Prevalence of Beta-Lactamase Genes in Oral Streptococcus Species in a Healthy Population: Molecular Analysis by Polymerase-Chain Reaction

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Oral Streptococcus of the viridans group are common bacteria with disease-causing potential and a high prevalence of antibiotic resistance (Whitney, 2000). The prevalence of ampicillin resistance and the carriage of beta-lactamases TEM-1 and SHV-1 in oral viridans group Streptococcus was determined from 35 healthy subjects ages 12-70 exclusively using molecular methods. Polymerase chain reaction (PCR) using the primer for the ribosomal 16S subunit identified all resistant isolates to be Streptococcus of the viridans group (Scholtz, 2010). Genomic DNA was then amplified using PCR using primers to identify the carriage of the TEM-1 and SHV-1 beta-lactamase genes (Sharma, 2010). Ampicillin-resistant Streptococcus was present in 20 subjects (57%), with 17 (85%) of these having the TEM-1 and/or SHV-1 beta-lactamase genes: 6 (30%) had TEM-1 only; 2 (10%) had SHV-1 only, and 9 (45%) had both TEM-1 and SHV-1. In 3 ampicillin-resistant Streptococcus isolates, neither TEM-1 nor SHV-1 genes were identified. These data showed a high prevalence of ampicillin resistance among oral viridans group Streptococci and the high prevalence of beta-lactamase genes, often of multiple types. Molecular methods were shown to have potential for clinical diagnostic use.

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