

ABSTRACT

Muhammad Alief Rafi Satria, 24020221140042. **Identification of Antibiotic Resistance Genes in *Escherichia coli* from Effluent 6 Chicken Slaughterhouses** (under the guidance of Hermin Pancasakti Kusumaningrum and Puji Rahayu).

Antibiotic resistance is a major global health threat, with *Escherichia coli* being one of the primary pathogens developing resistance genes. This study aimed to identify and analyze antibiotic resistance genes (ARGs) in *E. coli* isolates originating from chicken slaughterhouse (RPA) effluents using Whole Genome Sequencing (WGS) and bioinformatics analysis. Out of 18 isolate, only 10 met the DNA quantity standard (>400 ng/mL) and were further analyzed. The results revealed the presence of eight ARG classes on plasmids, including β -lactams (blaTEM-1B, blaTEM-105, blaCTX-M-15, blaCTX-M-55), aminoglycosides [aac(3)-IIId, aph(3'')-Ib, aadA2], sulfonamides (sul2, sul3), tetracyclines [tet(A), tet(B)], macrolides [mph(A)], dihydrofolate reductase (dfrA14, dfrA17), lincosamides, and chloramphenicol. On the chromosome, six ARG classes were identified, namely β -lactams, aminoglycosides, sulfonamides, tetracyclines, diaminopyrimidines, and fosfomycin. Moreover, the multidrug resistance gene mdf(A) was consistently detected across most chromosomal samples. Overall, the diversity and abundance of ARGs on plasmids were higher than on chromosomes, highlighting the dominant role of horizontal gene transfer in resistance dissemination. These findings emphasize that chicken slaughterhouse effluents may serve as a significant source of ARG dissemination into aquatic environments, posing potential risks to public health. Therefore, improvement of Wastewater Treatment Plants (IPAL) and the standardization of effluent management procedures in slaughterhouses are urgently required to prevent the escalation of antibiotic resistance and safeguard community health.

Keywords: Antibiotic resistance, antibiotic resistance genes, effluent, *Escherichia coli*, Whole Genome Sequencing (WGS).