Abstract

Inadequate protection of water sources, and poor household hygienic and handling practices have exacerbated fecal water contamination in Kenya. This study evaluated the rate and correlates of thermotolerant coliform (TTC) household water contamination in Kericho District, Western Kenya. Culture and multiplex polymerase chain reaction (PCR) techniques were used to characterize TTCs. The disk diffusion method was used for antibiotic susceptibility profiling of pathogenic Escherichia coli. Out of the 103 households surveyed, 48 (46.6%) had TTC contaminated drinking water (TTC levels of >10 cfu/100 mL). Five of these households were contaminated with pathogenic E. coli, including 40% enteroaggregative E. coli, 40% enterotoxigenic E. coli, and 20% enteropathogenic E. coli. All these pathogenic E. coli strains were multidrug resistant to sulfamethoxazole/trimethoprim, ampicillin, tetracycline and ampicillin/sulbactam. Rural household locality, drinking water hand contact, water storage container cleaning practice, hand washing before water withdrawal, water source total coliforms <10 cfu/100 mL, temperature, and free chlorine levels were associated with TTC contamination of household drinking water. Significant proportions of household drinking water in Kericho District are contaminated with TTCs including with pathogenic multidrug-resistant E. coli. Source and household hygiene and practices contribute significantly to drinking water contamination.