

THE EFFECT OF SOMIDOBOVE (BIOSYNTHETIC BOVINE SOMATOTROPIN) ON THE PRODUCTION AND ON THE QUALITY OF MILK OF BUFFALOES (*BUBALUS BUBALIS*) RAISED IN ITALY

L. Ferrara, A. Di Luccia, F. Manniti

Instituto Ricerche Adattamento Bovini e Bufalini Ambiente Mezzogiorno
Via Argine 1085, Ponticelli, 80127 Napoli, Italy

G. Piva, F. Masoero, L. Fiorentini

Facoltà Agraria U.C.S.C., Via Emilia Parmense 84, 29100 Piacenza, Italy

G. Litta

Elanco, Divisione Ricerche e Sviluppo, Via Gramsci 733, 50019 Sesto F.
Firenze, Italy

Introduction

Numerous recent publications have documented the effect of bovine somatotropin, obtained by means of the technique of re-combining DNA, on the milk production of cows treated daily with B.S.T. either by injection or at 4-weekly intervals with slow-release preparations (Eppard, 1987).

The effect of the treatments as found in the various experiments varies markedly, for both short- and long-term treatments, and works out in production responses that vary between 10% and 25% (McGuffey, 1987). The increase in production is normally seen within 48 hours after treatment (Eppard, 1987; Thomas, 1987).

In trials over a short period the energy balance tends to be negative, reaching a position of equilibrium in medium-term trials, and actually being positive in the long-term ones.

Milk composition does not change substantially, although the fat content tends to rise in cows with a negative energy balance. The effect of the bovine somatotropin obtained through the technique of re-combining DNA on Murrah buffaloes are analogous to those with cattle. Ludri's findings (1988) show that treatment with 25 mg/head/day of B.S.T. by sub-cutaneous injection leads to an increase in production by buffalo cows of 19%, which rises to 24% with treatments of 50 mg/head/day.

In this short-term experiment no effect was noted on the consumption of feed or water, or on milk composition. The purpose of our research was to check the response to treatment with Somidobove (Biosynthetic bovine somatotropin) (28 days) of Italian buffaloes (*Bubalus bubalis*).

Materials and Methods

Twenty-eight multiparous Italian buffaloes (*Bubalus bubalis*), were sub-divided into two groups of 14 subjects each, homogeneous for the stage of lactation (78.14 ± 13 vs 76.79 ± 14.8 days after calving) and production (11.01 ± 2.68 kg vs 10.81 ± 2.39 kg).

Each group was sub-divided into two sub-groups of 7 animals according to the time of calving and production (kg/day, treated group A 10.63 ± 3.11 ; treated group B 11.52 ± 2.13 ; control group A 10.49 ± 2.84 and control group B 11.23 ± 1.8).

The animals were kept in a free stall and fed a daily ration containing alfalfa hay (3 kg), corn silage (15 kg), beet pulps (1 kg) and concentrate (8.7 kg).

Seven animals in each sub-group were treated, every 28 days, with 640 mg/head of Somidobove (Biosynthetic bovine somatotropin). The two periods of treatment (28 days each) were separated by a period, of the same length, when treatment was suspended. Thus the total experimental period was 84 days.

On the day of the second treatment, blood samples were taken from the animals before feeding (at 8 a.m.), and before treatment, in order to determine the principal blood parameters. Throughout the whole period the buffaloes were fed once a day, at 10 o'clock, with a complete mixed ration. The animals were also weighed before the morning feed every four weeks, individual samples of milk were taken at the morning milking to check on fat and protein levels and blood from jugular veins to check metabolic profile and free

TABLE 1. EFFECT OF SOMIDOBOVE ON MILK YIELD OF BUFFALOES (kg/day)

Day from treatment	First period: November 1988			Second period: January 1988		
	Groups A + B		t	Groups A + B		t
	treated	control		treated	control	
	mean±sd	mean±sd		mean±sd	mean±sd	
1	13.5±2.4	11.6±2.7	n.s.	9.0±1.4	10.4±1.9	n.s.
2	13.3±2.2	12.2±2.9	n.s.	10.3±1.7	8.9±1.5	*
3	13.1±2.0	12.5±2.7	n.s.	10.2±1.7	8.7±1.8	*
4	14.5±3.1	11.6±2.6	*	10.8±1.8	9.0±1.4	*
6	—	—	—	11.9±2.1	9.8±2.0	*
7	15.2±2.3	12.3±2.7	**	11.8±1.7	9.6±1.7	**
8	14.6±3.0	11.9±2.3	*	11.7±1.8	9.5±1.4	**
9	14.7±2.4	11.7±2.0	**	12.0±1.9	9.5±1.4	***
11	14.1±2.9	12.0±2.9	n.s.	11.2±1.6	10.1±1.4	*
14	13.0±2.0	10.9±2.1	*	11.3±1.5	10.3±1.6	n.s.
15	13.3±2.8	12.4±2.5	n.s.	10.3±2.0	9.6±1.3	n.s.
16	12.6±2.2	11.4±2.6	n.s.	10.2±1.4	9.9±1.6	n.s.
18	12.2±2.9	11.6±2.2	n.s.	10.1±1.8	9.8±1.6	n.s.
19	11.4±1.5	11.5±1.7	n.s.	—	—	—
20	—	—	—	10.3±2.1	10.2±1.7	n.s.
21	11.5±1.9	12.0±2.3	n.s.	9.8±1.9	10.3±1.4	n.s.

* = (p < 0.05) ** = (p < 0.01) *** = (p < 0.001) n.s. = not significant

amino acids.

Results and Discussion

The treatments caused an improvement in production in the different phases of the experiment, which was found to be 11.86% in the first period and 13.54% in the second. It should, however, be pointed out that the two periods were also differentiated by the changed distance from calving and hence the altered capacity of the animals to respond to Somidobove.

In fact, the most fresh animals gave a response of 9.67% in the first period and 11.22% in the second, while animals that had calved a longer time before had a response of 5.65% in the first period and 17.58% in the second.

It should be noted in particular how the effect of the treatment led to a significant difference (p < 0.05) of 2.6 kg/head/day (22.16%) between the 4th and 14th days of treatment. The differences then diminished and finally disappeared.

During the second period the treatment increased the production, equal to 1.88 kg/head/day (p < 0.05) (19.95%) between the 3rd and 11th

days after treatment.

The fact that the difference only become significant after the 4th day after treatment may well be due to the well-known variability that characterizes the production of animals when being used in experiments (coefficient of variation 23%).

The check on fat and protein levels in the milk, did not reveal any effect from the treatment and no difference was found between the treated and untreated animals as regards the blood parameters checked, including the free amino acids.

When compared with the effects of treatment of cows with a commercial product (Somidobove), we note a production response that seems to diminish more rapidly. In any case, this does not seem to be due to a problem of immunization, as repetition of the treatment after an interval did not lead to any variation in the response.

(Key Words: Bovine Somatotropin, Buffaloes, Milk Production)

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