

## **ABSTRACT**

*Escherichia coli* is a normal flora in the human body that have an important role in the digestive process. The presence of *Escherichia coli* ESBL bacteria in clean water samples indicates environmental pollution originating from feces. *E. coli* ESBLs are often encoded by genes located on plasmids resulting in resistance to antimicrobial agents. Several types of beta-lactamase-mediated genes are *bla*TEM, *bla*SHV and *bla*CTX-M. The research, which was conducted from December 2021 to April 2022, aims to determine the percentage of ESBL-producing *E. coli* bacteria in clean water samples at the Balai Besar Laboratorium Kesehatan Surabaya. The total sampling is 195 clean water samples. After going through screening in the form of membrane filter tests, KIA, and IMVIC, 25 isolates were found which were declared as *E. coli*. This study used a descriptive observational design. Analysis of *bla*TEM, *bla*SHV and *bla*CTX-M genes using conventional PCR. On electrophoresis readings using 2% agarose gel, the DNA band for the SHV gene was 931 bp, the CTX-M gene was 550 bp, and the TEM gene was 1089 bp. Analysis of the Molecular Weight value in the sample using the GelAnalyzer 19.1 application. Based on these calculations, samples with a positive percentage of the SHV gene were 0%, the CTX-M gene was 12%, the TEM gene was 12% and the overall value of the sample containing the ESBL gene (CTX-M, TEM and SHV) was 24% of the 25 isolates *E. coli*

*Keywords : Antibiotics, E. coli, Electrophoresis, ESBLs, PCR, Water*