

**ANALISIS EKSPRESI GEN GH DAN PRL PADA AYAM F₅
GOLDEN KAMPER (*Gallus gallus domesticus* Linnaeus, 1758)
TERHADAP PERLAKUAN PAKAN ALTERNATIF
MIKROALGA (*Chlorella vulgaris* Beijerinck.) DAN TANAMAN
MATA AIR (*Azolla microphylla* Kaulf.)
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Intisari

Pakan ayam merupakan komoditas penting dalam industri perunggasan. Harga pakan secara langsung mempengaruhi harga daging dan telur ayam ras dan buras. Dalam upaya meningkatkan kualitas dan kuantitas daging ayam buras khususnya ayam kampung dilakukan inovasi dengan teknik *crossbreeding* dan pengembangan pakan. Jenis spesies mikroalga hijau *Chlorella vulgaris* Beijerinck. dan tanaman *Azolla microphylla*, Kaulf. merupakan komoditas lokal yang dapat digunakan dalam industri pakan dan nutrisi ayam. Tujuan penelitian ini adalah untuk mengetahui performa pertumbuhan F₅ Golden Kamper dengan perlakuan perbedaan jenis pakan serta mempelajari hubungan antara jenis pakan dengan tingkat ekspresi gen GH & PRL pada F₅ Golden Kamper. Desain penelitian yang dilakukan membagi 12 ayam ke dalam 4 kelompok. Kelompok pertama diberi perlakuan pakan *broiler standar* (BR), kelompok dua diberi perlakuan pakan standar jagung dan dedak, serta kelompok tiga dan empat diberikan pakan formulasi dengan masing-masing presentase *Chlorella vulgaris* dan *Azolla microphylla extract powder* berturut-turut adalah 10% dan 5%. Bobot ayam dan FCR ditimbang setiap minggunya dan pada minggu ke 9, diambil hati dan dihitung berat karkasnya. Isolasi RNA dilakukan kemudian dilanjutkan dengan RT-PCR dan qPCR. Data C_q dari PRL dan GH kemudian dihitung menggunakan *relative quantification* dan dibandingkan dengan gen β -Actin. Performa bobot ayam hibrida dengan perlakuan pakan PF1 (CV 10%; AM 10%) dan PF2 (CV 5%; AM 5%) belum mampu mengungguli pakan BR dengan perbandingan bobot ± 625 gr (BR), ± 595 gr (PF1), dan ± 467.67 gr (PF2). PF1 dan PF2 dapat menaikkan bobot karkas dan persentase karkas secara signifikan dibandingkan perlakuan kontrol dengan nilai masing masing 299.67gr/50.36% serta 234.67gr/50.18%. PF1 dan PF2 dapat menurunkan FCR secara signifikan ($p < 0.05$) seiring dengan kenaikan bobot ayam dibandingkan perlakuan kontrol. Serta, memiliki nilai ME yang optimum untuk pertumbuhan ayam kampung (2900 kkal/kg) yang lebih kecil dari nilai ME pakan BR (3200 kkal/kg). Ekspresi gen GH pada pakan PF1 (1.21) dan PF2 (0.45) lebih rendah dibandingkan pakan BR (1.79), namun PF1 lebih tinggi dibandingkan pakan JD (0.64). Ekspresi gen GH berkorelasi positif dengan peningkatan kualitas pakan pada F₅ Golden Kamper. Ekspresi gen PRL pada kelompok perlakuan PF1 (2.62) menunjukkan hasil paling tinggi dan berbeda signifikan ($p < 0.05$) dibandingkan PF2 dan kelompok kontrol.

Kata kunci: *Azolla microphylla*, *Chlorella vulgaris*, *Growth Hormone*, Golden Kamper, Pakan alternatif, Performa pertumbuhan, *Prolactin*.

**ANALYSIS OF GH AND PRL GENE EXPRESSION IN F₅
GOLDEN KAMPER (*Gallus gallus domesticus* Linnaeus, 1758)
WITH ALTERNATIVE MIXED FEED MICROALGAE
(*Chlorella vulgaris* Beijerinck.) AND WATER FERN (*Azolla
microphylla* Kaulf.) TREATMENTS**

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Abstract

Chicken feed is an important commodity in the poultry industry. The price of feed directly affects the price of meat and eggs for domesticated and native chickens. As an effort to improve the quality and quantity of local chicken meat, innovations are made with crossbreeding techniques and feed development. Species of green microalgae *Chlorella vulgaris* and water fern *Azolla microphylla* are local commodities that can be used in the poultry feed and nutrition industry. The purpose of this study was to determine the growth performance of F₅ Golden Kamper by treating different types of feed and to study the relationship between feed types and the level of GH & PRL gene expression in F₅ Golden Kamper. The design of this study divided 12 chickens into 4 groups; the first group was treated with standard broiler feed (BR), the second group was given standard feed corn and bran, and groups three and four were given formulation feed with the percentages of *Chlorella vulgaris* and *Azolla microphylla* extract powder, respectively, were 10% and 5%. Chicken weight and FCR were weighed every week and at week 9, liver was taken and carcass weight was calculated. RNA isolation was carried out then followed by RT-PCR and qPCR. The C_q data from PRL and GH were then calculated using relative quantification and compared with the β -Actin gene. The weight performance of hybrid chickens with PF1 (CV 10%; AM 10%) and PF2 (CV 5%; AM 5%) feed treatments was still below BR feed with a weight ratio of ± 625 gr (BR), ± 595 gr (PF1), and ± 467.67 gr (PF2). PF1 and PF2 can increase carcass weight and carcass percentage significantly compared to control treatment with values of 299.67gr/50.36% and 234.67gr/50.18%. PF1 and PF2 can significantly reduce FCR ($p < 0.05$) along with the increase in chicken weight compared to the control treatment. Also, it has an optimum ME value for the growth of native chickens (2900 kcal/kg) which is smaller than the ME value of BR feed (3200 kcal/kg). The expression of GH genes in PF1 (1.21) and PF2 (0.45) diets was lower than in BR feeds (1.79), however PF1 was higher than JD feed (0.64). GH gene expression was positively correlated with improved feed quality in hybrid chickens. PRL gene expression in the treatment group PF1 (2.62) showed the highest results and significantly different ($p < 0.05$) compared to PF2 and the control group.

Keywords: Alternative Feed, *Azolla microphylla*, *Chlorella vulgaris*, *Growth Hormone*, Growth Performance, Golden Kamper, *Prolactin*.