UNIVERSITAS GADJAH MADA
Struktur Histologis Organ Limfoid dan Performa Pertumbuhan Ayam Broiler Gallus Gallus Gallus (Linnaeus, 1758) Setelah Pemberian Bubuk Hati Ikan Cakalang [Katsuwonus Pelamis (Linnaeus, 1758)]
Callista Nadya Noel Pasaribu, Dr. med. vet. drh. Hendry T. S. S. G. Saragih, M.P.
Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

STRUKTUR HISTOLOGIS ORGAN LIMFOID DAN PERFORMA PERTUMBUHAN AYAM BROILER [*Gallus gallus gallus* (Linnaeus, 1758)] SETELAH PEMBERIAN BUBUK HATI IKAN CAKALANG [*Katsuwonus pelamis* (Linnaeus, 1758)]

Callista Nadya Noel Pasaribu

21/479972/BI/10815

Dosen Pembimbing: Dr. med. vet. drh. Hendry T. S. S. G. Saragih, M.P.

INTISARI

Peningkatan kebutuhan protein hewani akibat pertumbuhan populasi mendorong optimalisasi kualitas pakan ayam broiler (*Gallus gallus gallus*). Bubuk hati ikan cakalang (*Katsuwonus pelamis*) berpotensi sebagai bahan aditif fungsional karena kandungan protein dan senyawa bioaktifnya. Penelitian ini bertujuan untuk mengevaluasi pengaruh pemberian bubuk hati cakalang serta menentukan dosis optimalnya untuk meningkatkan kinerja pertumbuhan ayam, dan mempelajari perbedaan struktur histologis organ limfoid ayam. Sebanyak 300 ekor *day old chick* (DOC) campuran jantan dan betina strain Cobb 500 dipelihara sampai umur ke-17 hari dengan empat kelompok perlakuan, yaitu kontrol (CON) dengan pakan basal (PB) tanpa pemberian *Katsuwonus pelamis liver powder* (KPP), serta kelompok yang diberi KPP sebesar 1%/kg PB (KPP1), 3%/kg PB (KPP2), dan 5%/kg PB (KPP3). Setiap perlakuan terdiri dari 15 ekor DOC. Parameter peningkatan struktur histologis yang diamati meliputi area folikel, medula, dan korteks pada bursa fabricius, serta area pulpa putih pada lien, sedangkan peningkatan performa pertumbuhan diamati dari pengukuran berat badan ayam, *Feed Conversion Ratio* (FCR), *feed intake, weight gain,* morfometri tubuh, dan indeks organ limfoid. Preparat histologis dibuat menggunakan metode parafin dengan pewarnaan *Hematoxylin-Eosin*. Analisis data dilakukan menggunakan uji *One-Way* ANOVA dan uji lanjut Duncan dengan tingkat kepercayaan 95% ($\alpha = 0,05$). Peningkatan berat badan dan efisiensi FCR yang signifikan ($p<0,05$) ditemukan pada kelompok KPP2 dan KPP3, sedangkan indeks organ limfoid tertinggi tercatat pada KPP1. Perluasan struktur histologis organ limfoid tertinggi pada perlakuan KPP3, yang menunjukkan aktivasi sistem imun adaptif. Dengan demikian, bubuk hati ikan cakalang telah terbukti mampu meningkatkan performa pertumbuhan dan respons imun ayam broiler secara *dose-dependent*. Kajian lanjutan disarankan untuk dilakukan guna mengevaluasi kandungan bioaktif dan mekanisme molekuler yang mendasari efek tersebut.

Kata kunci: ayam broiler, bubuk hati ikan cakalang, organ limfoid, morfometri, nutrisi

UNIVERSITAS GADJAH MADA
Struktur Histologis Organ Limfoid dan Performa Pertumbuhan Ayam Broiler Gallus Gallus Gallus (Linnaeus, 1758) Setelah Pemberian Bubuk Hati Ikan Cakalang [Katsuwonus Pelamis (Linnaeus, 1758)]
Callista Nadya Noel Pasaribu, Dr. med. vet. drh. Hendry T. S. S. G. Saragih, M.P.
Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

Histological Structure of Lymphoid Organs and Growth Performance of Broiler Chickens [Gallus gallus gallus (Linnaeus, 1758)] After Feeding The Chicken Heart Powder [Katsuwonus pelamis (Linnaeus, 1758)]

Callista Nadya Noel Pasaribu

21/479972/BI/10815

Supervisor: Dr. med. vet. drh. Hendry T. S. S. G. Saragih, M.P.

Abstract

Increased demand for animal protein due to population growth encourages optimization of broiler feed quality (Gallus gallus gallus). Skipjack liver powder (Katsuwonus pelamis) has potential as a functional additive due to its protein content and bioactive compounds. This study aims to evaluate the effect of skipjack liver powder and determine the optimal dose to improve the growth performance of chickens, and study the differences in the histological structure of chicken lymphoid organs. A total of 300 male and female mixed day old chick (DOC) of Cobb 500 strain were reared until the 17th day of age with four treatment groups, namely control (CON) with basal feed (PB) without Katsuwonus pelamis liver powder (KPP), and groups given KPP at 1%/kg PB (KPP1), 3%/kg PB (KPP2), and 5%/kg PB (KPP3). Each treatment consisted of 15 DOC. The parameters of histological structure improvement observed included follicle area, medulla, and cortex in bursa fabricius, and white pulp area in the lien, while the improvement of growth performance was observed from the measurement of chicken body weight, Feed Conversion Ratio (FCR), feed intake, weight gain, body morphometry, and lymphoid organ index. Histological preparations were made using paraffin method with Hematoxylin-Eosin staining. Data analysis was performed using One-Way ANOVA test and Duncan's further test with 95% confidence level ($\alpha = 0.05$). A significant increase in body weight and FCR efficiency ($p<0.05$) was observed in the KPP2 and KPP3 groups, while the highest lymphoid organ index was obtained in KPP1. The expansion of the histological structure of lymphoid organs was highest in the KPP3 treatment, indicating the activation of the adaptive immune system. Thus, skipjack liver powder has been shown to improve growth performance and immune response of broiler chickens in a dose-dependent manner. Further studies are recommended to be conducted to evaluate the bioactive content and molecular mechanisms underlying these effects.

Keywords: broiler chickens, lymphoid organs, morphometry, nutrition, skipjack liver powder