

EFFECT OF PROTECTED B VITAMINS ON MILK PRODUCTION AND REPRODUCTIVE PERFORMANCE IN LACTATING DAIRY COWS DURING HEAT STRESS

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Commercial Dairy Farm: 1400 dairy cows
La Laguna, Mexico

OBJECTIVE

Evaluate the effect of supplementing the diet with a blend of protected B vitamins during the lactation period (folic acid, pantothenic acid, pyridoxine and biotin) on milk, milk components and reproductive performance during heat stress period.

MATERIAL AND METHODS

The trial was conducted from April to November 2014, which is the summer season with very high temperature. The experimental design was a split herd (side by side) using multiparous cows homogeneously distributed between milking pens.

Cows were randomly blocked into the two treatment groups, according to days in milk (DIM), parity and expected performance.

Control group: Cows did not receive any B vitamin supplementation.

Treatment group: Cows received 3 g/cow/day of the protected B vitamins blend, which was previously diluted at 6% with wheat middling before inclusion in the TMR.

Both groups received the same total mixed ration (TMR). The TMR was based on corn silage, alfalfa hay and dry corn and was typical of the region.

All the cows in this study received a protected B vitamin blend during the transition period (folic acid, riboflavin, and choline) three weeks before and three weeks after parturition.

Sampling

Data for milk production and reproduction was downloaded from AfiFarm software. Milk component data was collected monthly using Lactichack.

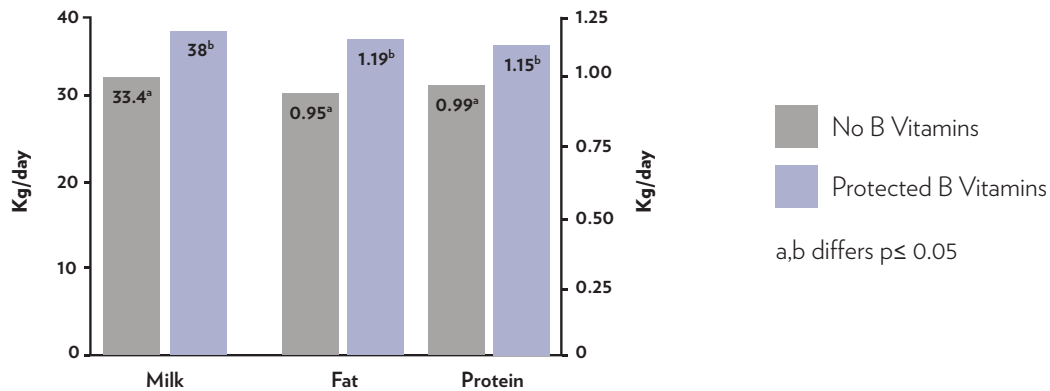
Milk data were analyzed using a 2-tailed Student's T test assuming equal variance within the two test groups. Reproduction data were analyzed by treatment group.

RESULTS

Milk yield and composition

The results for milk production and milk components yield for early lactation cows are shown in graph 1. Data were analyzed from 93 cows in the control group and from 89 cows in the treatment group. Average days in milk was 92.

Graph 1. Milk production and components yield in early lactation



Production was increased by 4.6 Kg of Milk, 24g of Fat and 16g of Protein, for the group of cows supplemented with the protected B vitamins blend. There were no statistical differences at day 45,70,75,140 and 170, due to the small number of cows tested during those days in milk.

Reproductive performance

Reproductive performance was numerically higher for the group of cows receiving the protected B vitamin supplementation. First service conception rate was increased by 19% with more cows pregnant at 120 and 150 DIM for the treatment group (Table 1).

Table 1. Reproductive performance

Parameters	Control	Protected B Vit.	Increased %	P Value
Number of cows inseminated	91	91	-	-
DIM at first service	74	73	-	-
First service conception rate	23.1%	27.5%	19%	0,5
Confirmed pregnant at first or more services	37.3%	41.7%	12%	0.528
Pregnant at 120 DIM	34.1%	41.7%	22%	0.359
Pregnant at 150 DIM	46.1%	56.0%	21%	0.235

There were no statistical differences for reproductive performance between groups due to the relatively low sampling size. However, there was numerical and biological differences which are specially meaningful since the trial was conducted during the heat stress period. In a similar study, with a larger number of cows, Juchem et al. (2012) showed a 13% significant increase of the first service conception rate when cows were supplemented with a similar protected B vitamin complex.

CONCLUSIÓN

Supplementing cows with a **Protected B vitamin blend for the lactating period** (folic acid, pantothenic acid, pyridoxine, and biotin), **during heat stress, improved reproductive performance and increased milk and components yield during the early lactation period.**