BIOFILM FORMATION BY CLINICAL STRAINS OF *Klebsiella pneumoniae* WITH MULTIPLE RESISTANCE TO ANTIBIOTICS

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Klebsiella pneumoniae is a Gram-negative bacterium responsible for hospital-acquired infections, especially in immunosuppressed patients. Capsular polysaccharide and fimbriae are among the major virulence factors involved in the development of infection by *K. pneumoniae*. The capsule protects the bacteria from the host immune response, whereas the fimbriae promote adhesion of pathogens into host cells and favor the formation of biofilm. However, there is an inverse relationship between the expression of capsules and fimbriae in *K. pneumoniae*, since the expression of the capsule during biofilm formation may inhibit the expression of the fimbriae. This study aimed to characterize phenotypically *Klebsiella pneumoniae* strains from urinary tract infection, correlating the presence of capsules and adhesive fimbriae with biofilm formation. Initially eleven clinical isolates were selected and tested for antibiotics susceptibility. Next, the fimbriae expression was evaluated by the yeast agglutination assay in the presence and absence of mannose, and the production of capsular polysaccharide was investigated by slow centrifugation protocol, followed by optical density measurement on a spectrophotometer. Biofilm formation assay was performed in 96-well microplates after different periods of incubation. The clinical strains with multiple resistance to antibiotics presented higher ability to form biofilm, regardless of fimbriae expression. The strains showed extremely significant variation in the expression of the capsules. This study shows that biofilm formation seems to be related to antibiotics resistance, but not with the expression of capsular polysaccharide. Expression of fimbriae and biofilm formation contribute to the pathogenesis of *Klebsiella pneumoniae* clinical isolates from urinary tract infections by mediating the adhesion and colonization of the host epithelial cells.

Keywords: *Klebsiella pneumoniae*; Capsule; Fimbriae; Antibiotic Resistance; Biofilm Formation.

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