

The Effect of Biopolym Granulat 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 Granulat on quality components in cow milk. Biopolym Granulat, was by a milking robot calibrated, given to dairy cows in a selected breeding around České Budějovice for a selected period of time. A slight increase, 23.24 L 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 Granulat, milk components, rumen

1. Introduction

The most important part is then to provide quality nutrition to dairy cows, enabling them to efficiently convert roughage to milk.

Additive substances that favourably influence the characteristics of feed improving performance and resilience of animals also play an important part in cow feed. At present, attempts are made to use substances derived from natural products. Biopolym Granulat, used in this study, is such a substance, namely a bioalginate derived from brown seaweed. The aim of this study was to determine the effect of Biopolym on daily milk yield and quality of milk components (fat, protein).

Biopolym has 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 development of the energy metabolism in dairy cows [2]. Milk quality is also significantly affected by proper adjustment and sufficient care

of milking equipment as well as milk cooling. It is desirable to align the requirements on cows and milking machines. Good milking robot is able to provide following operations and tasks: identification of animal, cleaning of udder (teats), preparation for milking, first strike separation, testing milk quality, udder check-testing for mastitis, measuring the activity of belling prognosis, the use of milking machine, milking itself, milking machine removal, collection of data on the amount of milked milk [4]. Nutrients created by microbial activity are the basis of nutrition for the organism and precursors for milk production [2].

2. Materials and methods

The effect of Biopolym Granulat on the daily milk yield of dairy cows and on the quality of milk constituents (fat, protein) was studied on selected animals, located near České Budějovice. The original barn, located at an altitude of 440 m above sea level, has undergone a complete modernization, is equipped with three milking robots (Astronaut A2) and operation is now fully

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automated. The barn has a capacity of 210 pieces of cows of Czech Pied cattle breed.

The experiment conducted in this chosen location involved adding liquid Biopolym Granulat-bioalginate seaweed) at a dose of 10 g/cow/day diluted 1:1 with one of the robots(robot number 3) and feed as addition to concentrate for the group. Robot number 3 thus serves the experimental group of cows, while robot number 2 serves a control group, i.e. without product addition. In both groups (control, experimental) the cows were divided according to lactation (1, 2, 3). The individual lactations for the two groups were then compared as to the daily milk yield, respectively to the average daily milk yield and milk components (fat, protein). The experimental period lasted 5 months (July-November). Daily milk yield were recorded by the milking robots and were subsequently stored in a computer, while

data on milk components (fat, protein) were derived from monthly monitoring tests.

3. Results and discussion

These results show a slight increase in milk (average 4.3 kg) yield in dairy cows that were administered Biopolym [1]. Also, as shown by Čermák et al., 2012 [2] and proved by this experiment, it is important to ensure optimal nutrition for the subsequent achievement of desired fermentation processes that greatly determine the conversion of nutrients and milk production. The average fat content in milk are reduced it is in opposite of results of Čermák et al., 2012 [2,]; Čermák et al., 2011 [4]; Slavík et al., 2004 [5]; Velechovská, 2009 [6]. Only the ammoniac content in rumen and slurry are reduced as by result of of Čermák et al., 2012 [3].

Table 1. The average milk yield difference between control and experimental group (kg)

	Control group (kg)	Experimental group (kg)	differences between groups (kg)	milk increasing by experimental cows (kg)
1. lactation	19.1	22.0	2.9	
2. lactation	29.2	30.8	1.6	4.3
3. lactation	26.2	34.5	8.3	

Table 2. Average fat content in milk (%)

	Control group (%)	Experimental group (%)	differences between groups (%)	milk increasing by experimental cows (%)
1. lactation	3.66	3.71	0.05	
2. lactation	3.49	3.35	-0.14	-0.11
3. lactation	3.87	3.64	-0.23	

4. Conclusions

The product Biopolym positively influenced the average daily milk yield for all lactations. The components of milk were only slightly affected by Biopolym where fat levels showed a decreased.

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