ABSTRAK

ISOLASI, IDENTIFIKASI, DAN RESISTANSI *Escherichia coli* TERHADAP *STREPTOMYCIN* PADA SAMPEL LINGKUNGAN DI *SMART VETERINARY TEACHING FARM* PLAYEN, GUNUNG KIDUL

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Resistansi antibiotik terjadi ketika bakteri tetap mampu bertahan hidup meskipun telah diberikan antibiotik dengan dosis terapi yang sesuai. Kondisi ini menjadi salah satu ancaman yang serius karena penggunaan antibiotik yang tidak tepat dapat mempercepat munculnya resistansi. Penelitian ini bertujuan untuk melihat seberapa besar tingkat resistansi *Escherichia coli* terhadap antibiotik *streptomycin* di lingkungan *Smart Veterinary Teaching Farm* Fakultas Kedokteran Hewan Universitas Gadjah Mada yang berlokasi di Playen, Gunung Kidul, Yogyakarta. Sebanyak 53 sampel lingkungan diambil dari berbagai titik seperti air, feses, dan tanah. Proses isolasi dan identifikasi dilakukan menggunakan media selektif serta uji biokimia, sedangkan uji sensitivitas antibiotik menggunakan metode difusi cakram Kirby-Bauer. Hasil penelitian menunjukkan bahwa 35 isolat (66,01%) merupakan *E. coli*. Dari jumlah tersebut, sembilan isolat (25,7%) tergolong sensitif, 19 isolat (54,3%) bersifat intermediet, dan tujuh isolat (20%) menunjukkan resistansi terhadap streptomisin. Selain itu, analisis berdasarkan jenis sampel menunjukkan tingkat resistansi pada 2 sampel air (18%), 2 sampel tanah (20%), dan 3 sampel feses (22%). Temuan ini menunjukkan adanya potensi paparan antibiotik di lingkungan *Teaching Farm* yang bisa berkontribusi terhadap resistansi. Evaluasi kembali perihal praktik penggunaan antibiotik dan biosekuriti di lingkungan *Teaching Farm* sangat penting untuk dilakukan.

Kata kunci: *Escherchia coli*, resistansi antibiotik, *streptomycin*, *Teaching Farm,* sampel lingkungan

ABSTRACT

ISOLATION, IDENTIFICATION, AND RESISTANCE OF *Escherichia coli* AGAINST STREPTOMYCIN FROM ENVIRONMENTAL SAMPLES AT SMART VETERINARY TEACHING FARM PLAYEN, GUNUNG KIDUL

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Antibiotic resistance occurs when bacteria are able to survive even when antibiotics are given in proper therapeutic doses. This condition has become a serious soncern, as improper antibiotic use can accelerate the development of resistance. This study aimed to determine the level of *Escherichia coli* resistance to the antibiotic streptomycin in the environment of the Smart Veterinary Teaching Farm, Faculty of Veterinary Medicine, Universitas Gadjah Mada, located in Playen, Gunung Kidul, Yogyakarta. A total of 53 environmental samples were collected from various spots, including water, feces, and soil. Bacterial isolation and identification were performed using selective media and biochemical tests, while antibiotic susceptibility testing was performed using the Kirby-Bauer disk diffusion method. The results showed that 35 isolates (66.01%) were identified as *E. coli*. Among these, nine isolates (25.7%) were classified as sensitive, 19 isolates (54.3%) as intermediate, and seven isolates (20%) as resistant to streptomycin. Furthermore, analysis based on sample type revealed resistance levels of 18% in water samples (2 samples), 20% in soil samples (2 samples), and 22% in fecal samples (3 samples). These findings suggest a potential exposure to antibiotics in the Teaching Farm environment that may contribute to antibiotic resistance. Re-evaluation of antibiotic usage and how biosecurity is implemented at the Teaching Farm is important to do.

Keywords: *Escherchia coli*, antibiotics resistance, streptomycin, Teaching Farm, environtmental sample