

**ASOSIASI POLIMORFISME PROMOTER GEN *CHICKEN FOLLICLE*
STIMULATING HORMONE RECEPTOR TERHADAP
PRODUKTIVITAS TELUR AYAM HIBRIDA
[*Gallus gallus gallus* (Linnaeus 1758)]**

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INTISARI

Upaya pengembangan ayam lokal terhambat oleh produktivitas telur yang sangat rendah, sehingga tidak mampu menyuplai *Day Old Chicken* (DOC) dan menyeimbangi permintaan pasar terhadap konsumsi telur ayam sebagai sumber protein hewani selain daging. Oleh karena itu, perlu dilakukan perbaikan genetik melalui persilangan konvensional antara ayam lokal dengan ayam ras petelur. Laboratorium Genetika dan Pemuliaan Fakultas Biologi UGM berhasil mengembangkan ayam hibrida F₁ kamper hasil persilangan ayam ♀ *Layer Lohmann Brown* dan ayam ♂ pelung dengan produktivitas telur yang tinggi yaitu 140 butir selama 300 hari produksi dan setiap ekor ayam mampu menghasilkan telur sebanyak 54-55 butir pada usia 11-26 minggu produksi. Pada penelitian ini dilakukan pengamatan produktivitas telur ayam hibrida hasil persilangan *backcross* antara ayam ♀ *Layer Lohmann Brown* dan ayam ♂ F₁ kamper selama 16 minggu. Seleksi ayam hibrida menggunakan promoter gen *cFSHR* yang dilaporkan berkorelasi positif antara rasio perkembangan dan kemampuan bertelur pada ayam hibrida F₁ kamper, pelung, dan *layer*. Tahapan penelitian yaitu seleksi bobot tetas indukan ayam hibrida, isolasi DNA darah ayam melalui vena aksilaris, amplifikasi dengan primer spesifik promoter gen *cFSHR*, *sequencing*, pengelompokan ayam hibrida berdasarkan *haplotype* pada kandang baterai di Pusat Inovasi Agroteknologi (PIAT) UGM, Kalitirto, Sleman, serta pengamatan produksi dan morfometri telur. Hasil menunjukkan terdapat perbedaan bobot tetas *Day Old Chicken* (DOC) ayam hibrida pada berat telur lebih dari 60 dan kurang dari 60 gr, karakter fenotip hasil persilangan *backcross* bervariasi tinggi pada warna bulu dan mewarisi sifat rekombinasi kedua indukan, terdapat 7 kelompok *haplotype* dan 6 *Single Nucleotide Polymorphism* (SNP) pada fragmen promoter gen *FSHR* pada nukleotida ke 10, 51, 59, 121, 233, dan 331. Produksi telur ayam hibrida tertinggi pada H1 dan produksi telur terendah H6. Berdasarkan uji korelasi terdapat korelasi positif pada $p > 0,05$ antara *haplotype* ayam hibrida *backcross*₁ dengan produksi telur, lebar dan berat telur, serta korelasi positif pada $p < 0,05$ antara *haplotype* ayam hibrida *backcross*₁ dengan panjang telur.

Kata kunci : promoter gen *cFSHR*, produktivitas telur, *backcross*, ayam hibrida

**POLYMORPHISM ASSOCIATION OF CHICKEN FOLLICLE
STIMULATING HORMONE RECEPTOR GENES PROMOTER ON EGG
PRODUCTION IN HYBRID CHICKEN
[*Gallus gallus gallus* (Linnaeus 1758)]**

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ABSTRACT

Local chicken development are hampered by very low egg productivity, it will impact on indigenous local chicken population to be threatened. Improvement of local chicken can be performed by selective breeding between laying chicken. Laboratory of Genetics and Breeding Faculty of Biology UGM successfully developed hybrid F₁ kamper crosses between ♀ Layer Lohmann Brown and ♂ pelung with high egg productivity of 140 eggs for 300 days of production and also each chicken products 54-55 eggs at 11-26 weeks of production. This research observed of hybrid chicken egg productivity resulted from backcross between ♀ Layer Lohmann Brown and ♂ F₁ kamper for 16 weeks. Selection of hybrid chicken using *cFSHR* gene promoter that known has positive correlation between follicle growth ratio and laying in F₁ kamper, pelung, and layer. The research stages are the selection of hybrid chicken mortgage weight, DNA isolation through axillary vein, amplification with specific primer *cFSHR* gene promoter, sequencing, hybrid chicken grouping based on haplotype bred in battery cage at UGM Innovation Center of Agro-technology (PIAT), Kalitirto, Sleman, then observation of egg production and morphometry. The results show that there is a difference of DOC weight of hybrid chicken on egg weight more than 60 and less than 60 gr, and offspings have high varies on feather color and have a cross recombination phenotypic character inherited from the character both of their parents. The polymorphisms of 6 Single Nucleotide Polymorphism (SNP) are existed on *cFSHR* gene promoter fragments on 10, 51, 59, 121, 233, and 331 nucleotides, then conducted 7 haplotype group. The highest egg production in hybrid chicken on H1 and lowest egg production on H6. Based on the correlation test there was a positive correlation at $p > 0.05$ between hybrid chicken haplotype with egg production, egg width, egg weight, and positive correlation at $p < 0.05$ between hybrid chicken haplotype with egg length.

Keywords : *cFSHR* gene promoter, egg productivity, backcross, hybrid chicken