

TITLE: EVALUATION OF MORPHOGENESIS, HEMOLYTIC AND PHOSPHOLIPASE ACTIVITY OF *Candida albicans* ISOLATES FROM COASTAL ENVIRONMENT AND SUPERFICIAL INFECTIONS

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ABSTRACT:

Candida albicans is the most virulent and prevalent species of the genus *Candida*, due to its ability to survive as a commensal in several different anatomical sites, being associated to several superficial and invasive infections. Its presence in the marine environment is closely related to fecal contamination from untreated sewage, since this fungus is exclusive to the human microbiota and other warm-blooded animals. Several factors may contribute to the pathogenicity of this yeast, such as yeast-hyphae transition (morphogenesis) and the production of lytic enzymes capable of destroying, altering or damaging the integrity of the host cell. The present study aimed to evaluate morphogenesis as well as the production of hemolysin and phospholipases of 64 *C. albicans* isolates, as follows: 32 isolates from superficial infections (mucosa, skin and nails) and 32 isolates obtained from coastal environment sandy beach of Ponta Negra, Rio Grande do Norte State, Brazil. The hemolysis index (HI) was determined by the ratio of the diameter of the colony to the diameter of the colony plus the hemolysis zone, after incubation in sheep blood agar, while the precipitation zone (Pz) was determined by the ratio between the diameter of the colony and the diameter of the colony plus the precipitation halo, after incubation on an egg-yolk containing medium. To induce hypha formation on solid medium, isolates were inoculated in triplicate in Spider medium, and macromorphological aspects of the colonies were observed, after 7 days of incubation at 37 °C. All isolates were able to produce hemolysin and phospholipases. Environmental isolates showed a HI= 0.75 ± 0.04 to 0.34 ± 0.01 with an average of 0.46 ± 0.12, and the Pz ranged from 0.91 ± 0.01 to 0.43 ± 0.01 with an average production of 0.73 ± 0.13; while clinical isolates HI were = 0.73 ± 0.02 to 0.36 ± 0.01 with a mean of 0.50 ± 0.07, and phospholipase production ranged from 0.86 ± 0.01 to 0.46 ± 0.01 with an average of 0.67 ± 0.10. Regarding to filamentation capacity, for the clinical strains, ten different phenotypes were observed, of which 78.1% (25/32) had some degree of filamentation while for the environmental strains, nine different phenotypes were observed, whereas 37.5% (12/32) of the strains showed smooth edges. Our results show that *C. albicans* strains isolated from the environment may express virulence factors similar to what was observed for the clinical strains, suggesting similar pathogenicity potential.

Keywords: *C. albicans*, hemolysin, phospholipase, morphogenesis, clinical and environmental isolates.

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