

بسم الله الرحمن الرحيم

قال تعالى

وَفَوْقَ كُلِّ ذِي عِلْمٍ عَالِمٌ

صدق الله العظيم

سورة يوسف الآية (76)

# Dedication

*I dedicate this research to :*

***My parents***

***Teachers,***

***a***

***nd brothers***

## **Acknowledgment**

Firstly thanks to Almighty **Allah** for giving me knowledge and patience to complete this work.

I deeply thank my supervisor Dr. Humodi Ahmed Saeed who deserves the credit for this work, my thanks and appreciation to him for his support, advice and guidance.

Thanks are due to Dr. Mogahid M. Elhassen, Miss. Suheir Ramadan and Miss. Igbal A. Ahmed for technical assistance.

I am grateful to all staff members of the Department of Microbiology, College of Medical Laboratory Science, Sudan University of Science and Technology.

I would like to thank my parents, all my colleagues and friends for supporting me during the preparation of this work.

## Abstract

Beta- lactamases continue to be the leading cause of resistance to  $\beta$ -lactam antibiotics among gram-negative bacteria. In recent years there has been an increased incidence and prevalence of Extended-spectrum lactamases (ESBLs). This study was conducted in the Research Laboratory in Sudan University of Science and Technology. The study was carried out during the period from December 2009 to May 2010, to detect TEM, SHV and CTX-M genes in ESBLs-producing *Klebsiella oxytoca*.

The *Klebsiella oxytoca* strains were obtained from the Research Laboratory. All strains were checked for purity by sub-culturing on nutrient agar and examined microscopically. Bacterial DNA was extracted from each isolate using boiling method. Multiplex Polymerase chain reaction (PCR) was adopted to detect these genes. The result revealed presence of *TEM* gene in nine isolates. It is concluded that, TEM gene is the commonest gene in *K. oxytoca* isolates. Further studies with large number of bacterial isolates are required to validate this results.

## المستخلص

تعتبر الإنزيمات الممتدة الطيف (بيتا لاكتاميز) واحدة من أهم أسباب المقاومة لمجموعة المضادات الحيوية البيتا لاكتام وسط البكتيريا سالبة صبغة جرام. ومؤخرًا رصدت زيادة في معدل حدوث وانتشار هذه الإنزيمات. هذه الدراسة نُفِّذَتْ في مختبر البحوث في جامعة السودان للعلوم والتكنولوجيا في الفترة من ديسمبر/ 2009 إلى مايو/ 2010، للكشف عن الجينات ( *TEM* و *SHV* و *CTX-M* ) في الكلبسيلا المنتجة للحمض المنتجة لإنزيمات البيتا لاكتام الممتدة الطيف. تم الحصول على سلالات الكلبسيلا المنتجة للحمض من مختبر الأبحاث بالجامعة والتأكد من نقوتها بإعادة تزييعها على الأجار المغذي ومن ثم فحصها مجهرياً. تم استخلاص الحمض النووي منقوص الأكسجين للسلالات باستعمال طريقة الغليان. استخدمت طريقة تفاعل البلمرة المتسلسل المتعدد الإرسال لكشف هذه الجينات. أظهرت النتيجة وجود الجين ( *TEM* ) في السلالات التسعة. وخلصت الدراسة إلى أن الجين *TEM* هو الأكثر شيوعاً في سلالات الكلبسيلا المنتجة للحمض. وإن دراسات إضافية بعدد كبير من العزلات الباكترية مطلوبة لإثبات هذه النتائج.

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