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Mini Review

The Effect of the Application of a Ruminal Activator (VITAFERT) in The First Phase of the Lactation Curve and its Influence on the Bromatological Quality of Milk

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Summary

A total of 46 milking cows (animals in production) were selected, with a live weight of 454kg in their third lactation. Production at the beginning of the experiment was 11.3 liters/day, the animals were under the same driving conditions, the main food base was the star grass (*Cynodon nlemfuensis*) and a load of 2 cows/ha with a rotation period of 35 days. The animals were distributed in two groups by treatment (23 with Norgold and 23 with VITAFERT), each group was formed with animals from 10 to 100 days of lactation distributed in two treatments. Treatment 1: Norgold per cow per day. Treatment 2: 1.65kg of Norgold and 2 liters of VITAFERT (4.4ml/kg body) per cow per day. The objective of this work is 3,4kg to determine the effect of the application of the ruminal activator on the production and bromatological quality of milk. Consumption of VITAFERT significantly improved milk production in dairy cows from 10 to 100 days of lactation. The use of VITAFERT as a ruminal activator increases milk production and some dairy components. The supplement with VITAFERT is an estimated saving of imported (concentrated) foods and improved their use. It is recommended to include THE VITAFERT in the feeding of dairy cows as a way to increase milk production, favoring a partial substitution of the concentrate. Continue long-term studies on the effect of VITAFERT (ruminal activator) on dairy cow production indicators.

Keywords: Dairy cows, milk quality, ruminal activator, (VITAFERT)

Introduction

The dairy industry is one of the most dynamic branches in the livestock sector, perhaps due to the increase in demand for milk in the world, stimulated among other causes by the growth of the population on the planet. Another important aspect in the dynamism of this industry is that every time, consumers demand better quality dairy products, which leads to the search for options to try to cover both the demand for milk, its quality and that of its by-products. Currently a series of research work is carried out to find ways to increase concentrations in the main dairy components in a constant way, placing a particular emphasis on fat, protein and lactose; because these components have an effect on both the taste and yield of milk and also on the performance and sensory characteristics of dairy by-products, as well as in the unsaturated fatty acid chain [1]. Tropical pastures and fodder often have particularly low digestibility of dry matter and reduced protein content, limiting microbial activity in rumen and production. These pastures can be used more efficiently when the bacterial populations of the rumen meet their energy requirements, essential protein constituents, minerals and other nutrients [2] as well as, ensuring a level of non-structural carbohydrates, necessary to optimize the synthesis of microbial protein of the ration [3-5].

In Cuba, at the Institute of Animal Science Elías & Herrera [6] reported on the production and use of a new product obtained by a simple biotech process composed of lactobacilli, yeasts, organic acids of short chains and low pH capable of controlling the development of *E. coli*, significantly reducing the incidence of diarrhea in animals, increasing the gain of live weight and increase the retention of energy and nitrogen. This product is called VITAFERT (MEBA), which has been used in various species with acceptable results. VITAFERT, as part of the concept of efficient activated beneficial microorganisms (MEBA), is a biological product composed of bacteria, yeasts and their metabolites, capable of producing appreciable amounts of short-chain organic acids such as lactic, acetic, propynic, succinic and pyruvic, vitamins

and enzymes. It is a fermentation activator that stimulates the production of organic acids, decreases pH, increases and stabilizes the protein, increases the digestibility of dry matter and decreases the cell wall fractions of food materials that undergo its action [6,7]. The objective of this work is to determine the effect of the application of a ruminal activator (VITAFERT) on the production and bromatological quality of cow's milk.

Materials and Methods

In a typical cow house of the Institute of Animal Science, a total of 46 milking cows (animals in production) were selected, with a living weight of 454kg in their third lactation. Production at the beginning of the experiment was 11.3 liters/day, the animals were under the same driving conditions, the main food base was the star grass (*Cynodon nlemfuensis*) and a load of 2 cows/ha with a rotation period of 35 days. The animals were divided into two treatments. Treatments consisted of: A.3,4 kg of Norgold per cow per day (300 grams/liter according to initial production, from the first liter). B: 1.65 kg of Norgold (50% less than A) and 2 liters of VITAFERT (4.4ml/kg pv) per cow per day, one litre was offered in each milking. Additional charges were offered during milking hours (4:30 AM and 2:30 PM). The evaluations were carried out over a 45-day period. The animals were properly identified according to treatment. The determinations made consisted of: Milk production per cow (L/cow/day); Bromatological composition of milk per cow (morning and afternoon); Body condition according to the method of 5 points, every 10 days. The animals kept an individual monitoring of the production of milk with weighing at 7, 14, 21, 28, 35, 42 days and sampling of the milk to obtain its bromatological composition, at the same time the body condition of these animals was observed. The bromatological composition was performed in the ICA ruminant laboratory, using milko-Scan 104, A/S N. Foss Electric, Denmark. An analysis of processed variance was performed in the Microsoft Excel electronic tab and analyzed through the INFOSTAT statistical package. The economic analysis determined the total revenue from the production of milk per diet supplied, in the period of 45 days, after the experiment, as well as the cost of both diets for an animal in the period analyzed.

