Analisis Pewarisan Bulu Walik (*Frizzle*) dan Polimorfisme Gen *KRT75* Ayam Hibrida (*Gallus gallus domesticus*, Linnaeus 1758) Hasil Persilangan ♀ BC_3 Golden Kamper dan ♂ Ayam Mahkota

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INTISARI

Berbagai jenis ayam yang sering dipelihara oleh masyarakat umumnya seperti ayam kedu, ayam pelung, ayam bekisar, ayam kate, ayam mahkota, dan ayam bulu walik. Beragam ayam dengan keunikan tertentu sering dipelihara masyarakat seperti ayam pelung, gaok, tukung, bekisar, ayam mahkota dan ayam walik Ayam mahkota gama ayam merupakan jenis ayam yang dipelihara dengan memiliki ciri khusus bulu berupa walik. Bulu walik memiliki keunikan yang dapat dikembangkan sebagai ayam hias. Identifikasi pewarisan karakter fenotipik dan molekuler diamati dalam rangka pemuliaan jenis ayam. Karakter bulu walik (*frizzle*) disebabkan karena adanya mutasi pada protein α-keratin yang berasosiasi dengan mutasi delesi yang terjadi pada gen *KRT75 exon* 5 intron 5. Pada penelitian ini dilakukan identifikasi mutasi pada gen *KRT75 exon 1* intron 1 untuk mengetahui asosiasinya terhadap ekspresi karakter fenotipik *frizzle*. Pewarisan sifat *frizzle* dianalisis dengan melakukan tes *chi-square* dengan panduan persilangan *incomplete dominance* pada hokum mendel. Asosiasi polimorfisme gen *KRT75* kemudian dianalisis melalui pita DNA hasil visualisasi elektroforesis, analisis hasil sekuensing, beserta analisis korelasi *chi-square* antara titik SNPs terhadap fenotip yang dihasilkan dengan menggunakan nilai Fisher's. Hasil dari penelitian ditemukan bahwa perbandingan yang dihasilkan dari persilangan ayam *frizzle* dan normal sebanyak 7:3. Polimorfisme ditemukan sebanyak 20 titik mutasi pada anakan berupa insersi, delesi, dan subtitusi. Analisis korelasi menunjukkan polimorfisme yang terjadi belum berkaitan dengan keberadaan bulu *frizzle*.

Kata kunci: ayam Mahkota, *frizzle*, mutasi, polimorfisme, gen *KRT75*

Analysis of Frizzle Inheritance and *KRT75* Gene Polymorphysm on Hybrid Chicken (*Gallus gallus domesticus*, Linnaeus 1758) Results from Crossing Between ♀ BC_3 Golden Kamper and ♂ Crested Chicken

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ABSTRACT

Various types of chickens are often kept by the general public such as kedu chickens, pelung chickens, bekisar chickens, kate chickens, crested chickens, and walik feathers. Various types of chickens with certain uniqueness are often kept by the community, such as pelung, gaok, tukung, bekisar, crown chickens and walik chickens. The crested chicken gama chicken is a type of chicken that is kept with special characteristics of feathers in the form of walik. Walik feathers have a uniqueness that can be developed as an ornamental chicken. Identification of the inheritance of phenotypic and molecular characters was observed in the context of chickens breeding. The frizzle character is caused by mutations in the α-keratin protein associated with deletion mutations that occur in the *KRT75* exon 5 intron 5 gene. Frizzle inheritance was analyzed by performing a chi-square test with incomplete dominance crosses guided by Mendel's law. The association of *KRT75* gene polymorphisms was then analyzed through DNA bands from electrophoresis visualization, sequencing analysis, and chi-square correlation analysis between SNPs points and the resulting phenotype using Fisher's values. The results of the study found that the ratio resulting from the cross of frizzle and normal chickens was 7:3. Polymorphism was found as many as 20 point mutations in the offspring in the form of insertions, deletions, and substitutions. Correlation analysis shows that the polymorphism that occurs is not related to the presence of frizzle feathers.

Keywords: Mahkota chicken, frizzle, mutation, polymorphism, *KRT75* gene