

Characterization of Local *Staphylococcus epidermidis* from Pus and Wound

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Structured Abstract

Background: *Staphylococcus epidermidis* is a common skin commensal and opportunistic pathogen, often associated with wound and nosocomial infections due to its ability to form biofilms and resist antibiotics. Accurate identification and antibiotic profiling are essential for effective treatment. This study aimed to isolate presumptive *S. epidermidis* from clinical wound samples, confirm their identity using biochemical and molecular methods, and assess their antibiotic susceptibility patterns.

Methods: The pus and wound samples were inoculated on MSA and the isolates were streaked on BHI agar to obtain pure culture and stored in 25% BHI-glycerol stock for preservation. The biochemical tests were conducted by using Gram-staining, catalase and coagulase tests. For antibiotic susceptibility testing (AST), six antibiotics were used including cefoxitin (30 µg), clindamycin (2 µg), vancomycin (30 µg), rifampicin (5 µg), gentamicin (10µg) and tetracycline (30 µg) on MHA plate. After that, the species identification was done using DNA extraction, PCR amplification of the 16S rRNA gene followed by sequencing and BLAST analysis.

Results: A total of ten samples from fourteen showed pink colonies on MSA indicating the characteristic of *S. epidermidis*. From ten presumptive *S. epidermidis* isolates, eight were observed successful development of pure cultures. For biochemical testing, Gram-stain shows all samples were exhibited purple Gram-positive cocci arranged in cluster similar to catalase, the results show all catalase-positive were observed. Coagulase test showed only six samples were found to be coagulase-negative, therefore only six isolates were selected for further analysis. The results for AST showed 100% isolates were resistant against rifampicin. Most isolates were sensitive against gentamicin and tetracycline then showed mixed susceptibility patterns against cefoxitin, clindamycin and vancomycin. Lastly, BLAST analysis was confirmed the identity of *S. epidermidis* for two samples selected.

Conclusion: In conclusion, the objectives of this study were successfully achieved. Presumptive *S. epidermidis* isolates were identified using biochemical and molecular methods. Antibiotic susceptibility testing revealed consistent resistance to rifampicin, with varied susceptibility to other antibiotics. These results emphasize the importance of proper identification and resistance profiling for clinical management.

Keywords: *S. epidermidis*, Biochemical tests, Antibiotic Susceptibility Testing, 16S rRNA Gene Sequencing

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