

PRODUKSI SOSIS AYAM FERMENTASI MENGGUNAKAN KOMBINASI
PERLAKUAN *Lactobacillus plantarum* DAN ENZIM
TRANSGLUTAMINASE

INTISARI

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Pangan fungsional merupakan pangan yang mengandung banyak fungsi fisiologis yang tidak membahayakan dan bermanfaat bagi kesehatan. Penelitian ini bertujuan untuk mengetahui pengaruh inoculasi bakteri *L. plantarum* dan enzim TG-ase serta kombinasi keduanya terhadap kualitas kimia, kualitas fisik, analisis profil tekstur, kualitas sensoris, kualitas mikrobiologi, kualitas aktivitas antioksidan (nilai IC₅₀), dan kadar kolesterol sosis ayam fermentasi. Total proses fermentasi dilakukan selama 4 hari dengan proses pengasapan yang dilakukan selama 3 hari masing-masing selama 2 jam. Rancangan penelitian ini adalah Rancangan Acak Lengkap (RAL) pola faktorial 2x3 dengan tiga kali ulangan. Faktor pertama yaitu inoculasi bakteri probiotik *L. plantarum* (0% dan 2%) dan faktor kedua penambahan enzim TG-ase (0%, 1%, dan 2%). Data hasil pengujian kualitas kimia, kualitas fisik, analisis profil tekstur, dan kualitas mikrobiologi pada populasi bakteri asam laktat dianalisis dengan ANOVA. Data pengujian kualitas sensori dianalisis dengan analisis uji *Friedman*. Hasil analisis yang menunjukkan perbedaan nyata (signifikan) diuji lanjut dengan *Duncan's New Multiple Range Test* (DMRT). Data hasil pengujian kualitas mikrobiologi pada populasi bakteri *E. coli* dan *Salmonella sp*, aktivitas antioksidan (nilai IC₅₀), dan kadar kolesterol dianalisis secara deskriptif analitik. Hasil penelitian menunjukkan bahwa fermentasi dengan bakteri probiotik *L. plantarum* sebanyak 2% dapat meningkatkan kadar air sosis 44,42%, titrasi keasaman 2,88, *cohesiveness* 0,83, *resilience* 0,44, warna 3,96, tekstur 3,36, daya terima 3,11, dan populasi bakteri asam laktat 2,31x10⁶ cfu/g, dan menurunkan kadar protein 24,48%, kadar lemak 12,40%, kadar karbohidrat 12,45%, *hardness* 1 16,29 N, *hardness* 2 15,36 N, *adhesiveness* -0,04, Penambahan enzim TG-ase hingga 2% dapat meningkatkan kadar air 43,96%, nilai pH 5,80, *cohesiveness* 0,82, *resilience* 0,42, warna 3,60, tekstur 3,15 dan daya terima 3,13, dan menurunkan kadar protein 24,03%, kadar lemak 12,43%, *hardness* 1 15,11 N, *hardness* 2 14,18 N, *gumminess* 12,26 N, dan *chewiness* 12,27 N. Hasil penelitian analisis deskriptif pada populasi bakteri *E. coli* dan populasi bakteri *Salmonella sp* semua sampel sosis ayam fermentasi hasilnya negatif. Aktivitas antioksidan (nilai IC₅₀) terukur 7,845 mg/ml pada kombinasi bakteri probiotik *L. plantarum* 2% dan enzim TG-ase 1%, dan kadar kolesterol yang tidak terdeteksi pada semua sampel. Terdapat interaksi antara kombinasi bakteri *L. plantarum* dan enzim TG-ase pada semua parameter kualitas kimia, *hardness* 1, *hardness* 2, *gumminess* dan *chewiness*. Kesimpulan dari penelitian ini adalah inoculasi bakteri probiotik *L. plantarum* dan enzim TG-ase dapat berpengaruh menurunkan parameter fungsi fisiologis kimia namun meningkatkan parameter kenampakan sosis ayam fermentasi, dan level yang direkomendasikan yaitu pada bakteri probiotik *L. plantarum* 2% dan enzim TG-ase 1%.

Kata kunci: Sosis Ayam fermentasi, Bakteri probiotik, *Lactobacillus plantarum*, Enzim transglutaminase

PRODUCTION OF FERMENTED CHICKEN SAUSAGE USING A
COMBINATION TREATMENT OF *Lactobacillus plantarum* AND
TRANSGLUTAMINASE ENZYME

ABSTRACT

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Functional food is food that contains many physiological functions that are not harmful and beneficial to health. This study aims to determine the effect of bacterial inoculation *L. plantarum* and TG-ase enzymes and their combination on chemical quality, physical quality, texture profile analysis, sensory quality, microbiological quality, antioxidant activity quality (IC₅₀ value), and fermented chicken sausage cholesterol levels. The total fermentation process was carried out for 4 days with the smoking process carried out for 3 days for 2 hours each. The design of this study was a completely randomized design (CRD) 2x3 factorial with three replications. The first factor is the inoculation of probiotic bacteria *L. plantarum* (0% and 2%) and the second factor was the addition of the TG-ase enzyme (0%, 1%, and 2%). Data on the results of chemical quality, physical quality, texture profile analysis, and microbiological quality on lactic acid bacteria populations were analyzed by ANOVA. Data on sensory quality test were analyzed by Friedman test. The results of the analysis which showed a significant difference were tested further with Duncan's New Multiple Range Test (DMRT). Meanwhile, data on microbiological quality testing on populations of *E. coli* and *Salmonella sp* bacteria, antioxidant activity (IC₅₀ value), and cholesterol levels are presented in an analytical descriptive. The results showed that the fermentation with bacteria *L. plantarum* as much as 2% could increase the water content of sausage 44,42%, acidity titration 2,88, cohesiveness 0,83, resilience 0,44, color 3,96, texture 3,36, acceptability 3.11, and population of lactic acid bacteria 2.31x10⁶ cfu/g, and reduced protein content 24.48%, fat content 12.40%, carbohydrate content 12.45%, hardness 1 16.29 N, hardness 2 15, 36 N, adhesiveness -0.04, Addition of TG-ase enzyme until 2% can increase water content 43.96%, pH value 5.80, cohesiveness 0.82, resilience 0.42, color 3 .60, texture 3.15 and acceptability 3.13, and decreased protein content 24.03%, fat content 12.43%, hardness 1 15.11 N, hardness 2 14.18 N, gumminess 12.26 N, and chewiness 12.27 N. The results of the descriptive analysis on the population of *E. coli* bacteria and the population of *Salmonella sp.* all samples of fermented chicken sausage were negative. Antioxidant activity (IC₅₀ value) was measured 7.845 mg/ml in the combination of probiotic bacteria *L. plantarum* 1% and the enzyme TG-ase 1%, and the cholesterol levels not detected in all samples of fermented chicken sausage. There are an interaction between the combination of *L. plantarum* bacteria and TG-ase enzyme on all parameters of chemical quality, hardness 1, hardness 2, gumminess, and chewiness. The conclusion of this research is probiotic bacteria inoculation *L. plantarum* and the TG-ase enzyme can affect decreased the parameters of chemical physiological functions but increase the appearance parameters of fermented chicken sausages, and the recommended level is probiotic bacteria *L. plantarum* 2% and TG-ase enzyme 1%.

Keywords: Fermented Chicken Sausage, Probiotic Bacteria, *Lactobacillus plantarum*, Transglutaminase enzyme