

Staphylococcus aureus

/

09/05/2007

17/01/2007

Abstract

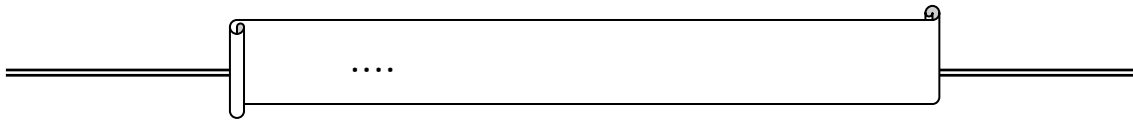
The study involved the isolation and characterization of some species of bacteria caused the wound infections. A number of (180) pus samples were collected from patients suffering from infected wounds.

The *Staphylococcus aureus* were isolated and characterized in (29%) percentage according to the other bacterial species.

The alcoholic extract of *Myrtus communis* under studying the inhibitory effect in the isolations bacteria, this extract showed high inhibitory effect on the isolated bacteria from the infected wounds and *Staph. aureus* was the most susceptible bacteria species against this extract.

The (MIC) for the tested bacteria was determined and the results showed that the (MIC) for the alcoholic extract of the fruit of *Myrtus communis* was (0.25) mg/cm³.

According to the results, the alcoholic extract of the fruit of *Myrtus communis* was selected to test its activity In vivo, so the extract showed a good effect in healing and curing the infected experimental wounds by the *Staph. aureus* in white mice strain BALB/c in a period of less than ten days, as it is clear in pictures of this study.



(180)

%29 *Staphylococcus aureus*

Staph. aureus

(Minimum Inhibitory Concentration, MIC)

(MIC)

³ / (0.25)

(In vivo)

BALB/c

Staph. aureus

(Invasion)

Wounds infection

(Inflammations)

(2.1)

Staph. aureus

(Mechanical effects)

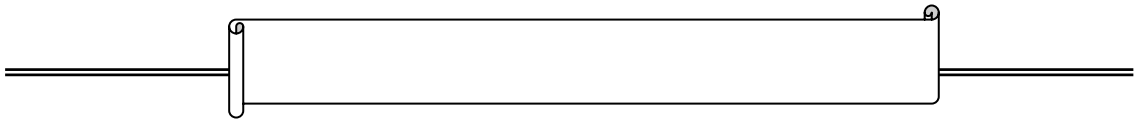
.1

(Biological effects)

.2

(Secondary effects)

.3



⁽³⁾ *Pseudomonas aeruginosa* *Staph. aureus*
Staph. aureus

⁽⁶⁾

^(5·4)

^(9·8·7)

Staph. aureus

^(11·10)

(1944)

Penicillinase

⁽¹²⁾

Beta-lactame

⁽¹³⁾

⁽¹⁴⁾

(Bitter principle)

⁽¹⁵⁾

.(Acne)

:

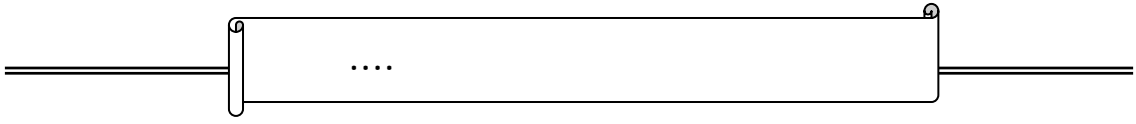
Staphylococcys aureus

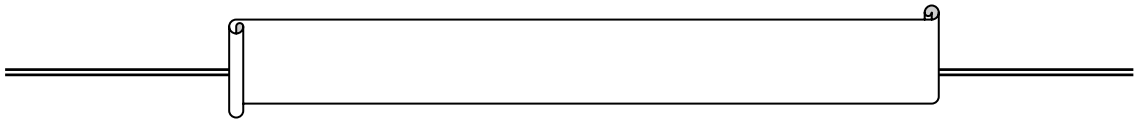
.1

. *Staph. aureus*

.2

.3





(18·17·16)

(180)

(Staurt)

Staph. aureus

^(17,4)(AP120 Staph.)

