

TITLE: ISOLATION, CHARACTERIZATION AND EVALUATION OF ANTIFUNGAL ACTIVITY OF A LECTIN FROM GENIPA AMERICA BARK.

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ABSTRACT:

The use of the genipap culture (*Genipa americana* L.) has a great economic potential and in folk medicine because of the presence of the bioactive compounds present in the species. Among these, lectins is a class of protein with medical and biotechnological importance due to its potential to be used as an antifungal, antitumor, mitogen and insecticide compound, and as a potent biological marker, due to its ability to specifically bind to carbohydrates. Thus, the present work aims to identify, purify and characterize a *G. americana* bark lectin as well as to evaluate cytotoxic and antifungal activities. The bark extract was prepared in 50 mM Tris-HCl pH 8.0 buffer under constant stirring for 12 h at 4 ° C. Saline precipitation was then performed using ammonium sulfate. The fraction that presented higher hemagglutinating activity (F0-20%) was submitted to the exclusion chromatography (Sephacryl S-100) for lectin isolation. By a single chromatographic step and by SDS-PAGE (10%), it was observed that GaBL has an approximated molecular mass of 242.5 kDa. The hemagglutinating activity was inhibited by lactose and fetuin, but was not affected by ions (Ca²⁺ and Mg²⁺). GaBL is classified as a thermostable protein because it remained active at between 30 ° C and 120 ° C for 30 minutes as well as between pH 5.0 and 10.0 with better activity at a temperature below 60 ° C and pH 5.0. Circular dichroism of GaBL demonstrated the presence of high β -sheet content and conformational stability over a wide range of pH (4.0-11.0). The purified lectin was submitted to the antifungal test and showed potent activity against pathogenic yeasts, presenting a MIC of 12.5 and 25 μ g / mL against *Cryptococcus neoformans* and *Candida albicans*. In this way, GaBL is a lectin with high biotechnological potential as antifungal.

Keywords: chromatography, fungus, genipap, lectin.

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