

## Abstract

*Staphylococcus aureus* strains; especially Methicillin-resistant *Staphylococcus aureus* (MRSA) strains are important pathogens that responsible for a broad range of suppurative post-operation infections in hospitalized patients. The major problem was under-lying when antimicrobials were ineffective against MRSA biofilm producers, known as Multi-Drug Resistant *Staphylococcus aureus* (MDR). The present study was designed to find the relationship between these isolates ability to form biofilm; moreover, resistance against frequently used antimicrobials therapies. A total of 130 swabs were collected during the period (December 2018- May 2019) from patients suffering from suppurative post-operative infections after clinical diagnosis by specialist physicians at Al-Hussein Teaching Hospital in AL-Samawah city. The work started with isolation and identification of *Staphylococcus aureus* depending on morphological, microscopical, biochemical tests and Vitek2 Compact system. Biofilm formation was detected by Tube Method (TM) and Microtiter plate (MTP) technique; while the antimicrobial susceptibility was done by Disc Diffusion Method (Kirby-Bauer Method) and Vitek2 Compact system.

The results revealed that *Staphylococcus aureus* recorded 55 (55%) from the total of 100 *Staphylococcus spp.*, whereas MRSA isolates recorded 38 (69.09%) from the total of 55 *Staphylococcus aureus*. However, the results of this study showed old generation of antimicrobials that used to be utilized in *S. aureus* treatment are not effective anymore, since these bacteria are able to develop resistance and become MRSA especially upon misuse of antimicrobials. New generation of antimicrobials; mentioning Rifampin, Vancomycin, Tetracycline and Erythromycin recorded developing resistant by MRSA isolates, which warns rising alarm for future problems in treatment of local MRSA isolates infections. There is an obvious relationship between antimicrobials resistance and biofilm formation ability of MRSA isolates suggesting for the synergistic effects of both factors in status infections of clinical cases in the present study. Antimicrobials susceptibility test is a fundamental procedure before prescription script to avoid treatment failure and loss of cost. The method of biofilm formation detection via Microtiter Plate (MTP) is better and more accurate than Tube Method (TM).