

Abstract

Extended-spectrum β -lactamase (ESBL)- producing resistant-*E. coli* has particularly been public health attention for years due to its resistance towards β -lactam drugs. Furthermore, CTX-M gene group 1 and 9 are known to be detected as the most prevalent resistance genes carried by ESBL-producing resistant-*E. coli* in Scotland's environment. Therefore, Portobello West beach, designated as bathing waters in Edinburgh, becomes a particular concern as bathing water users may freely be exposed to the resistant bacteria, especially ESBL-producing resistant-*E. coli*. Three different sites in three different times of sampling had been done to investigate this. It was intended to know the prevalence and diversity of ESBL-producing resistant- *E. coli* in Portobello West beach. A total of 1.265 cfu/ml resistant-*E. coli* was obtained, in which 33 colonies were well-selected to represent the diversity of ESBL-producing *E. coli*. Seventeen different types of ESBL-producing resistant- *E. coli* were observed. Moreover, 60.61% of isolates carried CTX-M gene group 1, and 30.30% of isolates carried CTX-M gene group 9. Hence, it was successfully presented that ESBL-producing resistant-*E. coli* with 17 different types of them were observed in Portobello West beach.

Keywords: ESBL-producing E. coli, resistant- E. coli, antibiotic-resistant bacteria, Portobello West beach, Edinburgh, CTX-M, diversity, prevalence