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CANDIDA TROPICALIS CLINICAL ISOLATES: BIOFILM COMPOSITION AND ARCHITECTURE

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The number of infections caused by *Candida* species has greatly increased in the past ten years. This has been attributed to an increase in the number of AIDS patients, the elderly population and immunocompromised patients. Moreover, the increased use of indwelling medical devices has also been implicated with the rise of *Candida* infections. Most candidiasis have been attributed to *Candida albicans*, however, recently, new non-*Candida albicans Candida* (NCAC) species have been identified as common pathogens, namely *Candida tropicalis*. Formation of *C. tropicalis* biofilms has important clinical repercussions because of their increased resistance to antifungal therapy and the ability of cells within biofilms to withstand host immune defenses. Thus, the aim of this study was to compare biofilms formed by different clinical isolates of *C. tropicalis*. A total of 6 *C. tropicalis* strains isolated from the vagina (n=2), urinary (n=2) and oral tract (n=2) were used. A reference strain, *C. tropicalis* ATCC 750, was also assayed. Biofilms were formed in 96-well microtiter plates, in Sabouraud dextrose broth at 37ºC (agitated at 130 rpm). The ability of biofilm formation was assessed after 48h through total biomass quantification by crystal violet staining and cellular activity by the reduction of a tetrazolium salt (XTT). Moreover, the number of viable *C. tropicalis* cells in biofilms was determined by Colony Forming Units (CFUs). Matrix material was extracted from biofilms by sonication and their protein and total carbohydrate contents were determined by the Lowry and Dubois methods, respectively. The ultrastructure of the *C. tropicalis* strains biofilms was observed by Scanning Electron Microscopy (SEM). The results showed that all clinical isolates of *C. tropicalis* were able to form biofilms, although there were differences on biomass and biofilm activity depending on strains. Furthermore, comparison of biofilm biomass with cell activity did not reveal any correlation. Matrix recovered from *C. tropicalis* biofilms present an high amount of proteins and small amounts of carbohydrates per gram of biofilm cell dry weight. *C. tropicalis* biofilms revealed a multilayer structure that consists of a dense network of yeast, hyphae and pseudohyphae. As a general conclusion, it was possible to infer that clinical isolates of *C. tropicalis* present different behaviors in terms of biofilm formation, structure and chemical composition.