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Effect of *Lactobacillus rhamnosus* C6 inoculation on fermentation quality and rumen degradability of maize cob and hush silage

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Abstract

The objective of this study were to evaluate effect of *Lactobacillus rhamnosus* C6 inoculation on fermentation quality and rumen degradability of maize cob and hush silage. *L. rhamnosus* C6 were isolated from rumen fluid of Thai native cattle. The isolates were grown in nutrient agar (NA) plate at 37°C for 48 hours in anaerobic condition. Maize cob and hush silage were divided into 2 groups as control and supplemented with *L. rhamnosus* C6 with 10^6 cfu g⁻¹. Silage was collected at 21 days of fermentation. The fermentation quality was evaluated by pH measurement and VFA analysis. The chemical compositions were analysed by proximate analysis and detergent fiber method was employed to determine fiber compositions. Ruminant degradability was determined using *in vitro* gas production technique. Ruminant fluid was obtained from 4 rumen fistulated Thai native cattle. Gas production was recorded after incubation at 2, 4, 8, 10, 12, 24, 48, 72 and 96 hr. The pH value of maize cob and hush silage inoculated with *L. rhamnosus* C6 were lower than control group. Lactic acid concentration was higher in inoculated groups. Maize cob and hush silage inoculated with *L. rhamnosus* C6 showed significantly lower NDF, cellulose and hemicellulose contents than control group. Moreover, gas production at 48 and 72 hr after incubation was significantly greater in inoculated groups. It could be concluded that maize cob and hush silage inoculated with *L. rhamnosus* C6 had better quality fermentation than natural fermentation as *L. rhamnosus* C6 stimulated the fermentation process and accelerated lactic acid production, resulting in a sharp drop in pH and faster ruminant degradability after 48 hr of incubation.

Keywords: Fermentation quality, *Lactobacillus rhamnosus* C6, maize cob and hush silage, rumen degradability, Thai native cattle