Molecular confirmation of the presence of *E.coli* in shallow well water

A.V.A.P. Athukorala and N. Welikala*

Department of Botany, University of Kelaniya, Kelaniya. niwel@kln.ac.lk

Infectious water-related diseases are a major cause of morbidity and mortality worldwide. Immense burden of disease caused by water-related pathogens pose a challenge to public health sectors. The presence of coliform bacteria, such as E. coli, in surface water is a *common indicator* of fecal contamination. Biochemical tests used to detect the presence of *E. coli* in environmental water are cumbersome, have lower specificity and sensitivity and require confirmation. Coliform bacteria in shallow well water samples isolated by membrane filter technique were examined by IMViC (indole, methyl red, Voges-Proskauer and citrate) tests to determine the presence of *E. coli*. DNA from bacterial colonies, tested positive for *E.coli* by IMViC tests was extracted by Guanidine thiocyanate-based purification method and PCR amplified using uidA primers specific for *E. coli* gene β-D glucoronidase to confirm the validity of the IMViC tests. Samples that gave positive results for indole and methyl red tests and negative for citrate and Voges-Proskaur tests also gave a characteristic DNA band of 380 bp length confirming the presence of *E. coli* and vice versa. The present study demonstrates that PCR is sensitive, relatively inexpensive and rapid compared to cumbersome biochemical tests and can be used to detect *E. coli* in water with high specificity.

Keywords: bacteriological analysis, IMViC tests, *E. coli*, Polymerase Chain Reaction, β-D glucuronidase gene