

TITLE: ANALYSIS OF THE ANTIMICROBIAL ACTIVITY BIOGLASS F18 AGAINST *Candida albicans*

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ABSTRACT:

The polymorphic fungus *Candida albicans* compose the human microbiota, but under certain circumstances it can cause complications from superficial skin infections up to systemic infections. This fungus is able to produce biofilms, when these are present in implanted medical devices such as catheters, dentures and prosthetics joints, being resistant to conventional antifungal therapies and becomes a significant clinical challenge. Patients with prostheses often have prosthetic stomatitis associated with *Candida albicans*, it is called erythematous candidiasis, which is difficult to treat due to high population frequency and small number of drugs available. In this way, a possible solution to the problem is the use of bioactive materials (glass, glass ceramic and composites) that prevent adhesion, growth and infection by fungi and bacteria. Through the use of bioactive glasses such as Biosilicate®, Bioglass® 45S5 and F18, and their anti-inflammatory and bactericidal mechanism; the evaluation of the antimicrobial activity of the F18 bioglass against *Candida albicans* and its comparison with the Biosilicate® and Bioglass® 45S5, besides the negative control (silica), was also carried out. An adapted methodology was used microplates with 24 wells and evaluation of three different concentrations for each bioglass and control (25, 12.5 and 6.25 mg/mL), all of them in powder form with a diameter of approximately 50 µm. A standardized suspension of 10⁶ CFU/mL of *Candida albicans* was maintained in contact at 36±1 °C for 24 hours with the different treatments. After that, dilutions and inoculation were performed by *Spread Plate* method for quantification and counting of colony-forming units. The results prove that all the bioglasses present antimicrobial activity against the fungus *Candida albicans*, evidencing an improvement in the rate of death as the concentration increases. In addition, the F18 bioglass has a better effect in relation to 45S5 and Biosilicate by combating the microorganism in an efficient manner and could be an alternative for the control and treatment of infections, which are mostly associated with dental applications and medical, contributing to the advancement in the search for new biomaterials.

Keywords: bioglass, biomaterial, *Candida albicans*, antimicrobial activity

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