Analisis Sekuen Gen Tubulin Isotipe 1 Cacing Haemonchus Contortus Isolat Resisten terhadap Benzimidazole pada Domba di Indonesia

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Abstrak

Benzimidazole (BZ) resistance to gastrointestinal nematodes in small ruminants (sheep and goat) has become a significant problem worldwide. Evidences of anthelmintic resistance to albendazole in Indonesia has been reported from some government owned farms in West Java, Central Java, and Yogyakarta. Previous study on the sheep parasite H. contortus had shown that the BZ resistance was related to selection for individuals in a population possesing a spesific β-tubulin isotype 1 gene. The study is aimed to determine mutation on coding region of central part of β-tubulin isotype 1 gene of H. contortus resistant strain from Indonesia. Seven H. contortus worms were isolated from four BZ resistant sheep from two government farms (SPTD Trijaya, Kuningan, West Java, and UPTD Pelayanan Kesehatan Hewan, Bantul, Yogyakarta), and from a BZ susceptible sheep from Cicurug, Sukabumi, West Java. DNA was extracted individually from female H. contortus worms. A fragment of 520 bp β-tubulin isotype 1 gene exon 3, 4, 5 was amplified using the PCR technique and then sequenced. The results showed that a single mutation occurred in codon 200 (from phenilalanine to tyrosine) had caused benzimidazole resistance in H. contortus from SPTD Trijaya, Kuningan, West Java. Mutation in β-tubulin isotype 1 gene of H. contortus from UPTD Pelayanan Kesehatan Hewan, Yogyakarta, occurred in codon 198 (from glutamate to glycine), codon 201 (from cystein to stop codon), and codon 202 (from isoleucyne to stop codon).