

الآية

قال تعالى

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قَالَ رَبِّ اشْرِحْ لِي صَدْرِي (25) وَيَسِّرْ لِي أَمْرِي (26) وَاحْلُلْ عُقْدَةً مِنْ لِسَانِي (27) يَفْقَهُوا قَوْلِي (28)

صدق الله العظيم

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Dedication

I dedicate this thesis

To my mother, wife with love and appreciations

To my brothers, sisters and all family with sincerely and grateful

To all my friends and relatives

To all those who helped me

Acknowledgement

All thanks to Almighty Allah for blessing my life and lightening my way.

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ABSTRACT

The aim of this study was to detect and characterizing ESBLs producing *E.coli* isolated from clinical specimens from Wad Alabass Specialized Hospital, Sennar State in the period from March 2011 to June 2012.

A total of 500 urine samples were collected and cultured on MacConkey's agar and blood agar. Identification of the causative bacteria, was done by growth criteria on media, Gram's stain and biochemical tests. 332/500(66.4%) samples gave growth while the rest not grown. The Gram-negative bacilli were 232/332(69.9%), 93/332(28%) were Gram-positive cocci and 7/332(2.1%) were yeast cells. 133/332(40%) were *E. coli*, 33/332(10%) *K. pneumoniae*, 39/332(12%) *Proteous spp*, and 27/332(8%) *Pseudomonas aeruginosa*. ESBL production tests were done for all *E. coli* isolates, initially screened by cefotaxime and ceftazidime, where 62(46.6%) isolates gave positive result by both, then confirmed by combination test by using cefotaxime and ceftazidime with and without clavulanic acid, 48/62(77.4%) isolates gave positive result by both. The PCR was performed For all *E. coli* isolates by using SHV, TEM and CTX-M primers. CTX-M genes were the most predominant genes 30/46(65.22%) followed by TEM gene 13/46(28.26%), and the least one was SHV gene 3/46(6.52%) genes.

This study concluded that *E. coli* bacterium is the most predominant one and confirmed that CTX-M genes is the most spreading and predominant ESBLs genes followed by TEM and SHV genes.

ملخص الدراسة

هذه الدراسة تهدف لكشف وتمييز البكتيرية المعوية المنتجة لإنزيم البتالاكتام متعددة الطيف في مستشفى ود العباس التخصصي بولاية سنار في الفترة من شهر مارس ٢٠١١ إلى يونيو ٢٠١٢. تم جمع ٥٠٠ عينة بول وزرعت في مادة الماكونكي المثخنة ومادة الدم المثخنة ، وتم التعرف علي البكتريا المسببة للتهاب البول بشكل النمو في المستعمرات, صبغة الجرام والاختبارات الكيموحيوية. ٣٣٢/٥٠٠ (٦٦,٤٪) أعطت نمو علي ألا وساط السابقة , وكان ٣٣٢ / ٢٣٢ (٦٩,٩٪) بكتريا سالبة الجرام, ٣٣٢/٩٣ (٢٨٪) بكتريا موجبة الجرام, و ٣٣٢/٧ (٢,١٪) خلايا خميرية وكانت نسبة البكتريا سالبة الجرام كالآتي : ١٣٣ (٤٠٪) الاشريكيه القولونية, ٣٣ (١٠٪) الكليبيسيليه الرئوية, ٣٣ (١٢٪) المتقلبة الشائعة , ٢٧ (٨٪) الزائفة الزنجارية.

للكشف عن العينات ١٣٣ لبكتريا الاشريكيه القولونية المنتجة لا إنزيمات ألبيتا لاكتام متعددة الطيف تم أولا بواسطة الأقراص لمشبعه بالمضادات الحيوية السيفوتاكسيم والسيفتازايديم, حيث ٦٢ (٤٦,٦٪) عينة أعطت نتيجته ايجابية. وتم تأكيد وجود الإنزيم بواسطة اختبار الأقراص المزدوجة مع حامض الكلافيولانيك, حيث ٦٢/٤٨ (٧٧,٤٪) عينة أعطت نتيجته ايجابية. اجري اختبار تفاعل البلمره المتسلسل لكل عينات بكتريا الاشريكيه القولونية حيث كانت ١٣٣/٤٦ (٣٤,٥٪) أعطت نتيجته ايجابية , وكان أكثرها جين CTX-M 30/46 (65.22%) ثم جين TEM 13/46 (28.26%) واقلهم جين SHV 3/46 (6.52%) .

خلصت هذه الدراسة إلا أن بكتريا الاشريكيه القولونية هي الأكثر شيوعا, ثم أكدت أن ألجين الأكثر حدوثا وانتشارا هو جين ال CTX-M.

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LIST OF ABBREVIATIONS

MIC	Minimum inhibitory concentration
NTPs	Nucleoside triphosphatases
dNTPs	Deoxynucleoside triphosphatases
RNA	Ribo nucleic acid
DNA	Deoxy ribo nucleic acid
MHA	Muller-Hinton agar
MIU	Mid stream urine
KIA	Kliger Iron Agar
CLSI	Clinical Laboratory Standard Institute
CFU	Colony forming unit
PCI	Phenol-chloroform-isoamylalcohol
DW	Distilled water
EDTA	Ethylenediamine tetra-acetic acid
UK	United kingdom
UTI	Urinary tract infection
CTX	Cefotaxime
CA	Clavulanic acid
CAZ	Ceftazidime
ESBLs	Extended-spectrum beta-lactamases
PCR	Polymerase chain reaction
NCCLS	National Committee for Clinical Laboratory Standards
TEM	Temoniera
SHV	Sulfydryl variable

CTX-M	Cefotaxime
EPEC	Enteropathogenic <i>E. coli</i>
EIEC	Enteroinvasive <i>E. coli</i>
EHEC	Enterohemorrhagic <i>E. coli</i>
EAggEC	Enteraggregative <i>E. coli</i>
UPEC	Uropathogenic <i>E. coli</i>

