

Evaluation of Fermentation Ability of Many Lactic Acid Bacteria to Manufacture the Highest Quality Silage of Rice Straw

In-Sok Lee^{1*}, Song-Yee Lee¹, Min-Kyung Choi¹, Chan-Ho Kang¹, Jeong-Man Kim¹

¹Jeollabukdo Agricultural Research Extension Service, Iksan, 54968, Korea.

[Introduction]

Our country has been importing 75% of feed grain from various countries. To overcome it, our government has been enlarging coarse fodder production by supporting various policies. The coarse fodders should be manufactured as silage to provide to animals for a long time. At present in Korea, just one additive for silage has been produced at a company. Therefore, this study was conducted to select the optimum additive, lactic acid bacteria, to produce quality rice silage instead of CMRT.

[Materials and Methods]

The rice straw used in this study was obtained from Korea farmer, which were harvested at the stage of maturity in 2016. The lactic acid bacteria were selected from the Kimchi. The silage of rice straw was made by using various lactic acid bacteria and used to analyze smell, pH, protein, organic acid ADF and NDF after 60 days.

[Results and Discussions]

This study was conducted to determine the quality of rice straw silage made with various lactic acid bacteria(LAB) during fermentation. Five strains of LAB(*L. plantarum* CMRT, *L. leuconostoc mesenteroides* M17, *L. sakei* C11, M5, SP2) were used in this study. As to smell, the silage made from ready-made CMRT(comparison strain) had the highest grade from 10 days to 60days, followed by M17. The pH level of all silages made with five strains aspart from CMRT ranged from 4.02 to 4.59. Of them, M17 rapidly lowered pH value in silage. Crude protein(CP) content was significantly lower($p<0.01$) in ready-made CMRT compared to the others. Its content of silage originated from C11 was the highest score by 5.56. Acetic acid and butyric acid were not detected in all silage. Lactic acid of four silages created by M17, M5, C11, and SP2 was comparatively higher than that of the silage of CMRT. The total digestible nutrient(TDN) content levels and relative feed value(RFV) were the highest in the silage of C11 with 69.65 and 155.56, respectively, followed by M17. Based on smell, pH, protein, organic acid, and feed value, M17 strain could be recommendable for good silage inoculant of rice straw as a substitute of ready-made CMRT.

[Acknowledgements]

This research was supported by a grant from Jeollabuk-do Province, Republic of Korea.

*Corresponding author: Tel. +82-63-290-6038, E-mail. bioplant325@korea.kr