



INTISARI

Penelitian ini bertujuan untuk mengetahui lama inkubasi yang optimum untuk fermentasi pakan broiler dengan menggunakan bakteri *Limosilactobasillus fermentum* BN21. Fermentasi dilakukan dengan variasi lama waktu inkubasi 0, 1, 2, 3, dan 4 hari pada suhu ruang, dengan ulangan sebanyak 5 kali pada masing-masing perlakuan. Data yang diambil meliputi kandungan nutrisi pakan fermentasi meliputi bahan kering (BK), bahan organik (BO), protein kasar (PK), lemak kasar (LK), dan serat kasar (SK), asam laktat, pH, populasi total bakteri, populasi total bakteri Asam Laktat (BAL), aktivitas antibakteri (*Escherichia. Coli*, *Salmonella*, dan *Staphylococcus. Aureus*), aktivitas antioksidan, dan profil protein. Data penelitian dianalisis menggunakan analisis variansi (ANOVA) pola searah dan jika terdapat perbedaan antar rerata dilanjutkan dengan uji jarak berganda (DMRT). Total populasi bakteri pada hari ke 4 ($8,82 \pm 0,09$) paling rendah ($P < 0,001$) dan populasi BAL yang paling tinggi ($9,47 \pm 0,41$) ($P < 0,001$). pH pakan fermentasi mengalami penurunan ($P < 0,001$), pH hari 1 ($4,699 \pm 0,026$), 3 ($4,703 \pm 0,028$), dan 4 ($4,697 \pm 0,008$) hari yang paling rendah dibandingkan inkubasi hari 0 ($5,297 \pm 0,021$). Kadar asam laktat pada hari 1 ($1,22 \pm 0,29$) dan 2 ($1,40 \pm 0,26$) memiliki kadar yang paling tinggi ($P < 0,001$). Kadar lemak kasar dan aktifitas antioksidan pada hari ke 2 ($5,41 \pm 0,14$) memiliki peningkatan yang paling tinggi ($P < 0,001$) dibandingkan inkubasi hari 1 ($4,25 \pm 0,45$), 3 ($5,06 \pm 0,50$), 4 ($5,12 \pm 0,11$). Demikian juga aktivitas antibakteri *S.Aureus* setelah hari ke 1 ($P < 0,05$), tetapi pada *E.Coli* dan *Salmonella* aktivitas antibakteri tidak menunjukkan hasil yang signifikan. Kadar Antioksidan menunjukkan perbedaan nyata ($P < 0,05$) pada hari ke 2 ($82,33 \pm 4,17$). Secara keseluruhan, fermentasi pakan selama dua hari dapat meningkatkan mutu biologis dan fungsional pakan broiler tanpa mengubah secara signifikan kandungan bahan kering, protein kasar, dan serat kasar. Dengan demikian, fermentasi selama dua hari dengan *L. fermentum* BN21 dapat direkomendasikan sebagai perlakuan optimum dalam produksi pakan broiler.

Kata kunci: Fermentasi, Pakan broiler, Optimasi, Lama inkubasi, *Limosilactobasillus Fermentum*.

ABSTRACT

The purpose of this study is to establish the appropriate incubation period for the fermentation of broiler feed using the bacterium *Limosilactobacillus fermentum* BN21. The fermentation process was carried out at room temperature with variable incubation periods of 0, 1, 2, 3, and 4 days. For each treatment, five repetitions were carried out. The data collected involves the nutrient content of the fermented feed, including proximate analysis (dry matter, crude protein, extract ether, and crude fiber), lactic acid, pH, total bacterial population, total lactic acid bacteria (LAB) population, antibacterial activity against *E. Coli*, *Salmonella*, and *S. Aureus*, antioxidants activity, and protein profile. The research data were subjected to one-way analysis of variance (ANOVA), and if mean differences were identified, Duncan's Multiple Range Test (DMRT) was subsequently employed. The crude fat content and antioxidant activity on the second day exhibited the most significant increase ($P < 0.001$) relative to the first, third, and fourth day incubations. On the fourth day, the total bacterial population was at its nadir ($P < 0.001$), while the LAB population reached its zenith ($P < 0.001$). The pH of the fermented feed on day 1 ($4.699 \pm 0.026a$), day 3 ($4.703 \pm 0.028a$), and day 4 ($4.697 \pm 0.008a$) was the lowest ($P < 0.001$) compared to day 0 incubation ($5.297 \pm 0.021c$). The lactic acid concentration on days 1 and 2 was the greatest ($P < 0.001$), and the antibacterial activity against *S. Aureus* was high on days 1, 2, and 4 ($P < 0.05$). The antibacterial efficacy against *E. coli* and *Salmonella* did not yield meaningful findings. Antioxidant levels exhibited a substantial difference ($P < 0.05$) on day two. The research results demonstrate that a 2-day feed fermentation yielded optimal levels of crude fat, antioxidants, lactic acid, and antibacterial activity against *S. Aureus*.

Keyword: Fermentation, Broiler feed, Optimization, Incubation period, *Limosilactobacillus Fermentum*..