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قال تعالى:

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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 bromide. 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 السوادن للعلوم والتكنولوجيا فى الفترة من ديسمبر 2009م حتى مايو 2010م للكشف عن الجينات (CTX-M و SHV TEM) فى المتقلبة الرقيقة المنتجة لإنزيمات بيتا لاكتام المتعددة الطيف. تم الحصول على سلالات المتقلبة الرقيقة من مختبر الأبحاث بالجامعة والتأكد من دقايتها بإعادة تزريعها على الأغار المغذي ومن ثم فحصها مجهريا. تم استخلاص الحمض النووي من قووس الأكسجين للسلالات باستعمال طريقة الغليان . تم قياس الحمض النووي بقارئي الحمض النووي. اختبار آخر على 5.1 هلام الا قاروز مصبوغة بالاسيديوم برومايد. تستخدم تفاعل البلمرة المتسلسل متعدد الإرسال للكشف عن الجينات وأظهرت النتائج وجود الجين تيم فقط من البيتا لاكتام في السلالات العشر المسئولة عن المقاومة في سلالات المتقلبة الرقيقة بحزن مطابقة في القياس 200pb كما هو مشار إليه بواسطة مؤشر الحامض النووي ، والجينات الأخرى لم تكشف عنها. وان دراسات اضافية بعدد كبير من العزلات الباكتيرية مطلوبه لاثبات هذه النتيجة.

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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	Sulfhydryl variable
TBE	Tris base Boric acid EDTA
TEM	Temoniera
UTI	Urinary Tract Infection
UV	Ultraviolet Light