

## Title: ANTI-*Candida albicans* ACTIVITY OF ETHANOLIC EXTRACTS OF *Astronium* sp LOADED OR NOT LOADED INTO NANOSTRUCTURED SYSTEMS

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### Abstract:

The biological potential of several plant species of the Brazilian Cerrado has been studied in order to obtain new herbal medicines. Among these plants, *Astronium* sp is a neotropical genus of arboreal species typical of Brazil's north and northeast savanna. The species *Astronium urundeuva* (aroeira-do-sertão), *Astronium graveolens* (guaritá) and *Astronium fraxinifolium* (Gonçalo-alves) are popularly used as anti-inflammatory, antimicrobial, anti-ulcerogenic and healing agents. The use of nanotechnologic systems, such as microemulsions, is considered the ultimate tool to reduce the toxicity and increase the bioavailability of drugs. The minimum inhibitory concentration (MIC) of the extracts (1000 to 7.81 µg/mL) was evaluated by microdilution technique against *C. albicans* ATCC 18804 at a concentration of  $2,5 \times 10^3$  UFC/mL, anfotericina B (32 µg/mL) and fluconazol (256 µg/mL) were used as positive controls and the visual reading was performed using 2,3,5-triphenyltetrazolium chloride (TTC - 2%). The extracts were loaded into two systems: system 1 [10% oil phase (cholesterol), 10% surfactant (Brij 98<sup>®</sup> and soybean phosphatidylcholine - 2:1) and 80% aqueous phase (phosphate buffer pH=7.4)]; system 2 [10% oil phase (cholesterol), 10% surfactant (Brij 58<sup>®</sup> and soybean phosphatidylcholine - 2:1) and 80% aqueous phase (phosphate buffer pH=7.4 and Poloxamer 407<sup>®</sup> - 0.086%), both prepared by sonication (amplitude of 10 and 15%, respectively; 700 watts power). We highlight the results obtained with the stem extract of *A. fraxinifolium* (AFS), which had the antifungal activity improved after being loaded into systems 1 and 2 (AFS - MIC >1000 µg/mL, AFS loaded into system 1 - MIC = 62.5 µg/mL and AFS loaded into system 2 - MIC = 7.81 µg/mL). In addition, the previously inactive leaves extract of *A. graveolens* (MIC >1000 µg/mL) improved the activity after being loaded into system 2 (MIC = 250 µg/mL). This study concluded that the incorporation of these plant extracts into the nanostructured systems can potentiate the antifungal activity against *C. albicans*, suggesting that the use of nanotechnology can be used as an effective alternative therapy with lower doses.

**Keywords:** Anti-*C. albicans* activity; *Astronium* sp; Nanostructured systems.

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