

***Dedication
To my sweet family***

***My father (Mohamed Musa
Babekir)***

My mother (Fatheia)

My brother (Ahmed)

My sister (Suzan)

***And to my lovely
friends.....***

***I dedicate this work with all love
and I hope be together all
lifelong.***

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All my thanks to ALMIGHTY ALLAH, the most Gracious and the most Merciful for giving me health and patience to finish this work.

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ABSTRACT

Staphelococcus aureus, *Pseudomonas* and *Proteus species* are most common cause of hospital acquired or nosocomial infection, especially in patients with post-surgical wound, diabetic and immunocompromised.

This study was conducted in the Royal Medical Laboratory in Wad Medani during July to September 2013. It was aimed to investigate the antibacterial activity of garlic extract against three bacterial species (*S. aureus*, *Pseudomonas aeruginosa* and *Proteus species*). Thirty five wound swab samples were collected from patients with post-surgical and diabetic wounds who were hospitalized in Wad- Medani Teaching Hospital. The 35 samples were collected and cultured in the laboratory, 8 *S. aureus*, 7 *Pseudomonas* and 5 were *Proteus species* were isolated from the collected samples. Sensitivity tests were done to the 20 isolates by using two concentrations of fresh garlic extract (1 g/ml, 500 mg/ml), on Muller Hinton agar medium. The results showed that; at the concentration of 1 g/ml, the mean diameter of zone was 30.8 for *S. aureus*, 28.5 for *Pseudomonas species*, 23 for *Proteus species* and 0 for *pseudomonas aeruginosa*. At the concentration 500 mg/ ml the mean diameter of zone was 24.8, 24.5, 19 and 0 respectively. Overall results of this study indicate that *Allium sativum* have an activity that can prevent the growth of *S. aureus*, *Pseudomonas* and *Proteus species* on Muller Hinton agar (in-vitro) at different concentrations.

ملخص الدراسة

تعتبر الباكتيريا المكورة العنقودية الصفراء والزائفة الزنجارية والباكتيريا المتقبلة من الباكتيريات التي تسبب معظم الاصابات داخل المستشفيات متمثلة في الالتهابات بعد العمليات والجرح الناتجة من مرض السكري والاصابات لدى الاشخاص ضعيفو المناعة أجريت هذه الدراسة في معمل روبيال للتحاليل الطبية في الفترة من 1 يوليو وحتى 1 سبتمبر 2013 حيث هدفت هذه الدراسة لدراسة النشاط الباكتيري لبصل الثوم ضد ثلاثة عزلات من الباكتيريا (العنقودية الصفراء، المتقبلة والباكتيريا الزائفة)، وذلك باجراء إستخلاص لنبات الثوم بإستخدام محلول الملح الفسيولوجي 0.9 %. شملت هذه الدراسة المرضى المصابون بالتهابات جروح ما بعد العمليات وجروح مرضي السكري المتواجدون بمستشفيي ود مدني التعليمي. تم جمع 35 عينة وبعد الزراعة واجراء الاستقصاءات المخبرية تم عزل (8 عزلات من العنقودية الذهبية، 7 من الزوائف الزنجارية و 5 من الباكتيريا المتقبلة). تم اجراء اختبارات الحساسية الدوائية للباكتيريا المعزولة بإستخدام تركيزين مختلفين لنبات الثوم (1 جرام/ مل و 500 ملجرام/ مل) على وسط مولر هنتون، أظهرت النتائج أن مستخلص الثوم بالتركيز 1 جرام/ مل اعطي متوسط قطر حساسية 30.8 ملم للعنقودية الصفراء و 28.5 ملم للزوائف و 23 للباكتيريا المتقبلة و 0 ملم للزائفة الزنجارية بينما التركيز 500 ملجرام/مل اعطي متوسط قطر حساسية 24.8 ملم، 24.5 ملم، 19 ملم و 0 ملم للباكتيريات السابقة ذكرها على التوالي . تشير نتائج هذه الدراسة الى أن مستخلص نبات الثوم يملك خاصية تمنع نمو الباكتيريا تحت الدراسة باستخدام تراكيز مختلفة لنبات الثوم.

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LIST OF ABBREVIATIONS

FGE	Fresh Garlic Extract
PH	Power of Hydrogen
min	minute
McF	McFarland
AGE	Aqueous Garlic Extract
<i>spp</i>	species
<i>S. aureus</i>	<i>Staphylococcus aureus</i>
<i>P. aeroginosa</i>	<i>Pseudomonas aeroginosa</i>

<i>SCCmec</i>	Staphylococcal Cassette Chromosome <i>mec</i>
MRSA	Methicillin resistant <i>Staphylococcus aureus</i>
Mb	Mega base pair
ORF	open reading frames
DNA	Deoxyribonucleic acid
NK	Natural killer cell
AST	Aspartate amino transferase
ALT	Alanine transferase
AMS	Allyl Methyl Sulphide
CO ₂	Carbon dioxide