

Infrared spectroscopy study of *Aggregatibacter actinomycetemcomitans* ATCC 29523, JP2 clone and clinical strains isolated from the human blood

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Aggregatibacter actinomycetemcomitans settle in human oral cavity its natural habitat. It has attracted particular interest by closest association with oral pathologies and others non-oral infectious diseases including endocarditis, pneumonia, septicemia, osteomyelitis, bacteremia, skin infections and abscesses, arthritis and urinary tract infections. Early reports describe that, *Aggregatibacter actinomycetemcomitans* non-oral strains shown extensive similarity with strains collected from the oral cavity. In this study we have used strains of *Aggregatibacter actinomycetemcomitans* ATCC 29523, its highly leukotoxic JP2 clone and clinical isolate from the human blood and measured by using a FT-IR Perkin Elmer Spotlight 400. This study was performed in triplicate, under controlled conditions of temperature, time and medium environment. A total of 75 spectra for each strain were obtained by using the method of stamping in ZnSe window. Biochemical analyses were performed to study the differences between organisms of the same species after culturing for 10 hours. This cultivation time is significantly reduced in comparison to 48-72 hours from the conventional grown. Significant spectra differences were found among each organism allowing the identification and characterization of each bacterial species. Vibrational modes in the regions of 1038 cm⁻¹, 1060 cm⁻¹, 1100 cm⁻¹, 1312 cm⁻¹, 2928cm⁻¹ were used in this differentiation. The identification and classification of each strain were performed by cluster analysis presenting a 100% of strains separation. We demonstrated that FT-IR could be used to decrease the identification time compared to the traditional methods.