

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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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 البكتيريا المكورة العنقودية الصفراء والزائفة الزنجارية والبكتيريا المتقلبة من البكتيريا التي تسبب معظم الاصابات داخل المستشفيات متمثلة في الالتهابات بعد العمليات والجروح الناتجة من مرض السكري والاصابات لدى الاشخاص ضعيفو المناعة أجريت هذه الدراسة في معمل رويال للتحاليل الطبية في الفترة من 1 يوليو وحتى 1 سبتمبر 2013 حيث هدفت هذه الدراسة لدراسة النشاط البكتيري لبصل الثوم ضد ثلاثة عزلات من البكتيريا (العنقودية الصفراء, المتقلبة والبكتيريا الزائفة), وذلك باجراء إستخلاص لنبات الثوم بإستخدام محلول الملح الفسيولوجي 0.9 %. شملت هذه الدراسة المرضى المصابون بالتهابات جروح مابعد العمليات وجروح مرضي السكري المتواجدون بمستشفى 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 البكتيريا المتقلبة). تم اجراء إختبارات الحساسية الدوائية للبكتيريا المعزولة بإستخدام تركيزين مختلفين لنبات الثوم (1 جرام/ مل و 500 ملجرام/ مل) علي 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 للبكتيريا المتقلبة 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 للبكتيريا السابقة ذكرها علي التوالي . تشير نتائج هذه الدراسة الي أن مستخلص نبات الثوم يملك خاصية تمنع نمو البكتيريا 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. aeruginosa</i>	<i>Pseudomonas aeruginosa</i>

SCC <i>mec</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 transeferase
ALT	Alanene transeferase
AMS	Allyl Methyl Sulphide
CO ₂	Carbon dioxide