

## INTISARI

### **ANALISIS FILOGENETIK DOMBA SAKUB ASAL KABUPATEN BREBES BERDASARKAN SEKUEN GEN PENYANDI *DISPLACEMENT LOOP* (D-LOOP) DNA MITOKONDRIA (mtDNA)**

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Gen penyandi *Displacement Loop* (D-Loop) merupakan gen dari DNA mitokondria (mtDNA) yang umum digunakan dalam identifikasi filogenetik, karagaman genetik, jarak genetik, dan hubungan kekerabatan genetik. Domba Sakub menjadi salah satu domba lokal Indonesia yang berasal dari Kabupaten Brebes Provinsi Jawa Tengah. Penelitian terkait dengan analisis genetik berdasarkan analisis sekuen gen penyandi D-Loop telah banyak dilakukan pada berbagai spesies. Akan tetapi, belum ada penelitian mengenai analisis filogenetik berdasarkan sekuen gen penyandi D-Loop pada domba Sakub. Penelitian ini bertujuan untuk mengetahui hubungan kekerabatan genetik domba Sakub dengan domba lain berdasarkan sekuen gen D-Loop dan mengetahui *haplogroup* dari domba Sakub. Delapan sampel isolat DNA domba Sakub diamplifikasi dengan primer (Alek-DLF 5'-GAAGAAGCTATAGCCCCACT-3' dan Alek-DLR 5'-GATTCGAAGGGCGTTACT-3'). Produk PCR disekuensing dan data dianalisis dengan perangkat MEGA versi 11.0.13. Spesies pembanding diperoleh dari referensi dan NCBI *Genbank*. Hasil *alignment* diperoleh 1180 bp dengan 1131 situs monomorfik, 50 situs polimorfik (V), 11 situs situs segregasi (S), dan 39 situs *Parsimony informative* (Pi). Jarak genetik antar sampel domba Sakub berkisar antara 0,000 dan 0,039. Hal ini menunjukkan hubungan kekerabatan yang dekat antar individu. Dua sampel domba Sakub (Kode sampel: SKB.4 dan SKB.8) termasuk *haplogroup* A/tipe Asia dan enam sampel (Kode sampel: SKB.1, SKB.2, SKB.3, SKB.5, SKB.6, dan SKB.7) termasuk *haplogroup* B/tipe Eropa. Berdasarkan hasil tersebut, domba Sakub cenderung tergolong *haplogroup* B/tipe Eropa. Domba Sakub memiliki hubungan kekerabatan yang dekat dengan domba lokal lain asal Indonesia, domba Merino, domba Suffolk, dan domba Texel.

**Kata kunci:** Domba Sakub, gen *Displacement Loop* (D-Loop), filogenetik, PCR

## ABSTRACT

### **PHYLOGENETIC ANALYSIS OF SAKUB SHEEP ORIGIN FROM BREBES DISTRICT BASED ON DISPLACEMENT LOOP (D-LOOP) MITOCHONDRIAL DNA (mtDNA) GENE SEQUENCES**

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The gene encoding the Displacement Loop (D-Loop) is a gene from mitochondrial DNA (mtDNA) which is commonly used in phylogenetic identification, genetic diversity, genetic distance and genetic relationships. Sakub sheep are one of Indonesian local sheep originating from Brebes District, Central Java Province. Research related to genetic analysis based on sequence analysis of the gene encoding the D-Loop has been carried out on various species. However, there has been no research on phylogenetic analysis based on the D-Loop gene sequence in Sakub sheep. This research aims to determine the genetic relationship of Sakub sheep with other sheep based on the D-Loop gene sequence and determine the haplogroup of Sakub sheep. Eight DNA isolate samples from Sakub sheep were amplified with primers (Alek-DLF 5'-GAAGAAGCTATAGCCCCACT-3' and Alek-DLR 5'-GATTCGAAGGGCGTTACT-3'). PCR products were sequenced and data analyzed with the MEGA software version 11.0.13. Comparative species were obtained from reference and NCBI Genbank. The alignment results obtained were 1180 bp with 1131 monomorphic sites, 50 polymorphic sites (V), 11 segregation sites (S), and 39 Parsimony informative sites (Pi). The genetic distance between Sakub sheep samples ranged between 0.000 and 0.039. This shows a close relationship between individuals. Two Sakub sheep samples (Sample codes: SKB.4 and SKB.8) belong to haplogroup A/Asian type and six samples (Sample codes: SKB.1, SKB.2, SKB.3, SKB.5, SKB.6, and SKB.7) belongs to haplogroup B/European type. Based on these results, Sakub sheep tend to belong to haplogroup B/European type. Sakub sheep have a close relationship with other local sheep from Indonesia, Merino sheep, Suffolk sheep and Texel sheep.

**Keywords:** Sakub sheep, Displacement Loop (D-Loop) gene, phylogenetic, PCR