Results and Discussion

Table 1 shows the results in the two treatments, significant differences are obtained for milk production, in favor of the treatment with supply of VITAFERT compared to the treatment with Norgold those that may be related to what Elias & Herrera [6] who point out that VITAFERT is a fermentation activator that stimulates the production of organic acids, decreases the pH, increases and stabilizes the protein, increases the digestibility of the matter dries and decreases the cell wall fractions of food that are subjected to its action, Although not determined in this test, Pirela [8] noted that an amino acid deficiency, NH3 and energy reduces microbial protein synthesis, digestibility and nutrient utilization, which negatively influences consumption in this sense coincides From Wind and Palm 2015 and, therefore, on animal production perhaps in this experiment. This product (Vitafer) contains yeasts, which can contribute to improve the efficiency of food utilization, favoring production according to Robinson & Garret [9]; Rivas [10] who propose that yeast, in primipara and multipara cows, improve milk yields between 23 days and 56 days postpartum, as a result of an increase in voluntary consumption of MS and FDN aspect that coincides with what Galina [11]. Castro-Madrigal & Jimeno [12] propose that with the increase in the digestibility of MS, fibrous components (FDN, FDA, hemicelulose) and crude protein, there is greater consumption and a positive effect on milk production.

Table 1: Results in production and body condition in 100-day dairy cows.

Variables	Norgold Tract	Norgold Trait	(±) EE.	signf
Production(kg/cow/day)	8.99	13.12	0.924	p<= 0.05
C. Corporal	3.15	3.06	0.07	NS

When the bromatological composition of milk was analyzed in the two treatments, significant difference in protein, total solids and non-fatty solids was observed. While fat and lactose showed no differences. These results could indicate a better balance in diet nutritions with VITAFERT. This may have been given by the increased concentration of precursors and the effect of the diet coinciding with Stokes, Hernández & Ponce, Hernandez & Armenteros [13-15] and Elijah & Herrera [6] who demonstrate in research that there is strong correlation, between the level of degradable protein in the diet and the effectiveness in the synthesis of bacterial protein and consequently influencing the components of milk (Table 2) [16-20].

Table 2: Assessment of milk bromatology in larger components.

Variables	Norgold Tract	Norgold Trait	(±) EE.	signf
Fat (%)	3.88	3.75	0. 18	NS
Protein (%)	2.92	3.33	0.12	p<= 0.05
S.Totales(%)	10.87	11.69	0..21	p<= 0.05
S.N.G (%)	6.94	7.89	0.17	p<= 0.05

Cost Analysis

Sources considerations

1 litre of VITAFER - 0.11 Cuban pesos Gutierrez 2012

1kg of Norgold - 0.24 Cuban pesos Minagri 2008

Price of sale /litre of milk ? 2.50 Cuban pesos

Table 3 shows that it can be produced with cows of this production level, a saving of more than 30ctvs /cow / day in the feeding system containing VITAFER and when analyzing the system (production and food) can produce an economy of more than 10 pesos/cow/day between one system and another, motivated basically by the increase produced in milk.

Table 3: Economic Response/Treatments.

Treatment	Prod./v	Consumption Norgold(kg)	VitaFERT consumption (l/v)	income/milk	Expense/ Food	Dif.	Benf/cow/day
Norgold	8.99	3.4kg/v/day	0	22.47 pesos	0´816	21.6	
Norgold +VITAFER	13.1	1.65kg/v/day	2 litres	32.8 pesos	0.39+0.22=0.51	32.3	10.6

Conclusion

Consumption of VITAFERT (ruminal activator) improves milk production and some dairy components in dairy cows from 10 to 100 days of lactation. The VITAFER supplement can be a saving of imported (concentrated) foods and better use of them, if their combination is carried out in situations similar to those observed in this work. The results suggest future studies of VITAFERT in complete lactation.

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