Intisari

SENSITIVITAS DAN RESISTENSI BAKTERI *Edwardsiella tarda* TERHADAP ANTIBIOTIK *CHLORTETRACYCLINE* DAN *SULFADIAZINE*

Edwardsiella tarda merupakan patogen bakteri penyebab penyakit edwardsiellosis yang menyebabkan kematian massal pada berbagai populasi dan kelompok umur ikan. Salah satu upaya pengobatan infeksi bakteri *E. tarda* yaitu dengan menggunakan antibiotik. Penelitian ini betujuan untuk mengetahui sensitivitas, resistensi dan peningkatan resistensi bakteri *E. tarda* terhadap antibiotik *chlortetracycline* dan *sulfadiazine* yang diijinkan di Indonesia. Uji sensitivitas bakteri *E. tarda* terhadap antibiotik *chlortetracycline* dan *sulfadiazine* dilakukan dengan metode *disk diffusion agar* (metode Kirby-Bauer) dan hasilnya dibandingkan dengan *Clinical and Laboratory Standards Institute* (CLSI). Isolat bakteri *E. tarda* yang sensitif terhadap antibiotic dilakukan uji *Minimum Inhibitory Concentration* (MIC) dan *Minimum Inhibitory Concentration* (MBC). Tiga isolat bakteri (ATCC, LUMD1, dan LUKY4) yang memiliki nilai MIC di bawah ambang batas yang ditentukan oleh CLSI dilakukan uji *Adaptive Laboratory Evolution* (ALE). Hasil penelitian menunjukkan bahwa seluruh isolat (100 %) bakteri *E. tarda* resisten terhadap *sulfadiazine* dan sebanyak 5 isolat (27,78%) resisten terhadap *chlortetracycline*. Sebanyak 13 isolat (72,22%) bakteri *E. tarda* sensitif terhadap *chlortetracycline*. Hasil MIC bakteri *E. tarda* terhadap *chlortetracycline* yaitu antara 0,18 – 46,87 µg/ml, dan tidak didapatkan nilai MBC karena antibiotik bersifat bakteriostatik. Resistensi meningkat sebesar 8,02 – 256,85 kali lipat dari nilai MIC awal akibat penggunaan antibiotik selama 7-14 hari.

Kata kunci: *E. tarda*, *chlortetracycline*, *sulfadiazine*, resistensi, sensitif

Abstract

THE SENSITIVITY AND RESISTANCE OF *Edwardsiella tarda* BACTERIA TO CHLORTETRACYCLINE AND SULFADIAZINE

Edwardsiella tarda is a pathogenic bacterium that causes a disease called Edwardsiellosis. This disease results in a large number of deaths in different populations and age groups of fish. Antibiotics have been used as a treatment method for *E. tarda* infections. The objective of this experiments is to assess the sensitivity, resistance, and development of resistance in *E. tarda* bacteria towards chlortetracycline and sulfadiazine, which are authorized for use in Indonesia. The disk diffusion agar method (Kirby-Bauer method) was employed to conduct test for the sensitivity of *E. tarda* bacteria to chlortetracycline and sulfadiazine. The obtained results were then compared to the guidelines set by the Clinical and Laboratory Standards Institute (CLSI). Isolates of *E. tarda* that are sensitive to antibiotics were tested for their minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC). Three bacterial isolates (ATCC15947, LUMD1, and LUKY4) with MIC values lower than the thresholds established by the CLSI were subjected to adaptive laboratory evolution (ALE) testing. The results indicated that all of the strains (100%) of *E. tarda* exhibited resistance to sulfadiazine, while five strains (27.78%) showed resistance to chlortetracycline. We found that 72.22% of the 13 isolates of *E. tarda* were susceptible to chlortetracycline. The MIC values of *E. tarda* to chlortetracycline varied between 0.18 and 46.87 μg/ml, and no MBC values were obtained as the antibiotic is bacteriostatic. The resistance level by 8.02 to 256.85 times the initial MIC values as a result of antibiotic usage over a period of 7–14 days.

Keywords: *Edwardsiella tarda*, chlortetracycline, sulfadiazine, resistance, sensitivity