

## الآية

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قال تعالى :

وَأَوْحَىٰ رَبُّكَ إِلَى النَّحْلِ أَنِ اتَّخِذِي مِنَ الْجِبَالِ بُيُوتًا وَمِنَ الشَّجَرِ وَمِمَّا يَعْرِشُونَ  
(68) ثُمَّ كُلِي مِن كُلِّ الثَّمَرَاتِ فَاسْلُكِي سُبُلَ رَبِّكِ ذُلُلًا يَخْرُجُ مِنْ بُطُونِهَا شَرَابٌ  
مُّخْتَلَفٌ أَلْوَانُهُ فِيهِ شِفَاءٌ لِلنَّاسِ إِنَّ فِي ذَٰلِكَ لَآيَةً لِّقَوْمٍ يَتَفَكَّرُونَ (69)

صدق الله العظيم

الآيات (68-69) من سورة النحل

## Dedication

*To* our teacher *prophet Mohammed*

Who was sent for all population as a mercy.

*To* my mother

Who gave me endless Love.

*To* my father

Who has gone from my world but still alive in my heart.

*To* my supervisor *Dr. Hisham Nooraldaym*

Who has given me advice and encouragement.

*To* my teachers

Whom have given me support and strength.

*To* my colleagues in *Sharg Alneel lab Hospital*

Who have supported me.

*And* to every one

Had a Participation in this project.

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## ABSTRACT

This study was aimed to measure the antibacterial activity of five concentrations of honey on bacteria isolated from different clinical specimens.

This study was carried out on Sharg Elneel Hospital in Khartoum state, in the period between March to June 2016. Hundred isolates from different clinical specimens were selected. Firstly the antibacterial activity of commonly used antibiotics including ciprofloxacin, gentamicin and ceftriaxone was measured using Kirby-Bauer disc diffusion technique, then antibacterial activity of honey was measured using cup plate method, five holes were made by sterile cork borer, then the five holes on each Petri dish were filled with different honey concentrations. All Petri dishes were then incubated at 37°C for 18 hours.

The results showed that gentamicin was the most effective antibiotic inhibiting 54% of organisms followed by ciprofloxacin inhibited 48% of organisms, while ceftriaxone was the worst one that inhibited only 16% of all organisms.

On the other hand both 100% (v/v) and 50% (v/v) of honey were more efficient than the tested antibiotics by inhibiting 70% of clinical isolates, while 59% of organisms were inhibited by 25% (v/v) honey and 12.5% (v/v) honey inhibited only 11% of organisms. Since all organisms were resistant to the fourth concentration of 6.25% (v/v) honey, the minimum inhibitory concentration (MIC) was 12.5% (v/v) honey. Regarding organisms honey was most effective against isolated *Staphylococcus aureus*, inhibiting 75% of isolates. Favorable results also obtained against 72% of isolated *Escherichia coli* isolates. 50% and 40% of *Proteus mirabilis* and *Proteus vulgaris* isolates were inhibited respectively. While 40% of *Klebsiella pneumoniae* were inhibited and the lowest activity of honey was

shown against *Pseudomonas aeruginosa*, inhibiting only 33% of the isolates. From these results we can conclude that honey has broad activity against both gram positive and gram negative bacteria. Therefore honey can be regarded as a broad spectrum antibacterial agent.

## ملخص الدراسة

اجريت هذه الدراسة لاختبار فعالية تراكيز مختلفة من عسل النحل على بكتريا معزولة من عينات سريرية مختلفه في ولاية الخرطوم.

هذه الدراسة تمت بمستشفى شرق النيل بولاية الخرطوم فى الفتره مابين مارس الى يونيو 2016. فى البدء تم اختبار فعالية ثلاثة من اكثر المضادات الحيويه استعمالا وهي السيبروفلوكساسين والجينتاميسين و السيفترايكسون وذلك باستعمال طريقة كيربي باور. بعد ذلك تم اختبار فعالية العسل على البكتريا المعزولة باستعمال طريقة طبق الكاس والتي فيها يتم عمل ثقوب فى الاوساط الزراعية باستعمال ثاقب معقم ثم تملأ الثقوب بالعسل بمختلف تراكيزه المختبره. واخيرا تم وضع جميع اطباق بتري فى الحضانة بدرجة حراره  $37^{\circ}\text{C}$  لمدة 18 ساعة.

اختبار المضادات الحيوية اظهر ان الجينتاميسين قد كان اكثرها فعاليه وذلك لقدرته على تثبيط نمو 54% من البكتريا وفي المرتبة الثانية للفعالية كان السيبروفلوكساسين والذي قد قام بتثبيط 48% من البكتريا اما السيفترايكسون فقد كان الاقل فعالية وذلك بتثبيط 16% فقط من البكتريا المعزولة.

وفي الجانب الاخر فقد اظهر كل من العسل بتركيز 100% و 50% فعالية اكبر من فعالية المضادات الحيوية وذلك بتثبيط 70% من البكتريا المعزولة. بينما ان 59% من البكتريا المعزولة تم تثبيطها بالعسل بتركيز 25% و تركيز 12.5% قام بتثبيط 11% من البكتريا. وبما ان اخر تركيز مخفف 6.25% قد فشل تماما فى تثبيط اي نوع من انواع البكتريا. فعليه ان اقل تركيز مثبط للعسل كان هو تركيز 12.5% .

بما يتعلق بالبكتريا المعزولة فان العسل كان اكثر فعالية على المكورات العنقودية الذهبية وذلك بتثبيط 75% منها. كما وقد اظهر نتائج ممتازة على الايشريكية القولونية وذلك بتثبيط 72% منها. اما المتقلبة الرائحة والمتقلبة الاعتيادية فتم تثبيط 50% و 40% منها على التوالي. بينما 40% من الكلبسيلا الرئوية قد ثبتت بالعسل واقل فعالية للعسل ظهرت على الزائفة الزنجارية وذلك بتثبيط 33% منها. عليه ومن كل تلك النتائج السابقة يمكن اعتبار ان العسل لديه فعالية واسعة على مختلف انواع البكتريا السريرية سالبة وموجبة الجرام.

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