

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قال تعالى:

(اقْرَأْ بِاسْمِ رَبِّكَ الَّذِي خَلَقَ) ١

صدق الله العظيم

سورة العلق الآية (1)

Dedication

I dedicate this dissertation to

My parents, friends and colleagues

Acknowledgment

First of all thank to Almighty Allah for giving me knowledge and patience to complete this research.

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Abstract

This study was conducted in the Research Laboratory of Sudan University of Science and Technology during the period from December 2009 to May 2010, to detect TEM, SHV and CTX-M genes in *Proteus mirabilis* producing Extended-spectrum β -Lactamases. The strains of *P. mirabilis* were obtained from the Research Laboratory at the university. And were checked for purity by sub-culture on nutrient agar and examined microscopically. Bacterial DNA was extracted from the strains using boiling method. DNA was measured quantitatively by DNA reader. Further examinations were checked on 1.5% Agarose gel, stained with ethidium promide. Multiplex PCR was used to detect these genes. The result showed the presence of TEM gene only in the ten strains with band typical in size of 200pb as indicated by the DNA ladder. The study concluded that the TEM gene was the only gene responsible for resistance in the investigated strains of *P. mirabilis*, the other genes were not detected. Further studies with large number of bacterial isolates are required to validate this result.

المستخلص

اجريت هذه الدراسة فى مختبر الأبحاث جامعة السودان للعلوم والتكنولوجيا في الفترة من ديسمبر 2009م وحتى مايو 2010م للكشف عن الجينات (SHV TEM و CTX-M) فى المتقلبة الرقيقة المنتجة لإنزيمات بيتا لاكتام الممتدة الطيف. تم الحصول على سلالات المتقلبة الرقيقة من مختبر الأبحاث بالجامعة والتأكد من مقاومتها بإعادة ترزيعها على الأجار المغذي ومن ثم فحصها مجهرياً. تم استخلاص الحمض النووي من قووص الأكسجين للسلالات باستعمال طريقة الغليان. تم قياس الحمض النووي بقارئ الحمض النووي. إختبار آخر على 5.1 هلام الاقاروز مصبوعة بالاسيديوم برومايد. أستخدم تفاعل البلمرة المتسلسل متعدد الإرسال للكشف عن الجينات وأظهرت النتائج وجود الجين تيم فقط من البيتا لاكتام في السلالات العشر المسؤولة عن المقاومة في سلالات المتقلبة الرقيقة بحزم مطابقة في القياس 200pb كما هو مشار إليه بواسطة مؤشر الحامض النووي ، والجينات الأخرى لم تكشف عنها. وان دراسات اضافيه بعدد كبير من العزلات البكتيرية مطلوبه لاثبات هذه النتيجة.

Table Contents

Chapter Two: Literature Review		
NO	Sp subject	Page
2.1	Extended-spectrum β -lactamases	3
2.1.1	Type of extended-spectrum β -lactamases	4
2.1.1.1	TEM <i>bla</i> lactamases	4
2.1.1.2	SHV <i>bla</i> lactamases	5
2.1.1.3	CTX-M <i>bla</i> lactamases	6
2.1.1.4	OXA <i>bla</i> lactamases	6
2.1.1.5	PER <i>bla</i> lactamases	7
2.1.1.6	EVB-1, BES-1, and other ESBLs	7
2.1.2	Transmission of ESBL bacteria	7
2.1.3	Prevention	8
2.1.4	Detection of ESBLs	9
2.2	<i>Proteus mirabilis</i>	10
Chapter One: Introduction		
Chapter Three: Materials and Methods		
3.1	Introduction	11
3.1.1	Rationale of study	12
3.1.2	Research questions	12
3.1.3	Objectives	12
3.2	Activation of bacterial strains	13
3.2.1	Purification of bacterial strains	13
3.3	Molecular method	14
3.3.1	Preparation of reagent	14
3.3.1.1	Primers	14
3.3.1.2	10x TBE buffer	14
3.3.1.3	1x TBE buffer	15
3.3.1.4	Agarose gel	15
3.3.1.5	Ethidium bromide	15
3.3.1.6	Loading dye	15

3.3.2	DNA extraction	15
3.3.2.1	Preparation of bacterial strains	15

3.3.2.2	Extraction procedure	16
3.4	Detection of DNA	16
3.4.1	Multiplex Polymerase Chain Reaction Techniques	16
3.4.2	Preparation of Master mix	16
3.4.3	PCR amplification	17
3.4.4	Visualization of PCR products	17
	Chapter Four:Results	
4.1	Source of <i>P. mirabilis</i> clinical isolates	18
4.2	Reactivation of bacterial strains	18
4.3	Purification of bacterial strains	18
4.4	Multiplex PCR Technique	18
	Chapter Five : Discussion Conclusion and Recommendation	
5.1	Discussion	20
5.2	Conclusion	21
5.3	Recommendations	21
	References	23

List of Abbreviations

BP	Base pair
CTX-M	Cefotaxime
DW	Distilled water
DNA	Deoxynucleic acid
dNTPs	Deoxynucleotide pyrimidines
ESBLs	Extended Spectrum Beta Lactamases
M	Marker
MgCL ₂	Magnesium chloride
NA	Nutrient Agar
PCR	Polymerase Chain Reaction
SHV	Sulphydryl variable
TBE	Tris base Boric acid EDTA
TEM	Temoniera
UTI	Urinary Tract Infection
UV	Ultraviolet Light