(19)

(20)

Staph. aureus

(In vivo)

⁽²¹⁾

Staph. aureus

Mus musculus

(3-2)

(20-5)

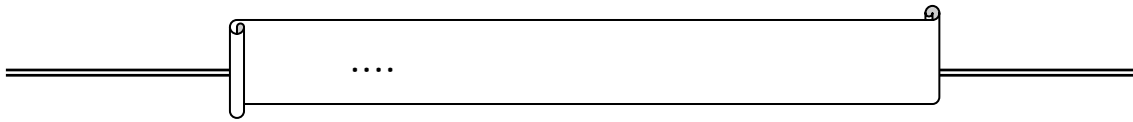
BALB/c

/

:

()

.1



() .2

Staph. aureus

() .3

. *Staph. aureus*

() .4

Staph. aureus

Staph. aureus

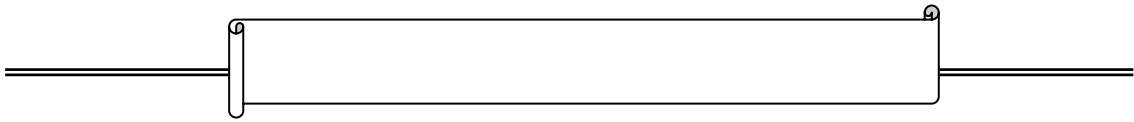
20 / 5000

. Phosphate buffered solution

$3 / 10^{11}$ (0.05) (2-1) 3 (0.05) %70

1

. 14 1



3 1)

(14 10 7

(14 10 7 3 1)

(32·22)

(72-24)

(Compound microscope)

(CRD)

Pentium IV

(24)

(SAS)

Staph. aureus (52)

(180)

(67)

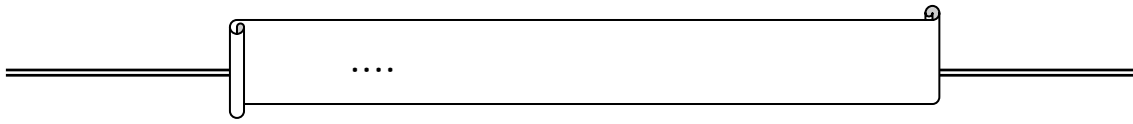
(15)

Streptococcus pyogenes (10)

Staph. epidermidis

(19) *Proteus mirabilis* (21) *Pseudomonas aeruginosa* (15)

Klebsiella pneumonia (12) *E. coli*



(1)

Staph. aureus

.()

:(1)

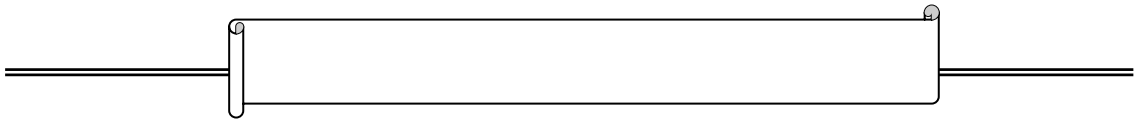
()

<i>Pseudo. aeruginosa</i>	<i>K. pneumonia</i>	<i>Prot. mirabilis</i>	<i>E. coli</i>	<i>Strep. pyogenes</i>	<i>Staph. aureus</i>	
19	---	16	12	31	30	
---	---	9	9	10	10	
---	---	---	---	---	16	
---	---	---	---	---	---	
---	---	9	---	29	16	Ampicillin (10 □g/disc)
---	---	17	23	21	21	Cephalexin (3 □g/disc)
11	19	18	26	19	18	Gentamycin (10 □g/disc)
18	-	-	-	-	-	Tobramycin (10 □g/disc)

(---)

(-)

6



(Minimum Inhibitory Concentration, MIC)

(MIC)

(1.56 3.125 6.25 12.5 25 50 100 200)

³ /

³ (9.8)

³ (0.1)

2)

³ (0.1)

³ / (. . . 0.125 0.25 0.5 1

.Staph. aureus ³ / (0.25)

(8-1)

. Staph. aureus



Staph. aureus

:(1)



Staph. aureus

:(2)



Staph. aureus

:(3)



Staph. aureus

:(4)



Staph. aureus

:(5)



Staph. aureus

:(6)



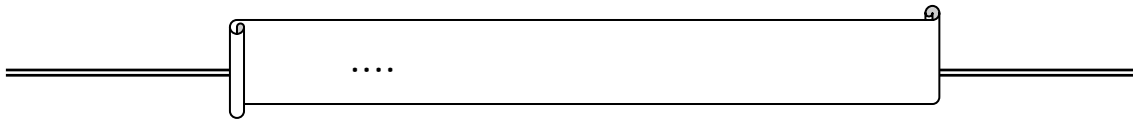
Staph. aureus

:(7)



Staph. aureus

:(8)



3 1)

(14 10 7

(24) (37)

. *Staph. aureus*

(2)

(7 3 1)

. (Epithelization)

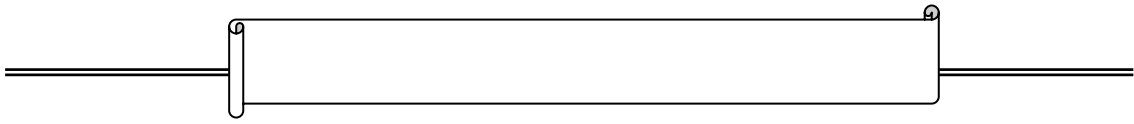
:(2)

