Summary and conclusion

MRSA was isolated shortly after the introduction of methicillin in 1959. Since then, the rate of MRSA infections in the hospital, as well as disease in the community, have continued to rise **(Rice, 2006).**

MRSA isolates are responsible for 59% of *S. aureus* infections encountered in U.S. emergency departments and 59.5% of *S. aureus* infections in intensive-care units **(Anonymous, 2004 and Moran et al.,2006).**

This study aimed to evaluate chromogenic agar medium as a rapid and sensitive method for detection of MRSA strains isolated from different pustular lesions in Benha University Hospital and detection of *mec A* gene by PCR .

This study was conducted on 100 Pus samples collected from 100 patients (61 males and 39 females) attending Benha university hospital and suffering from different pyogenic infections. Their ages ranged from one to seventy years.

Out of 100 collected Pus samples 52 staphylococcal strains were detected; 39 *S. aureus* strains were isolated on mannitol salt agar medium (a selective and indicator medium for staphylococci).

MRSA strains were identified phenotypically and genotypically. Phenotypic identification of MRSA was carried out by two methods; first by disc diffusion method using oxacillin and cefoxitin antibiotic discs then by culturing on selective culture media containing cefoxitin which were ChromID™ MRSA agar (MRSAID) and mannitol salt agar(MSA-FOX) media .The two methods were applied to all *S.aureus* isolates including the susceptible strains and showed the following results:

oxacillin disc diffusion (ODD) method gave 25(64.1%) resistant (MRSA) and 14 (35.9%) sensitive (MSSA) strains. While cefoxitin disc diffusion (CDD) method yield 26 (66.7%) resistant (MRSA) and 13 (33.3%) sensitive (MSSA) strains.

MRSAID medium yield 27 (69.2%) resistant (MRSA) and 12 (30.8%) sensitive (MSSA) strains.While MSA-FOX yield 26 (66.7%) resistant (MRSA) and 13 (33.3%) sensitive (MSSA) strains after 48h incubation.

Genotypic identification of MRSA was carried out using the real time PCR technique to detect *mec A* gene in all the isolated *S.aureus* strains; it showed that *mec A* gene was detected (MRSA) in 25 (64.1 %) strains and was absent (MSSA) in 14 (35.9%).

The study reveals that cefoxitin is considered a better indicator than oxacillin for the presence of the *mecA* gene in *S. aureus*. MRSA ID is the most sensitive and specific medium for the isolation and identification of MRSA between all chromogenic media.

The sensitivity and specificity of phenotypic methods used for MRSA isolation vary according to different factors such as type of used media, size of inoculum, incubation time,.....etc. So the phenotypic methods can be used for MRSA isolation but must be confirmed by other laboratory tests.Detection of *mecA* gene using PCR remain the gold standard test for MRSA isolation as there is no completely reliable phenotypic test for MRSA detection.