

PLASMID PROFILE OF MULTI-DRUG RESISTANCE BACTERIA ISOLATED FROM AVAILABLE WATER SOURCES AND LEACHATE SAMPLES FROM DUMPSITE AT EBIRA COMMUNITIES IN EKITI NORTH SENATORIAL DISTRICT, EKITI STATE, NIGERIA

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ABSTRACT

The drinking water and leachate samples from dumpsite of rural settlement of Ekiti North Senatorial district, Ekiti State, were subjected to bacteriological and physicochemical analysis using standard microbiological techniques and Atomic Absorption Spectrophotometric method. The mean of total bacterial, coliform and enterococcal count ranged from 0.1×10^5 CFU/mL to 13.9×10^5 CFU/mL; 0.1×10^5 CFU/mL to 7.2×10^5 CFU/mL and 0.1×10^5 CFU/mL to 6.3×10^5 CFU/mL respectively for water samples; and 14.6×10^7 CFU/mL to 24.2×10^7 CFU/mL; 11.7×10^7 CFU/mL to 28.3×10^7 CFU/mL and 13.4×10^7 CFU/mL to 34.9×10^7 CFU/mL respectively for leachate samples. *Escherichia coli* had the highest percentage occurrence of (34%) while *Klebsiella* spp had the least percentage occurrence of (1%). Only 6 - 33% and 0-18% of Gram positive and Gram negative isolates were respectively resistant to ofloxacin but all the isolates were resistant to other antibiotic at varying percentages. A little above half (54%) of the total isolates exhibited multiple antibiotic resistance, some of which possess plasmids with very high molecular weight varying between 4.361Kbp and 23.130Kbp. Physicochemical and metal concentration of the water samples ranged as follow: temperature (25 - 27°C), pH (6.25 - 6.70), dissolved oxygen (12.19 - 18.29mg/L), conductivity (114 - 206 μ homs/cm), turbidity (0.69 - 1.01NTU), acidity (10 - 14mg/L), alkalinity (25 - 60mg/L), biochemical oxygen demand (0.62 - 11.18mg/L), hardness (6 - 80mg/L), total suspended solid (0.87 - 0.98mg/L), chloride (18 - 86mg/L), magnesium (88 - 384mg/L), calcium (7.82 - 8.91mg/L), sodium (10.96 - 11.35mg/L), potassium (15.99 - 16.18mg/L), iron (0.19 - 0.44mg/L), zinc (0.02 - 0.23mg/L), lead (0.01 - 0.02mg/L), cobalt (0.02 - 0.04mg/L) and cadmium (0.001 - 0.01mg/L). The temperature of the leachate ranged between 34 and 34.2°C, pH was between 6.3 and 7.1, zinc and lead ranged between 0.02 and 0.04 while cadmium was between 0.01 and 0.02. There were no traces of copper and cobalt detected in any of the samples. This study showed that most of the water samples in Ekiti-North senatorial district are unfit for drinking and domestic use hence should be treated prior to usage.

Keywords: Drinking water, Leachate, North Senatorial, Ebira Community and Multiple Antibiotic Resistance.