

TITLE: EVALUATION OF THE ANTIFUNGAL ACTIVITY OF BIXIN MICROCAPSULES WITH GALACTOMANNAN

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ABSTRACT:

The indiscriminate use of antimicrobials in therapy has triggered several types of resistance mechanisms. Considering this, many studies have been conducted with emphasis on obtaining natural drugs for the treatment of infectious diseases. Bixin is a carotenoid found in the seeds of the species *Bixa orellana* L. (Urucuzeiro). Like other carotenoids, bixin has low stability in the presence of light, oxygen and high temperatures. In order to increase stability and improve the properties of this compound, were applied techniques such as encapsulation, which consists in coating the compound with a polymeric matrix. This study aimed to investigate the antifungal activity of bixin isolated and bixin microcapsules with the galactomannan polymer extracted from the endosperms of *Delonix regia* seeds against dermatophytic and yeast fungi. The encapsulation process was developed in the 1:10 ratio (bixin / galactomannan) by the spray drying technique. The antifungal activity was made by determination of Minimum Inhibitory Concentration (MICs) and Minimal Fungicide Concentration (MFCs) determined by the Broth Microdilution Method, carried out according to CLSI (Clinical and Laboratory Standards Institute) standards. As a control, ketoconazole was used for dermatophytes and amphotericin B for yeasts. Microbiological assays showed that isolated and encapsulated bixin both showed no activity against *Candida albicans*. Only bixin microcapsules showed activity against *C. parapsilosis*, with MICs of 2.5 mg/mL and MFCs of 5.0 mg/mL. For the dermatophytic fungi *Trichophyton rubrum* (6753) and *T. rubrum* (6212), isolated bixin showed MICs of 2.5 mg/mL and an MFCs of 5.0 mg/mL for both species. The microcapsules of bixin showed a higher activity on these fungi, with MICs of 0.07 mg/mL and MFCs of 0.15 mg/ml for *T. rubrum* (6753) and MICs of 0.62 mg/mL, MFCs Of 1.25 mg / mL for *T. rubrum* (6212). Therefore, it was concluded that bixin microparticles presented better antifungal activity compared to strains evaluated when compared to isolated bixin, which shows a more detailed study of the system developed as a possible alternative for the treatment of dermatophytoses.

Keywords: encapsulation, bixin, fungal infection

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