

## Polimorfisme Gen *Insulin-like Growth Factor-1* Pengkode Pertumbuhan Pada Ayam (*Gallus gallus domesticus* Linnaeus, 1758) Hibrida Golden Kamper

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### INTISARI

Program pemuliaan ayam kampung merupakan salah satu langkah penting dalam meningkatkan kualitas ayam kampung di Indonesia. Tingkat pertumbuhan ayam kampung di Indonesia cenderung rendah apabila dibandingkan dengan ayam ras pedaging yaitu ayam broiler. Salah satu jenis ayam kampung di Indonesia yang memiliki keunggulan dari segi pertumbuhan yaitu ayam Pelung. Laboratorium Genetika dan Pemuliaan Fakultas Biologi UGM telah berhasil melakukan pemuliaan ayam dengan menyilangkan ayam jantan pelung blirik merah dengan ayam betina layer yang menghasilkan F<sub>1</sub> Kamper. Metode pemuliaan yang digunakan yaitu *selective breeding* dengan memperhatikan sifat unggul yang dihasilkan untuk kemudian disilangkan kembali. Salah satu pemilihan individu yg unggul dilakukan dengan melihat pewarisan genetik pada ayam menggunakan penanda berupa gen *Insulin-like Growth Factor-1 (IGF-1)* yang berkorelasi terhadap pertumbuhan bobot ayam. Penelitian ini bertujuan untuk mendeteksi variasi pada gen *IGF-1* yang kemudian dianalisis untuk mengamati hubungannya dengan pertumbuhan bobot ayam F<sub>4</sub> Golden Kamper. Pada penelitian ini dilakukan pengambilan data lapangan yang meliputi pemeliharaan indukan, koleksi telur, penetasan telur, pemeliharaan DOC, dan pengamatan karakter fenotipe kuantitatif berupa pertumbuhan bobot serta morfometri dan karakter fenotipe kualitatif meliputi bentuk jengger, warna bulu, dan warna ceker. Pengambilan data molekuler meliputi isolasi darah, isolasi DNA, amplifikasi DNA, elektroforesis, dan DNA sekuensing. Hasil DNA sekuensing dianalisis menggunakan software *GeneStudio* dan dilakukan *alignment* menggunakan *ClustalOmega* untuk mendapatkan titik polimorfisme. Bobot ayam F<sub>4</sub> Golden Kamper pada minggu hari ke-49 memiliki rata-rata 486 gram dan lebih tinggi apabila dibandingkan tetuanya yaitu F<sub>2</sub> Golden Kamper, pelung, dan layer. Hasil *alignment* menunjukkan adanya 21 titik polimorfisme yang tidak memiliki korelasi signifikan terhadap pertumbuhan bobot ayam.

Kata Kunci : Pemuliaan, Ayam Golden Kamper, *Insulin-like Growth Factor-1*, Pertumbuhan, Polimorfisme

## **Polymorphism of *Insulin-like Growth Factor-1* Gene Encoding Growth in Hybrid Chicken (*Gallus gallus domesticus* Linnaeus, 1758) Golden Kamper**

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### ***ABSTRACT***

Chicken breeding program is an important step in improving the quality of native chickens in Indonesia. The growth rate of native chickens in Indonesia tends to be low when compared to broilers chicken. One type of native chicken in Indonesia that has advantages in terms of growth is Pelung chicken. The Laboratory of Genetics and Breeding Faculty of Biology UGM has succeeded in breeding chickens by crossing a red pelung blirik rooster with a layer hen that produces F<sub>1</sub> Kamper. The breeding method used is selective breeding by taking into account the superior traits that are produced and then crossed again. One of the selection of superior individuals is done by looking at the genetic inheritance in chickens using a marker in the form of the *Insulin-like Growth Factor-1* (*IGF-1*) gene which is correlated with the growth of chicken weight. This study aimed to detect variations in the *IGF-1* gene which was then analyzed to observe its relationship with growth in weight of F<sub>4</sub> Golden Kamper chickens. In this study, field data were collected which included broodstock rearing, egg collection, egg hatching, DOC maintenance, and observations of quantitative phenotypic characters in the form of weight growth and morphometry and qualitative phenotypic characters including comb shape, shank color, and plumage color. Molecular data collection includes blood isolation, DNA isolation, DNA amplification, electrophoresis, and DNA sequencing. The DNA sequencing results were analyzed using GeneStudio software and aligned using ClustalOmega to obtain polymorphism points. The weight of the F<sub>4</sub> Golden Kamper chicken on the 49th week of the week had an average of 486 grams and was higher than its parents, namely F<sub>2</sub> Golden Kamper, pelung, and layer. The results of the alignment showed that there were 21 polymorphism points that did not have a significant correlation with the growth of chicken weight.

**Keywords:** Breeding, Golden Kamper Chicken, *Insulin-like Growth Factor-1*, Growth Traits, and Polymorphism