

**PENGARUH PENAMBAHAN *Lactiplantibacillus plantarum* MTR-24
TERHADAP KOMPOSISI KIMIA DAN KARAKTERISTIK
FERMENTASI SILASE SORGUM YANG
TERPAPAR KONDISI AEROBIK**

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INTISARI

Penelitian ini bertujuan untuk mengetahui pengaruh penambahan bakteri asam laktat (BAL) terpilih terhadap komposisi kimia dan karakteristik fermentasi silase sorgum (*Sorghum bicolor* (L.) Moench) pada fase *feed-out* yang terpapar kondisi aerobik selama 2 hari. Hijauan sorgum difermentasi selama 60 hari menggunakan dua perlakuan, yaitu tanpa aditif (CON) dan dengan penambahan *Lactiplantibacillus plantarum* MTR-24 pada 1×10^5 cfu/g. Masing-masing perlakuan dibuat dengan 4 replikasi. Silase yang telah difermentasi diletakkan pada kondisi aerobik selama 2 hari pada suhu ruang. Selama 2 hari terpapar udara, stabilitas aerobik silase diamati. Setelah 2 hari, silase sorgum dilakukan pengambilan sampel untuk analisis laboratorium. Hasil penelitian menunjukkan bahwa pada silase CON dan silase MTR-24 memiliki nilai stabilitas aerobik berkisar 36 jam dan 38 jam yang menunjukkan tidak adanya perbedaan nyata. Penggunaan aditif BAL tidak berpengaruh terhadap komposisi kimia sorgum setelah 2 hari terpapar kondisi aerobik. Pada karakteristik fermentasi, silase MTR-24 menghasilkan nilai pH ($p=0,046$; 3,50 vs. 3,60) dan asam laktat ($p=0,142$; 0,47 vs. 0,61) yang lebih rendah dibandingkan silase CON. Namun, silase MTR-24 menghasilkan asam asetat yang lebih tinggi ($p=0,007$; 1,51 vs. 1,04) dibandingkan silase CON. Nilai ammonia pada silase MTR-24 dan CON tidak menunjukkan perbedaan nyata. Hasil penelitian ini menyimpulkan bahwa penambahan *Lactiplantibacillus plantarum* MTR-24 sebagai aditif pada silase sorgum belum mampu memberikan perbedaan pada komposisi kimia, namun mampu memperbaiki beberapa karakteristik fermentasi seperti pH dan asam asetat.

Kata kunci: Bakteri asam laktat, Karakteristik fermentasi, Komposisi kimia, *Lactiplantibacillus plantarum* MTR-24, Silase sorgum, Stabilitas aerobik

The Effect of *Lactiplantibacillus plantarum* MTR-24 Addition on the Chemical Composition and Fermentation Characteristics of Sorghum Silage Exposed to Aerobic Conditions

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ABSTRACT

This study aimed to evaluate the effect of selected lactic acid bacteria (LAB) addition on the chemical composition and fermentation characteristics of sorghum silage (*Sorghum bicolor* (L.) Moench) during the feed-out phase under aerobic exposure for 2 days. Sorghum forage was fermented for 60 days using two treatments, namely without additive (CON) and with the addition of *Lactiplantibacillus plantarum* MTR-24 at 1×10^5 cfu/g. Each treatment consisted of four replications. After fermentation, the silages were exposed to aerobic conditions for 2 days at room temperature. Aerobic stability was observed during the aerobic exposure period. After 2 days, silage samples were collected for laboratory analysis. The results showed that the aerobic stability of CON and MTR-24 silages lasted for 36 and 38 hours, respectively, indicating no significant difference. The use of LAB additive did not significantly affect the chemical composition of sorghum silage after 2 days of aerobic exposure. Regarding fermentation characteristics, MTR-24 silage exhibited a lower pH value ($p=0,046$; 3,50 vs. 3,60) and lower lactic acid concentration ($p=0,142$; 0,47 vs. 0,61) than CON silage. However, MTR-24 silage produced a higher acetic acid concentration ($p=0,007$; 1,51 vs. 1,04) compared with CON silage. Ammonia concentration did not differ significantly between MTR-24 and CON silages. It can be concluded that the addition of *Lactiplantibacillus plantarum* MTR-24 as an additive in sorghum silage did not alter the chemical composition after aerobic exposure but improved several fermentation characteristics, particularly pH and acetic acid concentration.

Keywords: Aerobic stability, Chemical composition, Fermentation characteristics, Lactic acid bacteria, *Lactiplantibacillus plantarum* MTR-24, Sorghum silage.