

IDENTIFIKASI SINGLE NUCLEOTIDE POLYMORPHISM GEN GROWTH
HORMONE SEBAGAI MARKER GENETIK SIFAT PERTUMBUHAN
PADA AYAM MERAWANG DAN MURUNG PANGGANG

INTISARI

Farhan Nadhif Adha
21/490264/PPT/01201

Penelitian ini bertujuan untuk mengetahui keragaman genetik berdasarkan variasi *single nucleotide polymorphism* (SNP) gen Growth Hormone (GH) serta pengaruhnya terhadap sifat pertumbuhan ayam Merawang dan Murung Panggang. Sebanyak 26 ekor Ayam Merawang dan 21 ekor Ayam Murung Panggang beserta data fenotip sifat pertumbuhan digunakan dalam penelitian ini. Data fenotip sifat pertumbuhan pada penelitian ini meliputi berat badan, lebar dada, panjang sayap dan panjang *shank*. Target gen GH sebesar 776 bp diamplifikasi menggunakan primer *forward* (5'-GCACATCATGTCCCACGTTT-3') dan *reverse primer* (5'-TGGTCTGGGTGCTGTGTTAA-3'). Identifikasi SNP dilakukan menggunakan aplikasi BioEdit v.7.2.5. Hasil identifikasi SNP menunjukkan tidak terdeteksi SNP di area ekson 3 namun terdapat 15 SNP yang terdiri dari 2 SNP di area ekson 4 meliputi g.2338 C>G (CC, CG, GG), g.2341 C>T (CC, CT, TT), 9 SNP di area intron 3 meliputi g.2010 C>A (AA, CA), g.2046 C>T (CC, CT, TT), g.2047 G>A (GG, GA), g.2050 G>A (GG, GA, AA), g.2060 C>T (CC, CT, TT), g.2106 A>T (AA, AT, TT), g.2156 A>G (AG, GG), g.2164 G>A (GG, GA, AA), g.2168 G>A (GG, GA, AA), dan 4 SNP di area intron 4 meliputi g.2463 A>G (AG, GG), g.2466 C>T (CC, CT), g.2470 T>C (TT, TC) dan g.2487 C>A (CC, CA, AA). Populasi ayam Merawang dan Murung Panggang berada pada kesetimbangan *hardy-weinberg equilibrium* (HWE) (X^2 hitung < X^2 tabel) dimana frekuensi alel paling tinggi sebesar 0,98 pada Alel C (g.2466 C>T) dan T (g.2470 T>C) pada ayam Merawang. *Single nucleotide polymorphism* g.2338 C>G berpengaruh terhadap berat badan pada ayam Murung Panggang dan g.2341 C>T berpengaruh terhadap panjang sayap dan panjang *shank* pada ayam Merawang. Berdasarkan hasil tersebut, dapat disimpulkan bahwa SNP g.2338 C>G dan g.2341 C>T dapat direkomendasikan sebagai marker genetik.

Kata kunci: Ayam Merawang, Ayam Murung Panggang, Gen GH, Keragaman genetik, SNP.

IDENTIFICATION OF SINGLE NUCLEOTIDE POLYMORPHISMS OF GROWTH HORMONE GENE AS A GENETIC MARKER FOR GROWTH TRAITS IN MERAWANG AND MURUNG PANGGANG CHICKENS

ABSTRACT

Farhan Nadhif Adha
21/490264/PPT/01201

This study aims to determine genetic diversity based on single nucleotide polymorphism (SNP) variations of the Growth Hormone (GH) gene and its effect on the growth traits of Merawang and Murung Panggang chickens. A total of 26 Merawang and 21 Murung Panggang chickens and growth trait phenotyping data were used in this study. Phenotypic data of growth traits in this study include body weight, chest circumference, wing length, and shank length. The GH gene target, measuring 776 bp, was amplified using forward primer (5'-GCACATCATGTCCCACGTTT-3') and reverse primer (5'-TGGTCTGGGTGCTGTGTAA-3'). The SNPs identification was performed using BioEdit v.7.2.5 software. The results of SNP identification showed no SNPs detected in exon 3 area but there are 15 SNPs consisting of 2 SNPs in exon 4 area including g.2338 C>G (CC, CG, GG), g.2341 C>T (CC, CT, TT), 9 SNPs in intron 3 area including g.2010 C>A (AA, CA), g.2046 C>T (CC, CT, TT), g.2047 C>A (GG, GA), g.2047 C>A (GG, GA), g.2046 C>T (CC, CT, TT), and g.2047 C>A (GG, GA). G>A (GG, GA), g.2050 G>A (GG, GA, AA), g.2060 C>T (CC, CT, TT), g.2106 A>T (AA, AT, TT), g.2156 A>G (AG, GG), g.2164 G>A (GG, GA, AA), g.2168 G>A (GG, GA, AA), and 4 SNPs in the intron 4 area including g.2463 A>G (AG, GG), g.2466 C>T (CC, CT), g.2470 T>C (TT, TC) and g.2487 C>A (CC, CA, AA). The Merawang and Murung Panggang chicken populations are in Hardy-Weinberg equilibrium (HWE) (X^2 stat < X^2 table) with the frequency of alleles being 0,98 on alleles C (g.2466 C>T) dan T (g.2470 T>C) on Merawang chickens. The single nucleotide polymorphism g.2338 C>G influences body weight in Murung Panggang chickens and g.2341 C>T influences wing length and shank length in Merawang chickens. In conclusion, the SNP g.2338 C>G and g.2341 C>T can be recommended as a genetic marker based on these findings.

Keywords: Merawang Chicken, Murung Panggang Chicken, GH gene, Genetic diversity, SNP.