Inoculation rates of *Lactobacillus buchneri* on the nutritive value of corn silage as exclusive forage source for lactating dairy cows

Corn silages inoculated with *Lactobacillus buchneri* are typically less susceptible to deterioration when exposed to air. However, the inoculation benefits are dose-dependent and the increase of acetic acid in silages could impair the feed intake. Therefore the objective of this study was to evaluate the effect of *L. buchneri* inoculation rate in corn silages, and elucidate the implications of its inclusion as the only forage source in dairy rations. Whole-corn crop was harvested and inoculated with the following doses of *L. buchneri* CNCM I - 4323: 0, 1×10⁵; 5×10⁵ and 1×10⁶ cfu/g fresh matter, before storage in bag silos (40 t/bag). Silage fermentation profiles were modified by inoculation, such as reduction of lactic acid and ethanol, and increase in acetic acid, propionic acid, and 1-propanol concentrations. Counts of lactic acid bacteria were increased by inoculation, whereas yeast counts were reduced, leading to silages with higher aerobic stability. Chemical composition was similar across treatments. Therefore, cow responses were: trend of lower intake of DM and NDF, modification of eating behavior, with lower DM intake in the morning period with no changes in eating time, and lower yield of fat corrected milk, resulting in lower daily excretion of milk energy. In the current study, DM intake was negatively correlated with the concentrations of acetic acid, propionic acid and 1-propanol in silages.

**Keywords:** Heterolatic fermentation; Volatile compounds; Aerobic stability; Animal performance

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