Abstract

The purpose of this study was to investigate the presence of Aeromonas hydrophila at commonly used water collection points on the River Njoro and to determine the in-vitro antimicrobial susceptibility and plasmid profiles of isolates. In total, 126 samples were collected and 36.5% of them were positive for A. hydrophila. The A. hydrophila were recovered on membrane filters, cultured on Trypticase Soy agar, Bile aesculin agar and Aeromonas Medium agar. They were further characterized using cytochrome oxidase and API 20E tests. Detection of drug susceptibility was determined using modified disc diffusion method to ampicillin (25 µg), cefaclor (30 µg), ceftizoxime (30 µg), cefixime (5 µg), cefazidime (30 µg), gentamicin (200 µg), streptomycin (25 µg), chloramphenicol (50 µg), nalidixic acid (30 µg) and ciprofloxacin (1 µg). Most of the isolates showed multi-drug resistance to two or more antibiotics. Chloramphenicol, nalidixic acid, ciprofloxacin, cefazidime and cefixime were the most sensitive drugs with 100% efficacy whereas ampicillin, cefaclor and streptomycin were the most resistant drugs having 100, 67 and 50 resistance, respectively. There was low resistance against ceftizoxime (16.7%) and gentamicin (23.3%). These results indicates that all A. hydrophila isolated from River Njoro had complete resistance to ampicillin and showed variable resistance to cefaclor, streptomycin, gentamycin and ceftizoxime. R-plasmids were extracted from multi-drug resistance strains and separated by agarose gel (0.8%) electrophoresis for profiling. Plasmid profiling revealed that most of the multi-drug resistant isolates contained one plasmid of 21.0 kb. Although some strains exhibited different antimicrobial resistance patterns, all of their plasmids were of the same size (21.0 kb). However, there were no plasmids in the antimicrobial sensitive isolates. This study also indicates that plasmid 21.0 kb is common in A. hydrophila and is important for antimicrobial resistance and virulence. Further studies are required to ascertain the role of this plasmid as a virulence marker.