

TITLE: CARBOHYDRATES INTERFERE ON THE IN VITRO ADHESION OF CLINICAL ISOLATES OF *Candida* TO SURFACE OF GLASS COVERSLEIPS

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ABSTRACT:

Different *Candida* species are capable of expressing various gene products for adaptation and growth in a variety of extreme physiological conditions, providing infections. Adhesion of *Candida* cells to various substrates is a complex process influenced by several factors. Because of the importance of adherence property in the pathogenesis of *Candida*, substances that may interfere with this process should be carefully studied in order to provide novel and less costly alternative therapeutic targets. Carbohydrates commonly consumed in the diet such as glucose and sucrose may be of importance in the pathogenesis of *C. albicans* in the oral cavity due to the effect of such sugars on yeast adherence in vitro. *C. albicans* grows in defined medium with high concentrations (500 mM) of dietary carbohydrates exhibit increased adherence to acrylic surfaces. The objective of this work was to evaluate the influence of different carbohydrate concentrations on the adhesion of *Candida* to surface of glass coverslips. The adhesion test was performed using 1 ml of *Candida* + carbohydrate solution (or *Candida* + medium in control sample) in a 24-well plate containing sterile round coverslips and incubated for 3h at 37 ° C. The plate was then washed three times with 1x PBS, stained with violet crystal and after further washing, coverslips were removed and observed under optical microscopy (1000x magnification) for counting of adhered cells. The mean number of cells counted in 30 fields observed was considered for comparison of results. The influence of carbohydrates on adhesion process was shown to be dependent on the analyzed species: some carbohydrates that had negative influence on one species had an opposite effect on another species. Mannose inhibited adhesion in *C. albicans*, *C. tropicalis* and *C. parapsilosis*. Raffinose has intensified the process in *C. tropicalis* and has acted more intensely in *C. glabrata*. Galactose has also increased the number of *C. glabrata* and *C. albicans* adhered cells. *C. glabrata* was the species most influenced by carbohydrates in the adhesion process (p<0.05). The study of the virulence properties and the factors that can inhibit the infection process is fundamental for the development of new efficient and economically viable therapies.

Keywords: adherence, *Candida*, carbohydrate, virulence

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