(14 10 7 3 1)

+	+	-	-	1
+	+	-	-	3
+	+	-	-	7
-	+	-	-	10
-	+	-	-	14

() (-)

() (+)



)

(

)

(

Staph. aureus

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(

)

.(

Staph. aureus

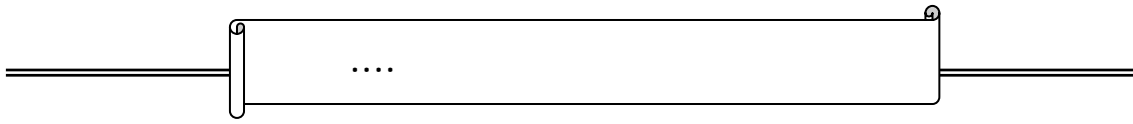
Staph. aureus

(25)

(27)

(26)

(29·28)



(1)

(1)

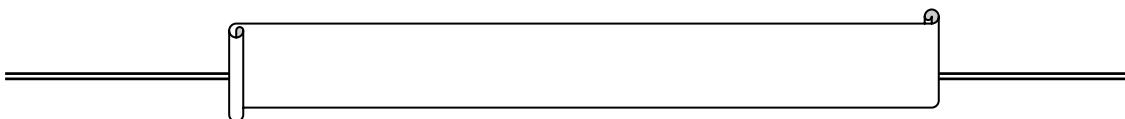
(31-30)

(In vivo)

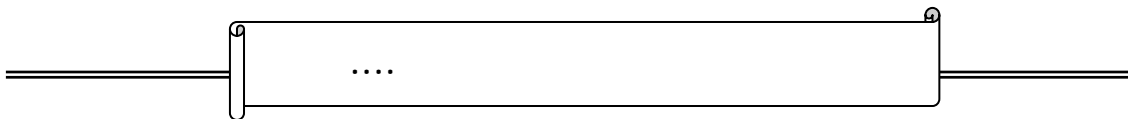
(In vitro)

Staph. aureus

(33-32)



1. Gupta, S. (1994). "Short Text Book of Medical Microbiology". 6th ed., Jaypee Brothers Medical Publishers (P) Ltd., India.
2. Schwartz, S.; Shires, G.T. and Spencer, F.C. (1988). "Principles of Surgery". 5th ed., McGraw-Hill Book Comp., Vol. 1, New York.
3. Walter, J.B.; Talbot, I.C.; Gardner, H.A.; Halloran, P.E.; Zuckerman, M.; Bird, A.G. and Frobes, A. (1996). Walter & Israel "General Pathology". 7th ed., Churchill Livingstone, New York.
4. Koneman, E.W.; Allen, S.D.; Janda, W.M.; Schreckenberger, P.C. and Winn, W.C.W. (1997). "Color Atlas and Textbook of Diagnostic Microbiology". 5th ed., J.B. Lippincott-Raben Publishers, Philadelphia.
5. Lennette, E.H.; Spaulding, E.H. and Truant, J.P. (1974). "Manual of Clinical Microbiology". Washington D.C.
6. Collee, J.G.; Fraser, A.G.; Marmion, B.P. and Simmons, A. (1996). Mackie & McCartney "Practical Medical Microbiology". 14th ed., Churchill Livingstone Inc., New York.
7. Atlas, R.M. (1995). "Principles of Microbiology", 1st ed., Mosby-Year Book, Inc., Printed in the United States, America.
8. Koneman, E.W.; Allen, S.D.; Janda, W.M.; Schreckenborger, P.C. and Winn, W.C. (1992). "Color Atlas and Textbook of Diagnostic Microbiology". 4th ed., J.B. Lippincott Company, Washington.
9. Rose, A.H. (1972). "Secondary Products of Metabolism". Vol. 3, Academic Press Inc., London.
10. Hope, R.A.; Lagmore, J.M.; McManus, S.K. and Wood-Allum, C.A. (1998). "Oxford Handbook of Clinical Medicine", 4th ed., Oxford University Press Inc., New York.
11. Novak, F.R.; Dasilva, A.V.; Hagler, A.N. and Figueiredo, A.M.S. (2000). "Contamination of expressed human breast milk with an epidemic, multiresistant Staphylococcus aureus clone". J. Med. Microbiol., 49: 1109-1117.
12. Murray, B.E. (1984). "Emergence of diseases caused by bacteria resistance to antimicrobial agents. In: Steele, J.N. and Beran, G.W. (eds.). Handbook Series in Zoonoses". Vol. 1, CRC Press, Inc., Boca Raton, Florida.
13. Villegas, L.F.; Fernandez, I.D.; Maldonado, H.; Torres, R.; Zavaleta, A.; Vaisberg, A.J. and Hammond, G.B. (1997). "Evaluation of wound-healing activity of selected traditional medicinal plants from Peru". J. Ethnopharmacol., 55(3): 123-200.
14. Grierson, D.A. and Afolayan, A.J. (1999). "Antibacterial activity of some indigenous plant used for the treatment of wound in the Eastern Cape". South Africa J. Ethnopharmacol., 66(1): 103-106.



