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Pengaruh Substitusi Tepung Ikan Dengan Tepung Bulu Ayam Terhidrolisis Dengan Lactococcus formosensis JAL 11 Terhadap Pertumbuhan Ikan Nila Merah (Oreochromis sp.)
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INTISARI

PENGARUH SUBSTITUSI TEPUNG IKAN DENGAN TEPUNG BULU AYAM TERHIDROLISIS DENGAN *Lactococcus formosensis* JAL 11 TERHADAP PERTUMBUHAN IKAN NILA MERAH (*Oreochromis* sp.)

Tepung ikan merupakan sumber protein utama dalam pakan ikan, namun harganya yang tinggi mendorong pencarian bahan alternatif. Bulu ayam merupakan limbah industri pemotongan unggas yang melimpah dan mengandung protein kasar tinggi (82,36%), namun sulit dicerna karena kandungan keratinnya. Hidrolisis menggunakan bakteri keratinolitik dapat mengubah keratin menjadi protein yang lebih mudah dicerna sehingga berpotensi menggantikan sebagian tepung ikan dalam pakan ikan nila merah (*Oreochromis* sp.). Penelitian ini bertujuan mengetahui pengaruh substitusi tepung ikan dengan tepung bulu ayam terhidrolisis bakteri *Lactococcus formosensis* terhadap pertumbuhan ikan nila merah. Penelitian menggunakan Rancangan Acak Lengkap dengan lima perlakuan (P1: 0%, P2: 5%, P3: 10%, P4: 15%, P5: 20% substitusi tepung bulu ayam) dan tiga ulangan selama 45 hari. Parameter yang diamati meliputi pertumbuhan panjang-berat, laju pertumbuhan spesifik, *Average Daily Growth*, *Feed Conversion Ratio*, sintasan, efisiensi pakan, dan *Protein Efficiency Ratio*. Hasil analisis proksimat protein menunjukkan seluruh pakan memenuhi standar protein SNI (>25%). Hasil uji ANOVA menunjukkan bahwa secara umum substitusi tepung bulu ayam tidak memberikan pengaruh nyata (P>0,05) terhadap sebagian besar parameter pertumbuhan, *Feed Conversion Ratio*, sintasan, efisiensi pakan, maupun *Protein Efficiency Ratio* dibandingkan kontrol, kecuali pada beberapa parameter yaitu berat mutlak, berat spesifik, dan *Average Daily Growth* di hari ke-15 dan ke-30. Hal ini mengindikasikan tepung bulu ayam terhidrolisis bakteri keratinolitik berpotensi digunakan sebagai bahan substitusi tepung ikan hingga taraf 20% tanpa menurunkan performa pertumbuhan ikan nila secara signifikan.

Kata kunci : bulu ayam, bakteri keratinolitik, ikan nila, pertumbuhan, substitusi

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ABSTRACT

THE EFFECT OF FISH MEAL SUBTITUTION WITH HYDROLYZED CHICKEN FEATHER MEAL by *Lactococcus formosensis* JAL11 ON THE GROWTH OF RED TILAPIA (*Oreochromis* sp.)

Fish meal serves as the primary protein source in aquaculture feed; yet, its elevated cost prompts the exploration of substitute ingredients. Poultry processing generates a significant amount of chicken feathers, which possess a high crude protein level (82.36%), although their keratin composition renders them challenging to digest. Hydrolysis facilitated by keratinolytic bacteria can transform keratin into more palatable proteins, possibly substituting a portion of fish meal in the diet of Red tilapia (*Oreochromis* sp.). This research seeks to assess the effect of fish meal subtitution with hydrolyzed chicken feather meal by *Lactococcus formosensis* jal 11 on the growth of Red Tilapia. The study employed a Completely Randomized Design featuring five treatments (P1: 0%, P2: 5%, P3: 10%, P4: 15%, P5: 20% substitution of chicken feather meal) and three replications conducted over a span of 45 days. The observed characteristics encompass length-weight growth, specific growth rate, Average Daily Growth, Feed Conversion Ratio, survival, feed efficiency, and Protein Efficiency Ratio. The findings from the proximate protein assessment indicate that all feed samples comply with the SNI protein (>25%). The ANOVA test results indicated that, overall, the replacement of chicken feather meal did not significantly influence ($P>0.05$) the majority of growth metrics, Feed Conversion Ratio, survival rates, feed efficiency, or Protein Efficiency Ratio in comparison to the control, with the exception of certain parameters, specifically absolute weight, specific weight, and Average Daily Growth on days 15 and 30. This suggests that chicken feather meal, hydrolyzed by keratinolytic bacteria, can serve as a viable alternative to fish meal at levels of up to 20% without markedly impairing the growth performance of tilapia

Keywords: chicken feather, keratinolytic bacteria, tilapia, fish meal substitution, growth