ISSN: 1391-8796
Proceedings of 11th Ruhuna International Science & Technology Conference
University of Ruhuna, Matara, Sri Lanka
January 24, 2024

Detection of pathogenic *E. coli* O157 along with the chemical monitoring of coastal water from Sarakkuwa to Mirissa coastal belt in Sri Lanka

Bandara S.M.T.V.[1], Wijerathna P.A.K.C.[1,2], Liyanage G.Y.[1,3], Manage P.M.[1*]

[1]*Centre for Water Quality and Algae Research, Department of Zoology, University of Sri Jayewardenepura, Nugegoda, Sri Lanka*
[2]*Faculty of Graduate Studies, University of Sri Jayewardenepura, Nugegoda, Sri Lanka*
[3]*Department of Aquatic Bioresources, University of Sri Jayewardenepura, Nugegoda, Sri Lanka*

Escherichia coli is considered as an indicator of fecal contamination and is found in gastrointestinal tracts of warm-blooded animals. *E. coli* O157 is a pathogenic serotype that produces intimin and shiga-toxins and responsible for severe health circumstances. Recreational activities heighten the infection risk of *E. coli* O157 to the human gut through contaminated waters. The objective of this study is to detect *E. coli* O157 strain and to determine chemical water quality parameters from Sarakkuwa to Mirissa coastal belt, Sri Lanka. The virulent genes *eae*, *stx1* and *stx2* were selected for the screening of *E. coli* O157. The PCR amplification was carried out through standardized protocols. The chemical water quality parameters; N-nitrate, N-nitrite, N-ammonia, and total phosphate were measured following the APHA standard methods. Results showed that all water samples were contaminated with *E. coli* and CFU values ranged between 5.00 ± 5.29 and 157 ± 2.00. *E. coli* of Dehiwala, Mt. Lavinia, Rathgama, and Galle areas showed positive results for *eae* gene while Ambalangoda, Hikkaduwa, Rathgama, and Weligama areas showed positive results for *stx1* gene. Galleface, Mt. Lavinia, Ginthota, Unawatuna, Koggala, and Mirissa areas were positive for *stx2* gene. Altogether, *E. coli* O157 strain was detected in 12 out of 22 sampled locations. The recorded N-nitrate, N-nitrite, N-ammonia, and total phosphate of the study sites ranged within 0.30 - 4.03 mg/L, 0 - 0.64 mg/L, 2.39 - 0.03 mg/L, 0.06 - 3.17 mg/L respectively. The presence of *E. coli* O157 indicates the unsuitability of water for recreation and findings emphasize that continuous monitoring and legislation are essential to upholding the water quality of the studied coastal stretch.

Keywords: Coastal water quality, E. coli O157, PCR amplifications, recreational water

*Corresponding author: pathmalal@sjp.ac.lk