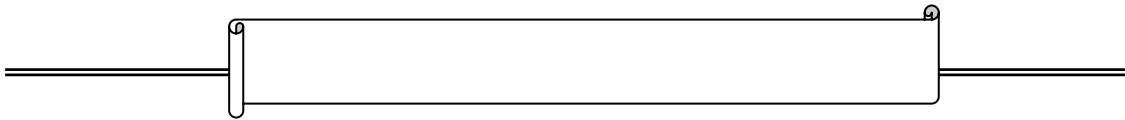
(1988) .15

. Myrtus communis

16. ...
17. Cruickshank, R.; Duguid, J.P.; Marmion, B.P. and Swain, R.H.A. (1975). "Medical Microbiology". 12th ed., The Practice of Medical Microbiology, Vol. 2, Churchill Livingstone, London.
18. Shareef, A.Y. (1998). "The molecular effect of some plant extract on the growth and metabolism of some gram positive and gram negative bacteria". Ph.D. Thesis, College of Science, University of Mosul, Iraq. (In Arabic).
19. Grand, A.; Woudergem, P.A.; Verpoorte, R. and Pousset, J.L. (1988). "Anti-infections phytotherapies of tree-savannah sengal (West Africa), II-Antimicrobial activity of 33 species". J. Ethnopharmacol., 22: 25-31.
20. Verpoorte, R.; Tagenastoi, A.; Vandoorn, H. and Svendsen, A.B. (1982). "Medicinal plant of serinam, 1-Antimicrobial activity for some medicinal plants". J. Ethnopharmacol., 5: 221-226.
21. Stepiuska, M.; Grzybowski, J.; Struzyna, J.; Olszowska, M.; Jablonska, H.; Chomicka, M. and Chomiczewski, K. (1995). "Mouse model of infected wound". Acta. Microbiol. Pol., 44(1): 39-46.
22. Bancroft, J.D. (1975). "Histological Techniques", 2nd ed., Butterworths, London-Boston.
23. Luna, L.G. (1968). "Manual of Histological Staining Methods". 3rd ed., McGraw-Hill Book Comp., New York.

" (1980) .24

25. Calligaro, K.D.; Veith, F.J.; Schwartz, M.L.; Pan, W.; Dougherty, M.J. and Delaurentis, D.A. (1995). "Recommendations for initial antibiotic treatment of extracavitary arterial-graft infection". Am. J. Surg., 170(2): 123-128.
26. Kluytman, J.A.; Mouton, J.W.; Lizerman, E.P.; Vandenbroucke-Grauls, C.M.; Maat, A.W. and Wagenvoort, J.H. (1995). "Nasal carriage of Staphylococcus aureus as a major risk factor for wound infections after cardiac surgery". J. of Infect. Dis., 171: 216-212.
27. Jibrán, S.A. (1986). "Isolation and identification of bacteria from traumatic wounds and their sensitivity pattern to antibiotic". M.Sc. Thesis, College of Medicine, Al-Mustansiriya University, Iraq.
28. Meckes, M.; Torres, J.; Calzada, F.; Rivera, J.; Camorlingo, M. and Lemus, H. (1997). "Antibacterial properties of Helianthemum glomeratum, a plant used in Maya traditional medicine to treat diarrhea". Phytother. Res., 11(2): 128-131.



29. Sokmen, A.; Jones, B. and Erturk, M. (1999). "The In vitro antibacterial activity of Turkish medicinal plants". J. Ethnopharmacol., 67: 79-86.

30. Makoto, I.; Suzuki, R.; Sakaguchi, N.; Li, Z.; Takeda, T.; Ogiwara, Y.; Jiang, B.Y. and Chen, Y. (1995). "Selective induction of cell death in cancer cells by gallis acid". Biol. Pharm. Bull., 18(11): 1526-1530.

" (1981) .31

32. Cowan, M.M. (1999). "Plant products as antimicrobial agents". Clin. Microbiol. Rev., 12(4): 564-582.

.(1999) .33

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