

Asosiasi Polimorfisme Gen *Ovoinhibitor* (OIH) terhadap Kualitas Telur pada Ayam Hibrida Golden Kamper (*Gallus gallus domesticus* Linnaeus, 1758)

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19/447333/PBI/01612

Intisari

Gen *ovoinhibitor* (OIH) terekspresi pada beberapa jaringan yaitu liver, magnum, uterine, kuning telur, dan zat prekursor cangkang telur ayam. Tujuan penelitian ini adalah untuk mengetahui kualitas telur pada ayam, mengetahui adanya SNP pada gen *ovoinhibitor* ayam, dan mengetahui hubungan genotip dan fenotip terhadap kualitas telur pada ayam hibrida Golden Kamper. Ayam yang digunakan dalam penelitian ini adalah ayam hibrida Golden Kamper. Tahapan penelitian yang dilakukan yaitu persilangan ayam, pemeliharaan ayam, pengambilan data telur, analisis kualitas internal dan eksternal telur, isolasi DNA, amplifikasi DNA dengan PCR, elektroforesis, dan sekuensing metode sanger. Analisis data meliputi data kualitas interior dan eksterior dari tiap kelompok ayam diuji perbedaan signifikansi dengan *oneway* anova program SPSS 23.0; data hasil sekuensing DNA dianalisis dengan GeneStudio dan dilakukan *alignment* dengan clustal omega; Asosiasi dari data genotipe dan haplotipe dengan karakter kualitas telur diuji menggunakan analisis korelasi Pearson program SPSS 23.0. Karakter eksternal telur ayam BC Golden Kamper BC Golden Kamper (BT: $47,06 \pm 2,91$ gr; TC: $0,30 \pm 0,03$ mm), ayam BC Resiprok Golden Kamper (BT: $53,32 \pm 2,33$ gr; TC: $0,35 \pm 0,00$ mm), dan ayam F₄ Golden Kamper (BT: $47,42 \pm 3,74$ gr; TC: $0,315 \pm 0,00$ mm). Karakter internal telur BC Golden Kamper (TA: $5,4 \pm 1,14$ mm; HU: $85,86 \pm 8,71$), ayam BC Resiprok Golden Kamper (TA: $6,12 \pm 0,68$; HU: $80,17 \pm 5,1$), dan ayam F₄ Golden Kamper (TA: $6,13 \pm 0,33$ mm; HU: $79,42 \pm 2,21$). Kesimpulan dari penelitian ini adalah karakter kualitas telur BC Golden Kamper dan F₄ Golden Kamper mendekati karakter kualitas telur Pelung. Karakter kualitas telur BC Resiprok Golden Kamper mendekati karakter kualitas telur *Layer*. Pada gen OIH intron 7 terdapat SNP G4363T dan gen OIH Intron 14 tidak ditemukan adanya SNP pada lokasi C8937C. Genotip (GG dan TT) dan haplotipe (H1 dan H2) berkorelasi signifikan negative terhadap berat albumen ($P < 0,05$), berat cangkang ($P < 0,05$), dan ketebalan cangkang ($P < 0,05$).

Kata kunci: ayam, kualitas telur, haplotipe, gen *ovoinhibitor*.

Association between *Ovoinhibitor* (*OIH*) Gene Polymorphism and Egg Quality in Golden Kamper Hybrid Chickens (*Gallus gallus domesticus* Linnaeus, 1758)

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Abstract

The *ovoinhibitor* gene (*OIH*) is expressed in the liver, magnum, uterus, egg yolk, and chicken egg shell precursor. The purpose of this research was to determine chicken egg quality, to determine the presence of polymorphism in the *ovoinhibitor* gene, and to analyze the correlation of genotype and haplotype to chicken egg quality. Procedures of the research were chicken breeding, chicken maintenance, egg data collection, egg quality internal and external analysis, DNA isolation, DNA amplification by PCR, electrophoresis result of PCR, and sequence with Sanger method. Data analysis includes interior and exterior quality data from each group of chickens tested for significant differences with the one-way ANOVA program SPSS 23.0; DNA sequencing results were analyzed by genestudio and alignment with clustal omega; Association of genotype and haplotype data with egg quality characters was tested using Pearson correlation analysis SPSS 23.0 program. Result showed the external quality of BC Golden Kamper chicken eggs (Egg weight: 47.06 ± 2.91 gr; Shell thickness: 0.30 ± 0.03 mm), BC Reciprocal Golden Kamper (Egg weight: 53.32 ± 2.33 gr; Shell thickness: 0.35 ± 0 mm), and F₄ Golden Kamper (Egg weight: $47, 42 \pm 3.74$ gr; Shell thickness: 0.315 ± 00 mm). Internal quality of BC Golden Kamper (Albumen height: 5.4 ± 1.14 mm; Haugh unit: 85.86 ± 8.71), BC Reciprocal Golden Kamper (Albumen height: 6.12 ± 0.68 ; Haugh unit: 80.17 ± 5.1), and F₄ Golden Kamper (Albumen height: 6.13 ± 0.33 mm; Haugh unit: 79.42 ± 2.21). The conclusion of this study, egg quality traits of BC Golden Kamper and F₄ Golden Kamper resembles the egg quality traits of Pelung. Egg quality characteristics of BC Reciprocal Golden Kamper resembles the egg quality characteristics of Layer. There was an SNP G4363T in the *OIH* gene intron 7. The *OIH* gene Intron 14 did not find any SNP at the C8937C location. Genotype (GG and TT) and haplotype (H1 and H2) were significantly negatively correlated with albumen weight ($P < 0.05$), shell weight ($P < 0.05$), and shell thickness ($P < 0.05$).

Key words: chicken, egg quality, haplotype, *ovoinhibitor* gene.