KUALITAS KARKAS, NON KARKAS, FISIKOKIMIA, DAN MIKROSTRUKTUR DAGING AYAM BROILER YANG DIBERI TEPUNG
DUCKWEED TERFERMENTASI SEBAGAI SUMBER PREBIOTIK
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INTISARI

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Penelitian ini bertujuan untuk mengevaluasi pengaruh pemberian tepung *duckweed* terfermentasi sebagai sumber prebiotik dalam pakan terhadap persentase karkas, komponen karkas, persentase non-karkas, karakteristik fisikokimia, dan mikrostruktur daging ayam broiler. Sebanyak 192 ekor DOC ayam broiler strain Ross digunakan dalam penelitian ini dan dibagi ke dalam tiga perlakuan, yaitu P0 (0%), P1 (2,5%), dan P2 (5%) dengan delapan ulangan. Fermentasi tepung *duckweed* dilakukan menggunakan konsorsium bakteri *Bacillus subtilis* dan *Lactobacillus plantarum*. Parameter yang diamati meliputi persentase karkas, komponen karkas, persentase non-karkas, karakteristik fisikokimia daging (warna, pH, daya ikat air, susut masak, tekstur, kadar air, kadar protein, kadar lemak, kadar kolagen, dan aktivitas antioksidan), serta mikrostruktur otot pada penampang melintang yang meliputi diameter serabut otot, luas penampang melintang serabut otot, serta ketebalan endomisium dan perimisium. Data yang diperoleh dianalisis menggunakan *analysis of variance* (ANOVA) pola searah, dan perbedaan yang signifikan antar rerata dilanjutkan dengan uji *Duncan's Multiple Range Test* (DMRT). Hasil penelitian menunjukkan bahwa pemberian tepung *duckweed* terfermentasi berpengaruh nyata ($P<0,05$) terhadap persentase karkas, daya ikat air, *hardness, yellowness*, diameter dan luas penampang melintang serabut otot, serta ketebalan perimisium, namun tidak berpengaruh nyata terhadap komponen karkas, persentase non-karkas, pH, susut masak, kadar air, kadar protein, kadar lemak, kadar kolagen, dan aktivitas antioksidan daging. Persentase karkas meningkat dari 67,43% (0%) menjadi 70,49% (2,5%) dan 70,46% (5%). Daya ikat air meningkat dari 52,83% (0%) menjadi 57,32% (2,5%) dan 59,17% (5%). Nilai *hardness* dan *yellowness* menurun seiring dengan peningkatan level pemberian tepung *duckweed* terfermentasi. Pengamatan mikrostruktur menunjukkan bahwa diameter serabut otot meningkat dari 42,30 µm (0%) menjadi 51,03 µm (2,5%) dan 65,02 µm (5%), luas penampang melintang serabut otot meningkat dari 201,36 µm² (0%) menjadi 210,68 µm² (2,5%) dan 222,94 µm² (5%), sedangkan ketebalan perimisium menurun dari 41,89 µm (0%) menjadi 37,78 µm (2,5%) dan 32,16 µm (5%). Berdasarkan hasil penelitian dapat disimpulkan bahwa pemberian tepung *duckweed* terfermentasi hingga level 2,5% sebagai sumber prebiotik berpotensi meningkatkan persentase karkas, memperbaiki sifat fisik daging, dan memperbaiki mikrostruktur otot ayam broiler tanpa memberikan pengaruh negatif terhadap karakteristik kimia daging maupun persentase non-karkas.

Kata kunci: Daging ayam broiler, *Duckweed,* Fermentasi*,* Kualitas daging, Mikrostruktur daging

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CARCASS AND NON-CARCASS TRAITS, MEAT QUALITY, AND MUSCLE MICROSTRUCTURE OF BROILER CHICKENS FED A FERMENTED *DUCKWEED* BASED PREBIOTIC

ABSTRACT

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This study aimed to evaluate the effects of dietary fermented duckweed meal as a prebiotic on carcass percentage, carcass components, non-carcass percentage, physicochemical properties, and muscle microstructure of broiler chickens. A total of 192 one-day-old Ross broiler chicks were used in this study and randomly assigned to three dietary treatments: P0 (0%), P1 (2.5%), and P2 (5%), with eight replicates per treatment. Duckweed meal was fermented using a bacterial consortium of *Bacillus subtilis* and *Lactobacillus plantarum*. The evaluated parameters included carcass percentage, carcass components, non-carcass percentage, meat physicochemical properties (color, pH, water-holding capacity, cooking loss, texture, moisture, protein, fat, collagen, and antioxidant activity), and muscle microstructure observed on cross-sections, including muscle fiber diameter, cross-sectional area of muscle fibers, and endomysium and perimysium thickness. Data were analyzed using one-way analysis of variance (ANOVA), and significant differences among means were further tested using Duncan's Multiple Range Test (DMRT). The results showed that dietary supplementation with fermented duckweed meal significantly ($P<0.05$) affected carcass percentage, water-holding capacity, hardness, yellowness, muscle fiber diameter, muscle fiber cross-sectional area, and perimysium thickness, but had no significant effect on carcass components, non-carcass percentage, pH, cooking loss, moisture, protein, fat, collagen, or antioxidant activity of the meat. Carcass percentage increased from 67.43% (0%) to 70.49% (2.5%) and 70.46% (5%). Water-holding capacity increased from 52.83% (0%) to 57.32% (2.5%) and 59.17% (5%). Hardness and yellowness decreased with increasing levels of fermented duckweed meal. Microstructural analysis revealed that muscle fiber diameter increased from 42.30 μm (0%) to 51.03 μm (2.5%) and 65.02 μm (5%), while the cross-sectional area of muscle fibers increased from 201.36 μm² (0%) to 210.68 μm² (2.5%) and 222.94 μm² (5%). In contrast, perimysium thickness decreased from 41.89 μm (0%) to 37.78 μm (2.5%) and 32.16 μm (5%). In conclusion, dietary supplementation with fermented duckweed meal up to 2.5% as a prebiotic improved carcass percentage, meat physical properties, and muscle microstructure without adversely affecting meat chemical characteristics or non-carcass percentage in broiler chickens.

Keywords**:** Broiler, *Duckweed*, Fermentation, Meat quality, Microstructure