



# Frequency of Inducible Clindamycin Resistance in *Staphylococcus haemolyticus* Isolated from Surgical Wounds Infections Using D-test and Molecular Methods in Al-Basrah, Iraq

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## ABSTRACT

**Aims** *S. haemolyticus* is generally considered an opportunistic pathogen that is strongly associated with immunocompromised individuals. *S. haemolyticus* is ranked as a highly antibiotic-resistant pathogen for various types of antibiotics. Current study aimed to investigate the frequency of inducible clindamycin resistance in *S. haemolyticus* isolated from surgical wounds infections using D-test and molecular methods in Al-Basrah, Iraq.

**Materials & Methods** 200 surgical wound swabs were collected from Ports General Hospital in Basrah, Iraq. The coagulase-negative staphylococcal strains were identified using methods like oxidase, catalase, hemolysis, and coagulase tests and confirmed by Vitek®2 system. Methicillin resistance and inducible clindamycin resistance were detected according to disk diffusion method based on CLSI guidelines. Moreover, molecular approaches was performed to confirm methicillin and inducible clindamycin resistance results.

**Findings** Out of 200 cases, 75 surgical wound swabs (37.5%) showed positive bacterial cultures. The highest frequency of isolates belonged to *Pseudomonas aeruginosa* (25.3%), *Staphylococcus epidermidis* (17.3%), *Staphylococcus aureus* (14.7%) and *Escherichia coli* (13.3%), respectively. Out of eight *S. haemolyticus* isolates, only 5 isolates (62.5%) showed inhibitory resistance criteria for both oxacillin and cefoxitin. Furthermore, 3 *S. haemolyticus* isolates (37.5%) were erythromycin-resistant and clindamycin sensitive with D-test positive with iMLS<sub>B</sub> resistance phenotype. While 2 isolates (25.0%) showed cMLS<sub>B</sub> resistance phenotype and 3 (37.5%) isolates were shown MS<sub>B</sub> resistance phenotypes. The most frequent resistance genes of *S. haemolyticus* strains were *mecA* (62.5%), *ermA* (62.5%), *ermB* (50.0%), respectively.

**Conclusion** D-test and molecular technique are appropriate for detection of inducible clindamycin resistance in *S. haemolyticus* strains.

**Keywords** Staphylococcus haemolyticus; Multiple Drug Resistance; Methicillin Resistance; Clindamycin

## CITATION LINKS

[1] Methicillin-resistant Staphylococcus ... [2] Assessment of antibacterial ... [3] Global patterns of cancer ... [4] Colonization pattern of coagulase-negative staphylococci ... [5] Whole genome sequencing revealed ... [6] Investigation of glycopeptide ... [7] Staphylococcus haemolyticus-an emerging ... [8] Pathogenesis of Staphylococcus ... [9] Diversity of plasmids and ... [10] Multiplex PCR assay to identify ... [11] Prevalence of methicillin-resistant ... [12] Characterization of clinical ... [13] Nosocomial spread of linezolid-resistant ... [14] Antimicrobial resistance in nosocomial ... [15] Catheter related recurrent ... [16] Clinical infections, antibiotic ... [17] The antimicrobial susceptibility ... [18] Staphylococcus haemolyticus ... [19] Whole-genome sequencing ... [20] Staphylococcus colonization ... [21] Characterization and antimicrobial susceptibility ... [22] Evaluation of prevalence of inducible ... [23] Detection of constitutive- and ... [24] Practical disk diffusion method ... [25] Distribution and expression of macrolide ... [26] Pattern of infection and antibiotic ... [27] Coagulase-negative ... [28] Prevalence and molecular determinants ... [29] Impact of insertion sequences ... [30] Staphylococcus haemolyticus as ... [31] Whole-genome sequencing ... [32] Non-susceptibility trends among staphylococci ... [33] Recommended minimal standards for ... [34] Performance standards for antimicrobial ... [35] Identification of methicillin-resistant ... [36] Distribution of genes encoding ... [37] Patterns of multidrug resistance ... [38] Antimicrobial resistance and production ... [39] Biofilm formation in medical ... [40] Molecular characteristics of ... [41] Detection of inducible clindamycin ... [42] Prevalence of inducible ... [43] Use of the D test method to detect ... [44] Detection of inducible clindamycin ... [45] Prevalence of methicillin resistance ... [46] High prevalence of Staphylococcus ...