

Effect of *Bacillus coagulans* probiotic on milk production and important economic and health indicators of raw milk of Holstein cows

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Abstract : *Bacillus coagulans* is a spore-based probiotic, resistant to environmental and gastrointestinal conditions. The ability to form spores makes this probiotic resistant to technological stresses. The purpose of this study was to investigate the effects of *Bacillus coagulans* as a food additive on the production level, dry matter, fat percentage, crude protein, casein, serum protein, and microbial load, and the number of the somatic cell as important economic and health indicators of raw milk of cattle. This study was performed on 33 Holstein breeders divided into two groups; control (16 heads) and experimental (17 heads). Probiotics were added daily for 63 days at a rate of 2 grams per each cow. Sampling was completed every 21 days from starting the study. The addition of probiotic *Bacillus coagulans* did not affect the levels of milk production, dry matter, fat, lactose, milk serum, somatic cell count, and microbial load, but the level of protein and casein in the experimental group were increased. At days 42 and 63, protein levels were higher in the experimental group. The level of casein was higher in the experimental group on the days 42 and 63. Using probiotic *Bacillus coagulans* can be considered as an improving factor to increase the quality of milk and the quality of dairy products.

Key words: Milk, Probiotic, *Bacillus coagulans*, Casein, Cow