Effect of fibrolytic enzymes and lactic acid bacteria supplementation on chemical composition, ruminal degradation and *in vitro* gas production of alfalfa silage

Abstract

in order to study of nutritional value of alfalfa silage treated with different levels of fibrinolytic enzyme and lactic acid bacteria (Lactobacillus), an experiment as factorial based on a completely randomized design with three replications in animal nutrition laboratory, department of animal sciences, faculty of agriculture and Sistan dam research station Zabol university college of agriculture. Application of fibrinolytic enzyme at 3 levels (0, 0.5 and 1 g in dry matter) and lactic acid bacteria at 3 levels (0, 0.25 and 0.5 g dry matter) a total of 9 treatments included treatment 1: alfalfa without any additives (control), treatment 2: alfalfa with 0.25 g bacteria in dry matter, treatment 3: alfalfa with 0.5 g bacteria in dry matter, treatment 4: alfalfa with 0.5 g of enzyme in dry matter, treatment 5: alfalfa with 0.5 g of enzyme in dry matter and 0.25 g of bacteria in dry matter, treatment 6: alfalfa with 0.5 g of enzyme in dry matter and 0.5 g of bacteria in the dry matter, treatment 7: alfalfa with 1 g of enzyme in dry matter, treatment 8: alfalfa with 1 g of enzyme in dry matter and 0.25 g of bacteria in dry matter, treatment 9: alfalfa with 1 g of enzyme and 0.5 g of bacteria were silicified in dry matter and were evaluated. The results showed that highest acidity (6.29), percentage of raw ash (16.19%), the amount of insoluble fibers in acid detergent (24.91%), and the highest amount of insoluble fiber in neutral detergent (31.88%) related to the control treatment of fibrinolytic enzyme and control treatment of lactic acid bacteria. Also the highest percentage of dry matter (31.97%), organic matter percentage (91.02%), percentage of crude protein (16.37%), crude fat percentage (4.21%), and the highest percentage of water-soluble carbohydrates (1.87%) related to 1 g application of fibrinolytic enzyme in dry matter and 0.5 g lactic acid bacteria in the dry matter. The highest percentage of degradability observed at 48, 72, and 96 hours. The fastest parsing rate (a) and slow partition (b) related to 1 g application of fibrinolytic enzyme in dry matter and 0.5 g lactic acid bacteria in the dry matter. Combine two additives improved potential degradability (a + b) that the highest with 81.90% in the treatment of the application of 1 g of the fibrinolytic enzyme in dry matter and 0.5 g lactic acid bacteria were observed in dry matter there were statistically significant differences between treatments. Combine two additives on decomposition rate constant (c) was significant and the highest rate of decomposition related to the control treatment of fibrinolytic enzyme and control treatment of lactic acid bacteria. At 12, 24, 48, 72 and 96 hours the highest volume of gas produced related to 1 g application of fibrinolytic enzyme in dry matter and 0.25 g of lactic acid bacteria in dry matter and at 3 and 6 hours the highest volume of gas produced related to 1 g application of fibrinolytic enzyme in dry matter and 0.5 g of lactic acid bacteria in dry matter and at all times of incubation the lowest volume of gas produced in the control treatment of fibrinolytic enzyme and lactic acid bacteria were observed. Based on these results we can state a combination of two fibrinolytic enzyme additives and lactic acid bacteria improves the nutritional value of alfalfa silage.

Keywords: Fibrinolytic enzyme, Lactic acid bacteria, Nylon bags, Silage

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The Thesis Submitted to the Degree of M.SC.
(In the Field of Animal Nutrition)

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September 2019