

GHRELIN RECEPTOR (GHSR) GENE POLYMORPHISM IN INDONESIAN LOCAL CHICKEN AND CROSSBRED ASSOCIATED WITH CARCASS COMPOSITION

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ABSTRACT

Ghrelin receptor (GHSR) gene is candidate gene for growth performance in chicken. This gene modulates growth hormone release from the pituitary by binding to its ligand of ghrelin. Ghrelin gene, or growth hormone secretagogue (GHS) gene, is well known as feed intake and energy homeostasis regulator in mammals and birds. Indonesia has wide variety of local chickens that play important role in national food security and self-sufficient. The objectives of this study were to identify the polymorphism of intron 1 GHSR gene in Indonesian local chicken and to evaluate its effects on carcass composition. The gene polymorphism was identified with polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP) method by using *Hin6I* restriction enzyme. Effect of genotype on carcass composition was analyzed using SAS General Linear Model (GLM) procedure. The genotyping was performed on 343 individuals including 7 Indonesian local chicken and crossbred populations (*Merawang*, *Pelung*, *Sentul*, *Kampung*, *Cobb* broiler, F1 crossbred of *Kampung* x *Cobb* broiler, and F2 crossbred of *Kampung* x *Cobb* broiler). All individuals were successfully amplified in GHSR/*Hin6I* locus and resulting a fragment with 470 bp PCR product. The genetic diversity of this locus was polymorphic with two alleles (T and C) and derived three genotypes (TT, CT, and CC). The T allele had higher frequency than C allele in overall populations (0.864 and 0.136, respectively). The TT genotype also had higher frequency than CT and CC genotypes (0.741, 0.248, and 0.012, respectively). Individuals with CT genotype were significantly had higher live weight at 26w, carcass weight, commercial cuts weights, and muscles weights than TT genotype in F2 crossbred of *Kampung* x *Cobb* broiler population. Association of GHSR/*Hin6I* gene polymorphism with chicken carcass composition have been described in Indonesian chicken, providing evidence that GHSR might be an important candidate gene for chicken carcass composition.

Keywords: Indonesian local chicken, crossbred, GHSR gene, carcass composition