

IDENTIFIKASI GEN *GONADOTROPHIN RELEASING HORMONE 1* (GnRH1)  
PENGKODE SIFAT REPRODUKSI AYAM LOKAL JANTAN  
KETURUNAN KEDUA (F2) HASIL PERSILANGAN

INTISARI

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Penelitian ini bertujuan untuk mengetahui sifat reproduksi serta mengidentifikasi adanya *Single Nucleotide Polymorphism* (SNP) gen *Gonadotrophin Releasing Hormone 1* (GnRH1) ayam lokal jantan F2. Sebanyak 60 ekor ayam lokal jantan F2 yang berasal dari pola persilangan F2-A (♂Merawang x ♀KUB = 39 ekor) dan pola persilangan F2-B (♂Murung Panggang x ♀KUB = 21 ekor) digunakan dalam penelitian ini. Tahapan penelitian dimulai dengan proses pemeliharaan ternak, pengambilan data sifat reproduksi (kualitas makroskopis semen: volume, pH, warna, bau, dan konsistensi; mikroskopis: viabilitas dan abnormalitas; fertilitas, dan daya tetas), koleksi sampel darah, dan analisis molekuler (isolasi DNA, PCR amplifikasi, sekuensing, dan *genotyping*). Analisis data sifat reproduksi kualitatif diolah secara deskriptif, sedangkan data kuantitatif diolah menggunakan uji *independent sample t-test*. Analisis data genotip menggunakan perhitungan frekuensi alel dan genotip. Hasil penelitian menunjukkan bahwa semen ayam lokal jantan F2 berwarna putih susu-putih kekuningan, konsistensi sedang, dan aroma spermin. Terdapat perbedaan nyata pada kedua pola persilangan pada variabel bobot badan, volume semen, dan viabilitas spermatozoa ( $P < 0,05$ ). Pola persilangan F2-B memiliki bobot badan sebesar  $3250,59 \pm 421,55$  g; volume semen  $0,25 \pm 0,12$  mL; viabilitas spermatozoa  $88,69 \pm 9,00\%$  lebih tinggi dari pola persilangan F2-A yang memiliki bobot badan sebesar  $3000,74 \pm 358,00$  g; volume semen  $0,18 \pm 0,10$  mL; dan viabilitas spermatozoa  $82,17 \pm 9,59\%$ . Namun, variabel pH semen, abnormalitas spermatozoa, fertilitas, dan daya tetas tidak menunjukkan perbedaan pada kedua pola persilangan ( $P > 0,05$ ). Hasil penyejajaran sekuen gen GnRH1 pada ayam lokal jantan F2 bersifat monomorfik. Berdasarkan hasil penelitian, dapat disimpulkan bahwa kedua pola persilangan memiliki karakteristik reproduksi yang berbeda, serta gen GnRH1 tidak dapat dijadikan sebagai kandidat marker seleksi untuk sifat reproduksi ayam lokal jantan F2.

Kata kunci: Ayam Lokal Jantan F2, Sifat Reproduksi, Gen GnRH1

IDENTIFICATION OF THE GONADOTROPHIN RELEASING HORMONE 1  
(GnRH1) GENE ENCODING REPRODUCTIVE TRAITS  
IN F2 MALE LOCAL CROSSED CHICKENS

**ABSTRACT**

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This study aimed to determine the reproductive characteristics and detect the Single Nucleotide Polymorphism (SNP) of the Gonadotrophin Releasing Hormone 1 (GnRH1) gene in F2 local crossed chickens. A total of 60 F2 local roosters, derived from two crossed pattern, included the F2-A (♂Merawang x ♀KUB = 39) and the F2-B (♂Murung Panggang x ♀KUB = 21) were used in this study. Data collection encompassed the reproductive traits (macroscopic: volume, pH, color, odor, and consistency of semen; microscopic: sperm viability and abnormalities; fertility, and hatchability), blood sample collected, and molecular analysis (DNA isolation, PCR, sequencing, and genotyping). The data of qualitative reproductive trait were analyzed descriptively, while quantitative data analyzed used the independent sample t-test. Genotype data were analyzed used allele and genotype frequencies. The results showed that semen of F2 local crossed chickens had milky white-yellowish white color, medium consistency, and sperm odor. Significant differences were observed between the two crossed patterns in terms of body weight, semen volume, and sperm viability ( $P < 0,05$ ). The F2-B crossed had a body weight of  $3250.59 \pm 421.55$  g; semen volume of  $0.25 \pm 0.12$  mL; and sperm viability of  $88.69 \pm 9.00\%$  which higher than the F2-A crossed which had a body weight of  $3000.74 \pm 358.00$  g; semen volume of  $0.18 \pm 0.10$  mL; and sperm viability of  $82.17 \pm 9.59\%$ . However, no significant difference ( $P > 0.05$ ) were observed between the two crossed patterns with regard to semen pH, sperm abnormalities, fertility, and hatchability. Sequence analysis of the GnRH1 gene revealed a monomorphic pattern in the F2 local chickens. Based on this results, it can be concluded that the two crossed patterns had distinct characteristic of reproductive traits, but the GnRH1 gene could not be utilized as a candidate marker for the selection of reproductive traits in F2 local chickens.

Keywords: F2 Local Crossed Chickens, Reproductive Traits, GnRH1 Gene