

Biochemical and Molecular Analysis of Staphylococcus aureus Various Isolates from Different Places

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Abstract : Staphylococcus aureus is an opportunistic human as well as animal pathogen that causes a variety of diseases. A total of 70 staphylococci isolates were obtained from soil, water, yogurt, and clinical samples. The likely staphylococci clinical isolates were identified phenotypically by different biochemical tests. Molecular identification was done by PCR using species-specific 16S rRNA primer pairs, and finally, 50 isolates were found to be positive as Staphylococcus aureus, sciuri, xylous and cohnii. Screened isolates were further analyzed by several microbiological diagnostics tests, including gram staining, coagulase, capsule, hemolysis, fermentation of glucose, lactose, maltose, and sucrose tests enzymatic reactions. It was found that 78%, 81%, and 51% of isolates were positive for gelatin hydrolysis, protease, and lipase activities, respectively. Antibioqram analysis of isolated Staphylococcus aureus strains with respect to different antimicrobial agents revealed resistance patterns ranging from 57 to 96%. Our study also shows 70% of strains to be MRSA, 54.3% as VRSA, and 54.3% as both MRSA and VRSA. All the identified isolates were subjected to detection of mecA, nuc, and hlb genes, and 70%, 84%, and 40% were found to harbour mecA, nuc, and hlb genes, respectively. The current investigation is highly important and informative for the high-level multidrug-resistant Staphylococcus aureus infections inclusive also of methicillin and vancomycin.

Keywords : MRSA, VRSA, mecA, MSSA

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