

THE ROLE OF PLASMID IN EPIDEMIOLOGICAL STUDIES OF *STAPHYLOCOCCUS aureus*

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ABSTRACT

Coagulase and deoxyribonuclease positive clinical strains of *Staphylococcus aureus* numbering 80 and a standard strain, Oxford NCTC 6571, were screened for sensitivity to 6 β -Lactam antibiotics, presence of β -lactamase and R-plasmid. The molecular weight (MW) of the isolated R-plasmid DNA was also determined by agarose gel electrophoresis. The resistant strains identified were exposed to sub-inhibitory concentrations of ethidium bromide for curing of the antibiotic resistance. Out of the 80 clinical strains of *S. aureus*, 74 strains (93%) exhibited resistance to some or all of the antibiotics tested. The remaining 6 strains and the control strain were sensitive to all the antibiotics. Of the 74 resistant strains, 78% were β -lactamase producers. Isolated R-plasmids from among 49 of the resistant strains were diverse in nature both in terms of copies and magnitude of MWs which varied from 1.0 to about 33.0 kb. Occurrence of plasmid DNA copies and their differing MWs did not show any relevance on the level of resistance to the antibiotics tested. Interestingly, the multiplicity of R-plasmids was present in most of the resistant strains of *S. aureus* irrespective of their sources. However, strains from high vaginal swab (HVS) exhibited the highest multiple plasmids followed by those from pyoderma and wounds. The relationship between multiplicity of R-plasmids and the clinical sources of the resistant strains of *S. aureus* suggests an epidemiological role for plasmid profiles as a predictive index of clinical source of an infection due to *S. aureus*.

Key words: Plasmid profile, epidemiological study, *Staphylococcus aureus*.