TITLE: RESISTANCE TO ANTIMICROBIAL AGENTS AND INFLUENCE OF EXTRACELLULAR MATRIX MOLECULES ON BIOFILM FORMATION BY *Corynebacterium amycolatum*.

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ABSTRACT:

Biofilm-related infections a major cause of morbidity and mortality. Biofilms allow several bacterial pathogens to become persistent colonizers, enhance their resistance to antibiotics and exchange genetic material. *Corynebacterium amycolatum* is a Gram-positive bacillus naturally observed as part of the microbiota of the skin and mucous membranes in humans. It has recently been described as a pathogen in both immunocompromised and immunocompetent individuals. In the past, *C. amycolatum* was rarely associated with infections, possibly due to the great complexity of the genus and difficulties in the differentiation of the species belonging to the group xerosis / striatum / minutissimum / amycolatum (XSMA). An increasing number of cases of invasive infections by this agent have been associated with high rates of morbidity and mortality. Additionally, multiresistant samples were isolated from patients with various systemic infectious conditions. Joint infections by *C. amycolatum* in humans have been related to the use of invasive medical devices and may evolve as chronic inflammatory processes of difficult treatment. The present study aims to investigate the resistance to antimicrobial agents and biofilm formation on hydrophilic (glass) and hydrophobic (plastic) abiotic surfaces by *C. amycolatum*. In addition the role of extracellular matrix proteins (Fibronectin, Type I Collagen, and Fibrinogen) in biofilm formation was also evaluated. Several resistance profiles by *C. amycolatum* strains tested were observed. *C. amycolatum* HTU2443, isolated from the hemodialysis catheter tip, showed multiresistance profile (MR). Adherence to polystyrene attributed to hydrophobic interactions between bacterial cells and this negatively charged surface indicated the involvement of cell surface hydrophobicity in the initial stage of biofilm formation. Data also showed the involvement human fibrinogen (Fbg), Collagen (Col) and fibronectin (Fn) in biofilm formation in "conditioning films". These findings suggest that biofilm formation demonstrated on hydrophilic and hydrophobic abiotic surfaces and the involvement to Fbg, Col and Fn may contribute to the establishment and dissemination of infection caused by *C. amycolatum*.

Keywords: *Corynebacterium amycolatum*, resistence, fibrinogen, fibronectin and collagen

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