

**KARAKTER FENOTIP, KOEFISIEN *INBREEDING*, DAN  
POLIMORFISME GEN *cTYR* INTRON 4 PADA AYAM  
(*Gallus gallus gallus* Linnaeus, 1758) HIBRIDA GOLDEN KAMPER**

Oleh:

Imroatul habibah  
(14/364867/BI/9231)

**INTISARI**

Ayam hasil domestikasi manusia selama ribuan tahun merepresentasikan berbagai mutasi yang telah mengubah susunan genotip dan fenotipnya. Warna bulu merupakan salah satu karakter genetik yang sangat bervariasi. Pada ayam, gen yang berperan penting dalam biogenesis melanin pada sel pigmen adalah tirosinase (*cTYR*). Penelitian sebelumnya menyebutkan bahwa perubahan susunan gen *cTYR* intron 4 dapat menyebabkan fenotip bulu putih (*recessive white*). Maka, pada penelitian ini dilakukan *selective breeding* pada ayam F<sub>1</sub> kamper hasil persilangan ayam ♀ *Brown Leghorn* dengan ayam ♂ Pelung dan mempelajari karakter gen *cTYR* intron 4 serta pengaruh mutasi gen *cTYR* terhadap karakter warna bulu ayam hibrida Golden Kamper (GK) (*reciprocal breeding*). Cara kerja penelitian ini adalah dilakukan persilangan antara ayam betina F<sub>1</sub> Golden Kamper dengan ayam jantan F<sub>1</sub> Golden Kamper. *Day Old Chicken* (DOC) dipelihara secara semi intensif selama 7 minggu. Selama pemeliharaan dilakukan pengukuran bobot ayam setiap 7 hari dan pengamatan karakter fenotip kualitatif serta koefisien *Inbreeding* (F<sub>x</sub>). Setelah itu dilakukan koleksi darah, isolasi DNA, amplifikasi gen *cTYR*, dan elektroforesis. Hasil yang diperoleh terdapat 4 kelas fenotip bulu dari 30 individu F<sub>2</sub> Golden Kamper yaitu blirik hitam-cokelat, blirik cokelat keemasan, cokelat, dan putih, nilai koefisien *Inbreeding* sebesar 25%, dan rata-rata pertumbuhan bobot ayam F<sub>2</sub> mencapai 435,7 gram pada umur 7 minggu. Sampel yang telah diamplifikasi dengan *Polymerase Chain Reaction* (PCR) menunjukkan kehadiran dua fragmen 481 bp dan 345 bp. Hasil tersebut memperlihatkan variasi genotip pada populasi Golden Kamper yaitu homozigot dominan (*C\*C/C\*N*), heterozigot (*C\*N/C\*C*), dan *recessive white* (*C\*C/C\*C*). Penelitian ini menunjukkan bahwa fenotip bulu putih resesif berasosiasi dengan mutasi insersi sekuen lengkap retroviral pada intron 4 gen *cTYR*.

Kata kunci : Karakter fenotip, Golden Kamper, koefisien *Inbreeding*, gen *cTYR*, bulu putih resesif.

**PHENOTYPE CHARACTERS, COEFFICIENT INBREEDING, AND  
POLYMORPHISM OF INTRON 4 IN THE *cTYR* GENE IN GOLDEN  
KAMPER CHICKEN (*Gallus gallus* Linnaeus, 1758)**

By:  
Imroatul Habibah  
(14/364867/BI/09231)

**ABSTRACT**

Domestic chickens, which have been selected by humans for thousands of years, represent a variety of mutations that have altered their genetic constitutions and phenotypes over time. Plumage color is one of the most varied genetic characteristics in chickens. In chickens, tyrosinase (*cTYR*) is a gene that plays a significant role in the biogenesis of melanin in pigment cells. Previous studies have suggested that changes to intron 4 in the *cTYR* gene can lead to a recessive white phenotype. As such, this study carried out selective breeding in F<sub>1</sub> Kamper chickens that had been crossbred from male Pelung chickens and female Brown Leghorn chickens. The study also assessed the characteristics of intron 4 in the *cTYR* gene and the effects of *cTYR* gene mutation on the characteristics of the Golden Kamper's (GK) plumage (the GK was born through reciprocal breeding). The research procedure involved crossbreeding between male and female F<sub>1</sub> GK chickens. All day old chickens (DOCs) were maintained semi-intensively for seven weeks, and during this time, their qualitative phenotype characteristics were observed. The body weight of chickens were measured every 7 days, qualitative phenotype characters and coefficient Inbreeding (Fx) were observed. After that, blood collection, DNA isolation, *cTYR* gene amplification, and electrophoresis were conducted. The results revealed four phenotype classes from the feathers of 30 F<sub>2</sub> GK chickens (e.g., brown, white, black-brown blirik, and brown-golden blirik). Coefficient Inbreeding value is 25% and average the body weight of F<sub>2</sub> chicken reaching 435,7 grams at seven weeks. Samples that had been amplified with Polymerase Chain Reaction (PCR) showed integration of two 481 bp and 345 bp fragments. These results indicate that the presence of genotypes in the GK population are homozygous dominant (*C\*C/C\*N*), heterozygous (*C\*N/C\*C*), and recessive white (*C\*C/C\*C*). This study also shows that the recessive white phenotype is associated with a complete retroviral sequence insert mutation in intron 4 of *cTYR* genes.

Keywords: Phenotype character, Golden Kamper, coefficient Inbreeding, *cTYR* gene, recessive white plumage.