PERFORMAN DAN PRODUKSI KARKAS ITIK YANG DIBERI PAKAN LIMBAH UDANG DIFERMENTASI DENGAN BAKTERI KITINOLITIK

INTISARI

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Tujuan penelitian ini adalah untuk mendapatkan bakteri kitinolitik unggul yang mampu menghidrolisis kitin dari limbah udang. Fermentasi limbah udang diharapkan dapat digunakan sebagai pakan itik untuk peningkatan produksi dan kualitas karkas itik. Karakterisasi bakteri dilakukan untuk menghasilkan isolat yang mempunyai aktivitas kitinase tinggi. Identifikasi bakteri dilakukan berdasarkan morfologi, fisiologi, biokimia dan molekuler. Uji optimasi pertumbuhan bakteri dilakukan terhadap pH dan suhu. Itik Magelang yang digunakan dalam perlakuan pakan fermentasi limbah udang dengan bakteri kitinolitik sebanyak 140 ekor. Rancangan percobaan menggunakan rancangan acak kelompok (7x4) pola searah. Hasil identifikasi morfologi, biokimia dan molekuler bakteri yang diisolasi termasuk genus *Isoptericola* dan *Paenibacillus* sp. D10-2. Hasil uji optimasi bakteri *Isoptericola* A10-1 pada pH berbeda, temperatur 29ºC diperoleh aktivitas spesifik kitinase tertinggi pada pH 8 yaitu 500,17 U/mg. Optimasi aktivitas spesifik kitinase terhadap temperatur optimal pada suhu 40ºC yaitu 404,29 U/mg. Bakteri *Isoptericola* sp. terseleksi sebagai inokulum dalam fermentasi skala laboratorium. Aktivitas spesifik kitinase inokulum diperoleh yang tertinggi pada hari kelima yaitu 705 U/mg. Hasil penelitian tahap II menunjukkan pada level kadar air 30% dan isolat level 15% mampu menurunkan kadar serat kasar. Level kadar air 50% dan level isolat 15% berbeda nyata ($P \leq 0,05$) meningkatkan kadar lemak kasar dan terjadi interaksi antara level kadar air serta isolat terhadap peningkatan kadar lemak kasar Limbah Udang Fermentasi (LUF). Kecernaan *in vitro* Limbah Udang Non Fermentasi (LUNF) dan LUF berbeda nyata ($P \leq 0,05$) dan terjadi peningkatan kecernaan serat kasar sebesar 23,49%. Hasil penelitian tahap III menunjukkan penambahan tepung LUF pada level 5, 10 dan 15% berbeda tidak nyata terhadap performan itik Magelang yaitu bobot potong, persentase karkas, pertambahan bobot badan dan konversi pakan. Penambahan LUF dan LUNF pada level 10 dan 15% meningkatkan konsumsi bahan organik dan bahan kering. Konsumsi serat kasar LUF berbeda sangat signifikan ($P \leq 0,01$) meningkat sampai level 15% dibandingkan dengan kontrol.

Kata kunci: Performan itik, Fermentasi, Limbah udang, Bakteri kitinolitik,

THE PERFORMANCE AND PRODUCTION OF DUCK CARCASS GIVEN SHRIMP WASTE FEED FERMENTED WITH CHITINOLYTIC BACTERIA

ABSTRACT

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The goal of this research is to acquire superior chitinolytic bacteria that are able to degrade chitin from shrimp waste. Fermented shrimp waste was expected to be used as ducks feed for the increasing production and carcass quality of its. Bacteria characterization was conducted to produce isolates which have high chitinase activity. Bacteria identification was based on morphology, physiology, biochemistry, and molecular structure. A bacteria growth optimization test was conducted on the pH and temperature. There were 140 Magelang ducks used in the shrimp waste fermentation feed with chitinolytic bacteria. The design of the experiment used a randomized block design (7x4). The morphology, biochemistry, and molecular identification of bacteria results included the genus *Isoptericola* and *Paenibacillus* sp. D10-2. The bacteria *Isoptericola* A10-1 optimization test results at different pH and a temperature of 29ºC had the highest chitinase specific activity at pH 8 was 500.17 U/mg. The chitinase specific activity optimization towards temperature was optimal at a temperature of 40ºC, which was 404.29 U/mg. The *Isoptericola* sp. bacteria were selected as an inoculum in the laboratory scale fermentation. The inoculum chitinase specific activity obtained was the highest on the fifth day at 705 U/mg. The stage II research results reveal that at a 30% water content level and a 15% isolate content level, the crude fiber content was able to be reduced. A 50% water content level and a 15% isolate content level had a significant difference (P≤0.05) in increasing the crude fat content, and there were interactions between the water content level and the isolate content level towards increasing the fermented shrimp waste (LUF) crude fat content. In vitro digestability non-fermented shrimp waste (LUNF) and LUF had significantly different (P≤0.05) and increased the crude fiber digestability by 23.49%. The stage III research results revealed adding LUF meal at levels of 5%, 10%, and 15% did not have significantly different towards the performance of Magelang ducks in terms of slaughter weight, carcass percentage, body weight gain, and feed conversion. Adding LUF and LUNF at the 10% and 15% levels increased the consumption of organic matter and dry matter. The consumption of LUF crude fiber had a very significantly difference (P≤0.01), increasing until a level of 15% compared with the control.

Keywords: duck performance, fermentation, shrimp waste, chitinolytic bacteria

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