.47
 □ rbST-slow 39.08 \pm 0.45
 Treatment $p = 0.03$
 Day $p < 0.01$
 Treatment*Day $p < 0.01$



RESULTS

In addition, cows in the "rbST-Fast" group had significantly higher ($p < 0.01$) serum concentrations of NEFA (figure 2) but lower ($p = 0.09$) serum glucose values than the "rbST-Slow" group (figure 3).

FIGURE 2. Means \pm standard errors for concentrations of non-esterified fatty acids in animals treated with 500 mg of two commercial rbST formulations every 14 days for 70 days.

● rbST-Fast 0.61 \pm 0.03
 □ rbST-slow 0.43 \pm 0.03
 Treatment $p < 0.01$
 Day $p < 0.01$
 Treatment*Day $p < 0.01$

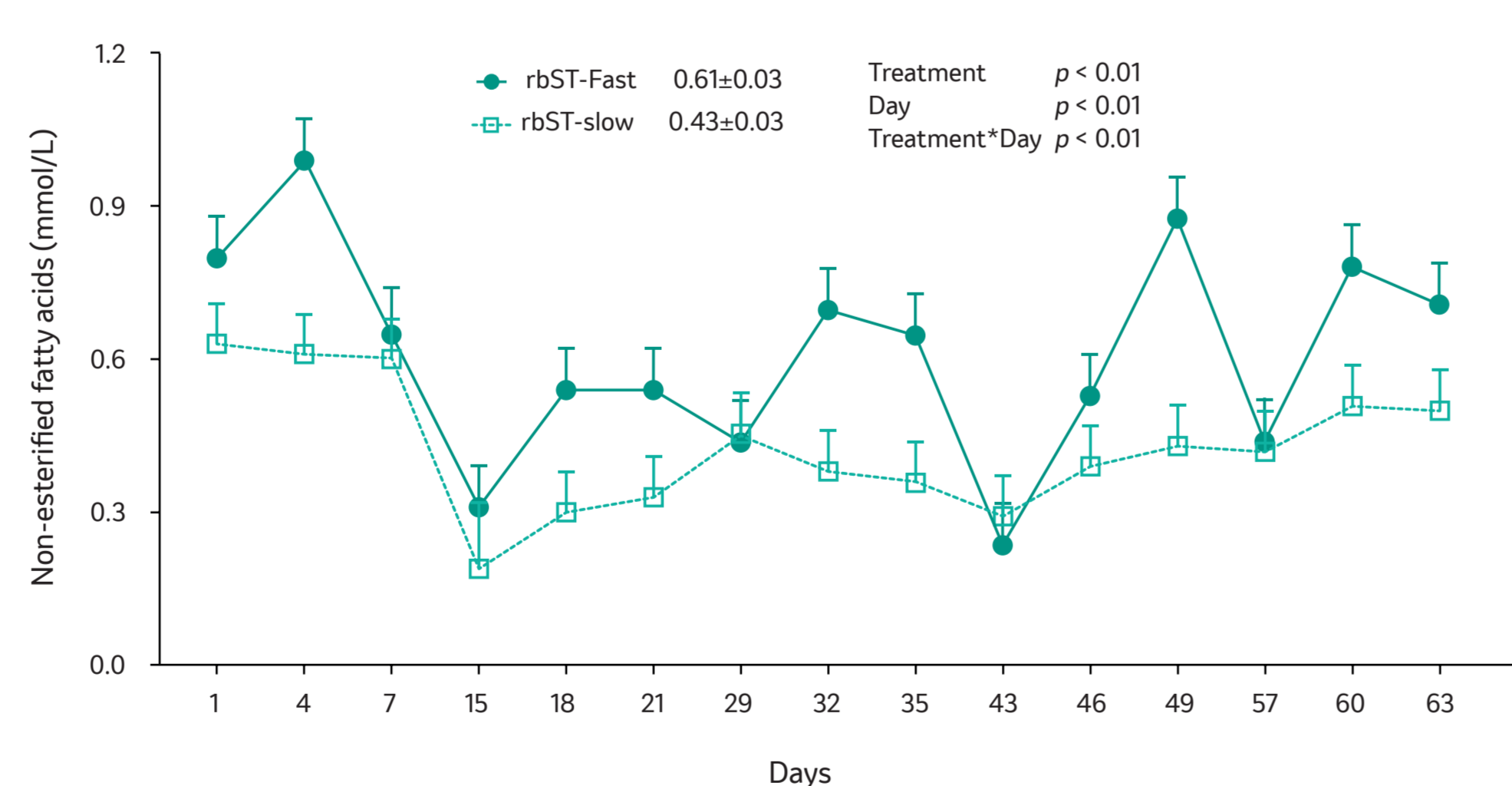
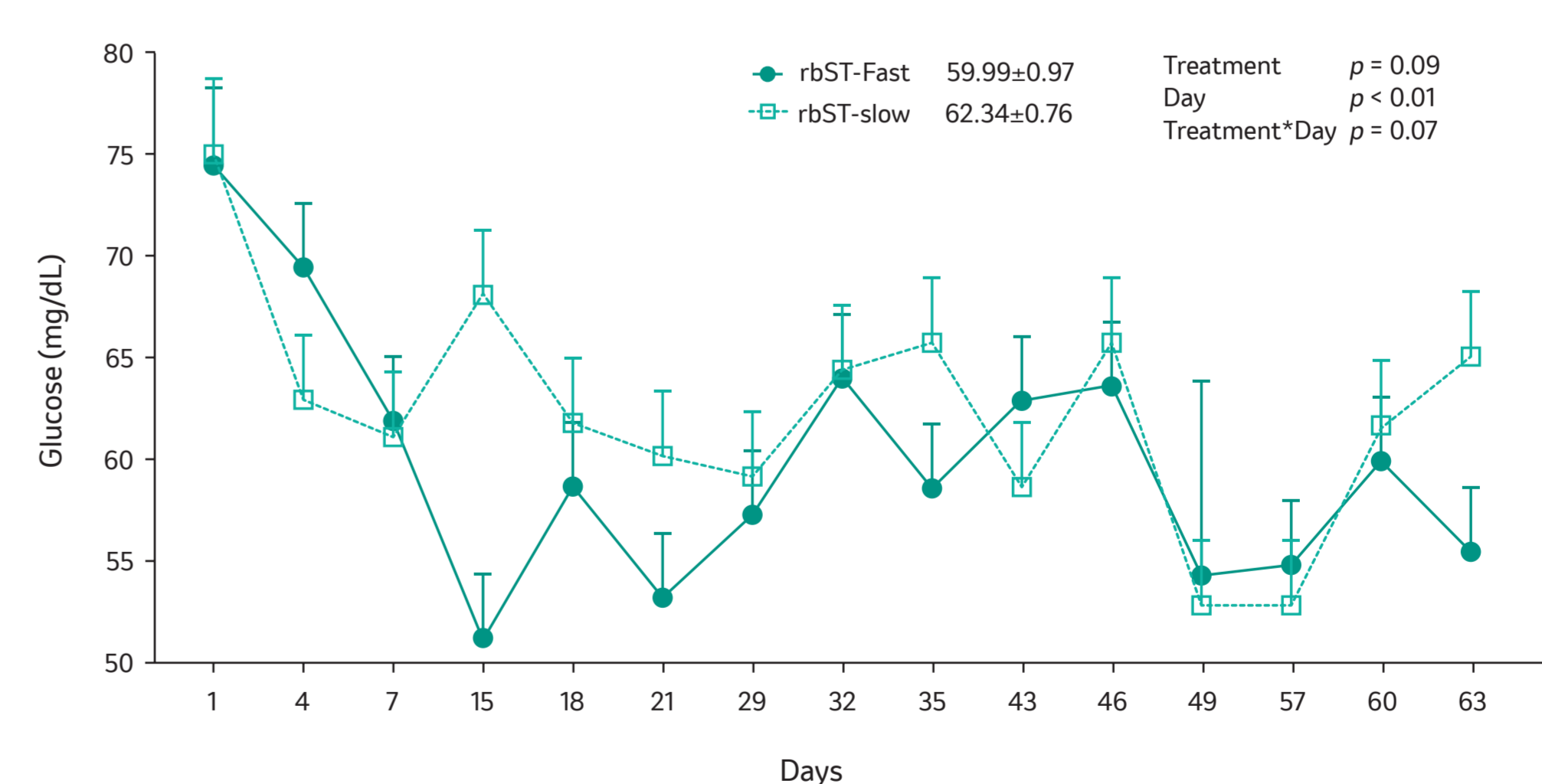


FIGURE 3. Means \pm standard errors for glucose in animals treated with 500 mg of two commercial rbST formulations every 14 days for 70 days.

● rbST-Fast 59.99 \pm 0.97
 □ rbST-slow 62.34 \pm 0.76
 Treatment $p = 0.09$
 Day $p < 0.01$
 Treatment*Day $p = 0.07$



RESULTS

Interestingly, the "rbST-Fast" group had higher lactose content ($p = 0.05$) than the "rbST-Slow" group (table 1).

TABLE 1. Means \pm standard errors for change lactose in animals treated with 500 mg of two commercial rbST formulations every 14 days for 70 days.

	Treatment		SEM	p-values		
	rbST-Fast	rbST-Slow		Treatment	Week	Treatment x Week
Lactose	4.50	4.37	0.04	0.05	< 0.01	0.16

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