Abstract

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Frequency of blaTEM and blaCTX-M genotypes in extended spectrum beta-lactamase (ESBL)-producing uropathogenic Escherichia coli isolated in Ebonyi State, Nigeria

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Abstract

The objective of this study is to determine the frequency of blaTEM and blaCTX-M genotypes in extended-spectrum beta-lactamase (ESBL)-producing uropathogenic Escherichia coli and their antibiotic resistance patterns. Seventy three uropathogenic Escherichia coli isolates were analyzed and fifty two were confirmed for their ESBL production phenotypically using double disk synergy test. The presence of blaTEM and blaCTX-M ESBL-producing uropathogenic E. coli were determined molecularly using Polymerase Chain Reaction (PCR) method. Quality control of the DNA extraction was carried out by testing all the extracted DNA of each isolates for 16S ribosomal ribonucleic acid (16S rRNA) gene. Out of 52 (71.2 %) ESBL-producing uropathogenic E. coli, 17 (32.7 %) were blaTEM, 35 (67.3 %) were blaCTX-M and 8 (15.3 %) harbored both blaTEM and blaCTX-M genes. CTX-M type ESBL was the most predominant ESBL among the isolates. Uropathogenic Escherichia coli evaluated in this study showed varying degree of resistance to the antibiotics tested. However, cefepime recorded 37.0 % resistance, ceftazidime (79.5 %), ceftriaxone (57.5 %), cefpodoxime (68.5 %), azatronam (61.6 %), cefotaxime (83.6 %), amoxycillin (72.6 %). In conclusion this study demonstrated present of blaTEM and blaCTX-M genes in uropathogenic Escherichia coli strains. Thus, routine clinical detection of ESBL using phenotypic method should be introduced in the clinical setting since molecular methods is expensive to checkmate drug resistance due to ESBL productions by organisms.

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Biography

Ugbo Emmanuel Nnabuike has completed his PhD at the age of 34 years from Nnamdi Azikiwe University, Awka Anambra State Nigeria. He is currently a Lecturer in the Department of Applied Microbiology, Ebonyi State University, Abakaliki Nigeria. He has published more than 15 papers in reputed journals.

