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EFFECTS OF LACTIC ACID BACTERIA INOCULATION ON MOUNTAIN GRASS AND ALFALFA SILAGE FERMENTATION CHARACTERISTICS

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Abstract

The objective of this work was to evaluate the effects of six lactic acid bacterial strains originated from different natural habitats of fermented food and feedstuff on pasture grass and alfalfa laboratory scale silages. The prepared mini silos were inoculated with the following bacterial strains alone or in combination: *Lactobacillus brevis* LbB (2×10^7 cfu/mL), *Enterococcus faecalis* EF (3.6×10^8 cfu/mL), *Lactobacillus plantarum* subsp. *plantarum* LbP (2.8×10^8 cfu/mL), *Weissella paramesenteroides* WP (3.6×10^7 cfu/mL), *Leuconostoc lactis* LL (3.5×10^8 cfu/mL), *Lactobacillus paracasei* subsp. *tolerans* LbPT (8.1×10^8 cfu/mL). The inoculation of the grass and alfalfa laboratory silos improved the chemical composition and fermentation patterns of the silages. Significant difference was detected ($P < 0.05$) in crude protein content, lactic acid production and acid detergent fibre and neutral detergent fiber content in some of the treated samples compared to the control. The best performing treatment in the case of grass silage was the *Lactobacillus brevis* LbB inoculant, for alfalfa silage the most effective was the *Enterococcus faecalis* EF inoculant. Also considerably good results were achieved with the inoculant *Lactobacillus paracasei* subsp. *tolerans* LbPT. Our results indicate that a bacterial consortium containing *Lactobacillus brevis* LbB, *Enterococcus faecalis* EF and *Lactobacillus paracasei* subsp. *tolerans* LbPT could be a strategy for silage inoculant with fermentation acceleration and prevention of nutritive value loss for the achievement of high quality silages.

Keywords: fermentation, lactic acid bacteria, silage, silage inoculant

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