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Bioenergy and Biochemical Processing Technologies pp 127–136Cite as

Molecular Detection of ESBLs, TEM, SHV, and CTX-M in Clinical Pseudomonas aeruginosa Isolates in Ogun State

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Chapter

First Online: 01 July 2022

Part of the Green Energy and Technology book series (GREEN)

Abstract

This study sought to detect the Class A extended-spectrum beta-lactamases (ESBLs) present in Pseudomonas aeruginosa from clinical samples using molecular methods. Twenty-seven P. aeruginosa isolates were characterized among one hundred and fifty clinical samples obtained from three major hospitals in Ogun State. Twenty-five isolates were found to be ESBL producers upon phenotypic screening. DNA was extracted using Zymo DNA extraction kit. Polymerase chain reaction was used to amplify the ESBL genes using specific primers for the CTX-M, SHV, and TEM genes. Agarose gel electrophoresis was used to resolve the amplicons, and they were visualized with a UV transilluminator, 64% (16 isolates) were found positive for TEM, 52 and (13 isolates) for SHV, and 44% (11 isolates) for CTX-M. Some isolates were found positive for two or more of the screened genes. This research identifies the need for surveillance of ESBL producers within Ogun state.

Keywords

ESBLs

Pseudomonas aeruginosa

CTX-M

Genotypic identification

PCR technique

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Acknowledgments

The authors would like to acknowledge the support of Covenant University Center for Research, Innovation, and Development (CUCRID).

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Cite this chapter

Ohore, H.U., Akinduti, P.A., Ahuekwe, E.F., Ajayi, A.S., Olasehinde, G.I. (2022). Molecular Detection of ESBLs, TEM, SHV, and CTX-M in Clinical Pseudomonas aeruginosa Isolates in Ogun State. In: Ayeni, A.O., Sanni, S.E., Oranusi, S.U. (eds) Bioenergy and Biochemical Processing

Technologies. Green Energy and Technology. Springer, Cham.
https://doi.org/10.1007/978-3-030-96721-5_11

Download citation

.RIS.ENW.BIB

DOI

https://doi.org/10.1007/978-3-030-96721-5_11

Published

01 July 2022

Publisher Name

Springer, Cham

Print ISBN

978-3-030-96720-8

Online ISBN

978-3-030-96721-5

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