

The Effect of Selected Stimulating Substances on Quality Components in Cow Milk

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Abstract

The aim of this work was to assess the impact of the liquid Biopolym FZT on quality components in cow milk. Biopolym was, calibrated by a milking robot, given to dairy cows in a selected breeding around České Budějovice for a selected period of time. A slight increase, 23.24L as compared to the 22.07 L of the control group, has been consequently found in values of the average daily milk yield. When considering the components of milk there has been a slight increase in values of fat in the milk, while the values of protein have been decreased.

Keywords: Biopolym, components of milk, rumen

1. Introduction

Biopolym is a biological regenerative medicine. It consists of hydrolyzed brown seaweed, *Ascophyllum nodosum*, adjusted for the addition to feed or drinking water. It has been shown to have a positive effect on the development of gastric and intestinal microflora, streamlining digestion in the small intestine and accelerating the transfer of nutrients into the bloodstream. Also, it supports regeneration of the body, improves health and overall condition of the animals.

This product is usually applied in three ways: to wet feed for pigs (Biopolym FZL), in drinking water (Biopolym FZT) or in dry feed (Biopolym granulate). Biopolym may also be dispensed from the milking robot. Cows are given exactly specified doses. Various effects, the most important being the suppression of odour of ammonia (NH₃) and hydrogen sulfide in the stable, improved feed conversion, increased growth and increased milk yield have been shown as a result.

The aim of this study was to monitor the effect of liquid Biopolym FZT has on values of daily milk yield and milk constituents. Biopolym was fed at a specific dose of the milking robot to a particular breed.

Biopolym contains vitamins, iodine, amino acids, alginate acid in the form of sodium alginate E 401 and other trace elements. It can be modified to be added to the feed and water. It has been shown that preparations from marine algae promote the development of intestinal microflora, digestion and accelerates gastric delivery of nutrients into the bloodstream. This will also promote feed intake and the resulting use of nutrients from food. Biopolym have diverse effects, one of them being an increase in milk yield in dairy cows [1].

Milk is a suitable testing medium for the evaluation of the development of the energy metabolism of dairy cows. Changes in metabolism, which have a negative impact on quality and quantitative composition of milk, are often manifested as rumen dysfunction. There are failures and proteosynthetic fermentation processes in the rumen caused by sudden change in the diet, poor physical structure of feed, low quality and digestibility and other shortcomings compared to the required quality [2].

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Unless optimum nutrition is ensured, there cannot be any expectations of good milk production. In assessing the level of nutrition it is not enough to judge only from the content of nutrients in the ration, but also from the reached levels of fermentation processes in rumen, because these actually decide the conversion of nutrients and the level of milk production. The most important processes that proceed in the rumen is the fermentation of carbohydrates and the conversion of the less valuable vegetable proteins for the high quality proteins – the proteins [2].

An integral part of the rumen are microfloral bacteria such as cellulotic bacteria, bacteria producing VFA, lactic acid and methane and proteolytic and lipolitic bacteria. Protozoa use slightly fermentative sugars and polysaccharides, preventing pH decline and stabilising hemicellulotic activity [3].

The action of enzymes of the rumen microflora is to degrade soluble carbohydrates from simple sugars to cellulose. The resulting products of this fermentation are volatile fatty acids (VFA). Proteins are digested by bacterial enzymes into amino acids and ammonia (as well as non-protein nitrogen compounds). Evolved ammonia is used by rumen microflora for the production of bacterial biomass. Nutrients created by microbial activity are the basis of the nutrition for the organism and precursors of milk production [2].

2. Materials and methods

In the selected animals the effect of addition of liquid Biopolym FZT on daily milk yield of dairy cows and the quality of milk constituents is observed. This activity is located near České Budějovice at an altitude of 440 m above sea level and is equipped with milking robots.

Production has a capacity of 210 stables and cows, and there are three robots Astronaut 3000th available. For robot number 3 liquid biopolym FZT at a dose of 17 ml / cow / day is added to the dose-granule robot. Since this dose is relatively large it is diluted 1:1 with water. The robot then records daily milk yield of each cow. Milk components are checked every month by a control performance. Daily milk yield is also recorded from robot number 1 which serves as a control.

3. Results and discussion

So far, the results show a slight increase in average daily milk yield for the group using Biopolym. For the control group, the values of the average daily milk yield, keep approximately same, little lower, values

The slight increase in values was observed also in milk constituents, especially in fat, whereas for the proteins a slight reduction was observed. However, all of these results also depend on age, order of lactation, stage of lactation, nutrition, health condition of the animal and other factors.

As SLAVÍK et al [2] states that it is important to ensure an optimal nutrition, so as to achieve the desired fermentation processes that in their turn determine the conversion of nutrients and the milk production, this requirement was carefully fulfilled during the experiment. Most cows were in good health during the whole experiment, but some appeared to experience short time changes in metabolism, which as stated SLAVÍK et al [2] could also have an effect of the composition of milk.

4. Conclusions

The results indicate that the liquid product Biopolym FZT induces a slight rise in average daily milk yield and in the values of the milk. In case of milk constituents, there was a greater increase in values for fat than in those for protein. This could be due to the current state of the observed dairy cows. It is therefore important to ensure the best possible conditions for milking dairy cows.

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