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Plasmid profile and curing of resistant bacteria isolated from the environment of two tertiary hospitals in calabar metropolis

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Nosocomial agents are a major challenge in hospital settings globally. This study evaluated the prevalence of bacteria in the environments of two tertiary hospitals in Calabar metropolis and elucidated the plasmids associated with resistance in the isolated bacteria. Bacteria were isolated and characterized from various sections of the hospitals using standard microbiological techniques. The isolates were subjected to antibiotic susceptibility testing and the plasmids of resistant bacteria were profiled using the ZYPPYTM Plasmid Miniprep Kit (Inqaba Biotech. SA), quantified using nanodrop 1000 and amplified using standard PCR. Isolates possessing plasmids were cured using ethidium bromide and re-subjected to antibiotics of prior resistance. Exactly 159 organisms were recovered from the hospitals with a mean count of 1949cfu. Most prevalent isolates were *Escherichia coli, Pseudomonas aeruginosa, Klebsiella pneumoniae, Salmonella species, Staphylococcus aureus, Coagulase-negative Staphylococci, Candida species, and Penicillium species*. All bacteria species except Streptococci showed resistance to β-lactams but not to fluoroquinolones and aminoglycosides with multiple antibiotic resistance (MAR) index of 0.19-0.62 and high MICs and MBCs. Plasmid profiling of MAR isolates showed the presence of CTX-M (40%), SHV (86.7%) and MecA (91.7%) genes in test isolates. Chi-square and the Fischer exact tests showed significance (P<0.001) for SHV but not CTX-M. Cured isolates showed susceptibility to all the antibiotics except *P. aeruginosa* and *S. aureus*. These findings revealed that MAR bacteria in these hospitals possessed plasmids and possibly other resistance mechanisms and makes the need for intervention.

Biography

Mboto is a Virologist, Bacteriologist, and Epidemiologist with over two decades of University teaching experience. He has 56 scientific publications in peer review journals and 13 scientific papers presented at International conferences in various parts of the world and is a serving member of three editorial boards. He was listed as one of the top 500 Nigerian Scientists in Nigerian Institutions in 2015 and 2016. He is presently the Head of the Department of Science Laboratory Technology of the University of Calabar and a Visiting Scholar to two other Universities.

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