

Determination of the Varied Resistance Abilities that are Possessed by *Staphylococcus Aureus*

Hanaa Daaj Khalaf Al-Mozan¹, Saad Shakir Mahdi Al-Amara²

¹Department of biology, college of science, university of Thi-Qar, Iraq.

²Department of biology, college of science, university of Basrah, Iraq.

Email: hanaa.d_bio@sci.utq.edu.iq

Abstract

Background: *Staphylococcus aureus* is constantly evolving and possesses new mechanisms of resistance to antibiotics. Antibiotics that unable to eliminate bacteria may cause them to become more virulent. Effort should be continuous to find new antibiotics, and accurate diagnostic techniques and tests that are absolutely relied upon in knowing the characteristics of the diagnosed bacteria to find the appropriate treatment.

Methods: *Staphylococcus aureus* isolates were diagnosed by morphological, biochemical, and molecular methods. *S. aureus* sensitivity to antibiotics was tested by Disk Diffusion Method and Vitek[®]2 system. Also, D-test was performed for both food and clinical samples.

Result: The differences were found between the two tests (disk diffusion method and Vitek[®]2 system) which were used to sensitivity test. Food isolates had an inducible MLSB phenotype with 80% and clinical isolates had it with 33.3%. All *S. aureus* isolates had *bla_Z* gene. The largest percentage of isolates were having the *mecA* gene.

Conclusion: There is no test can be considered absolutely accurate. Food sample isolates are the most tolerant to the altered conditions. The resistance to each one of antibiotics is controlled by many and different genes and different materials then, if one of these genes became inactive, the other genes or materials can do its action.

Keywords: *Staphylococcus aureus*, Erythromycin, Clindamycin, Methicillin, Vitek[®]2 system, and D- test.

Introduction

It is normal that frequent use of methicillin antibiotic to treat *S. aureus*, has big role to methicillin resistant *S. aureus* (MRSA) emergence⁽¹⁾. Especially, if it is known the abundant use of antibiotic can be considered as an incentive for bacteria to develop themselves⁽²⁾. It is also common for MRSA to appear in hospital (HA-MRSA) as a result of exposure to health risk factors. But it is interesting that MRSA appears in healthy people (CA-MRSA) without exposure to surgery, catheters, dialysis, or others tools used in the hospitals⁽³⁾.

Presence of CA-MRSA will become a familiar as HA-MRSA, if the capacity of *S. aureus* to obtain or develop several mechanisms is demonstrated⁽⁴⁾. Particularly, *S. aureus* is found in different ambiances and adapts to varying conditions⁽⁵⁾. Effect of antibiotics on