TITLE: ADHESION PROFILE AND PATHOGENICITY OF LOW AND HIGH BIOFILM FORMERS *Candida parapsilosis* sensu stricto BLOOD ISOLATES.

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ABSTRACT:

A large proportion of candidemia are due to *Candida parapsilosis* sensu stricto. This species is commonly related to catheter-associated candidemia due to its capability to adhere to and develop biofilms on the surfaces of intravascular devices. This study aimed to evaluate the adhesion profile and virulence using the *Galleria mellonella* model of *C. parapsilosis* sensu stricto isolates characterized as high biofilm formers (HBF) (82.12; 200.13; 219.13; 255.12) and low biofilm formers (LBF) (163.12; 188.12; 252.12; 322.12) on polyurethane catheter. Adhesion was tested using abiotic surfaces (polystyrene and polyurethane catheter) and buccal epithelial cells (BEC). For adhesion on abiotic surfaces, inocula of $1x10^7$ cells/mL were inoculated in wells of polystyrene microtitre plates and in wells containing fragments of 5 mm of catheter following incubation at 37°C for 90 min. Cells were stained with violet crystal and the total biomass was quantified (DO_{570} nm). For adhesion on BEC, cells suspension was adjusted to $2x10^5$ cells/mL and yeast suspension to $5x10^5$, following co-culture incubation at 37°C,70 rpm for 1h. The number of yeast adhered on BECs was determined using a light microscopy (x400). The virulence assay was realized with inoculum of $2x10^6$ yeast cells/larva. Larva were incubated at 37°C, and survival was monitored at 12-hour interval during 7 days. Isolates of the HBF group showed an uniform pattern regarding the ability of adhesion on polystyrene surface, where the isolate 255.12 showed higher adhesion than others isolates ($p<0.05$). On the other hand, isolates of the LBF group were more heterogeneous concerning the adhesion pattern, where the isolate 322.12 showed higher adhesion ($p<0.05$). Differently, adhesion on polyurethane catheter revealed that the isolates HBF exhibited heterogeneity, whereas the adhesion of isolates LBF was uniform. No differences were observed between the two groups in regard adhesion on the two abiotic surfaces tested. The HBF group isolates exhibit higher adhesion rate on BEC than the LBF isolates. There was no significant differences between the two groups ($p<0.05$). Three isolates (255.13; 252.12; 322.12) were capable to kill 80 to 100% of *G. mellonella* larvae after 12h, where the remaining isolates killed after 24h. Considering these results, we may conclude that biofilm capability on catheter surface does not correlate with adhesion and virulence, being this a putative isolated-dependent trait.

Keywords: *Candida parapsilosis*, Adhesion, Pathogenicity, Biofilm formation.
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