

PHYTOCHEMICAL PROSPECTION AND EVALUATION OF THE ANTIBIOTIC CAPACITY OF THE ETHANOL EXTRACT FROM THE LEAF OF *Brosimum gaudichaudii* Trécul (MORACEAE)**Bruna Helena Ferreira Ponce¹****Rodrigo Scaliante de Moura²****Luiz Eduardo Krüger Dias³****Abstract**

The development of antibiotics was a revolution in the treatment of infections, however the indiscriminate use of these substances caused the appearance of multidrug-resistant bacteria, which is a big public health problem. (Santos, 2004). Due to this problem, it is essential to develop measures to reduce the impacts generated, and look for new treatment resources, including the discovery of new potential antibacterial agents, with plants being an important source of biologically active substances, helping in the process of discovery and synthesis of numerous new drugs. (BARREIRO, E.J; BOLZANI, V.S., 2009). *Brosimum gaudichaudii* Trécul is a plant species native to the cerrado, popularly known as *mama-cadela*, it belongs to the class Magnoliopsida, the Urticales order and the Moraceae family (CRONQUIST, 1988). It has proven health benefits, however, its antimicrobial activity is little explored and controversial, since the studies found differ in terms of the results. (BORGES, 2016; POZETTI, 2005). This disagreement between the results found so far demonstrates the need for further investigation of the antibiotic activity of the species in order to elucidate the potential of its applicability as a therapeutic agent. This project aimed to carry out a preliminary study of the phytochemical compounds present in the leaves of *Brosimum gaudichaudii* Trécul and to evaluate the antibiotic activity of its hydroalcoholic extract against strains of several bacteria. The research is experimental, exploratory and qualitative-quantitative. Plant material collections were carried out in the urban area of the city of Silvânia Goiás (16°40'04.0"S 48°36'10.9"W), the first one in May 2021, the material was stored, then dried in a fresh, light-free location, which was later used for prospection and antibacterial action tests. The second collection happened in September 2021, and was transported to the Biodiversity Research Lab of the Evangelical University of Goiás, in Anápolis, where it was identified and described by Dr. Josana de Castro Peixoto, the exsiccate was made and is currently in registration process in the herbarium of the State University of Goiás, in Anápolis. The search for secondary metabolites was carried out in the chemistry laboratory of the Evangelical University of Goiás, using methodologies adapted from Costa (2001), Matos (1988), Matos & Matos (1989) and Simões et al. (2017), where the presence of anthraquinone heterosides, cardioactive heterosides, saponins, coumarins, alkaloids, tannins and flavonoids were investigated. In order to obtain the crude hydroalcoholic extract, the dried material was crushed, weighted, and later taken to grinding with Ethanol 78% for 7 days. After that, the mix was filtered and the filtrate was transferred to the rotary evaporator at a temperature of 40°C until the solvent was completely removed. The microdilution technique applied was described in CLSI M7 – A6 NCCLS, 2003, the following strains were tested: *Salmonella typhimurium* (ATCC 51812), *Pseudomonas aeruginosa* (ATCC 27853), *Klebsiella pneumoniae* (ATCC 700603), *Staphylococcus aureus* (ATCC 25923), *Enterococcus faecalis* (ATCC 51299) and clinical isolates of *Bacillus cereus*, *Proteus vulgaris* and *Streptococcus agalactiae*, the test was performed in duplicate. The antibiotic activity of the extract was verified using 0.01% sodium resazurin for 3 hours at 35°C as a developer. The macroscopic

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characterization of the plant showed that the leaves are simple, leathery and hairy on both sides. The size of this organ varied between 6-9 cm and width between 2.5 - 4 cm, it has alternating phyllotaxis, elliptical limb, with oblique base, spitting apex and revoluted margin, the plant species studied does not yet have its description in the pharmacopoeial compendium, however, these characteristics match those described in the work of Jacomassi, Moscheta and Machado (2007). The phytochemical prospection showed that the plant has positive results for anthraquinone heterosides, flavonoids, tannins and coumarins, however, when compared to other studies found in the literature, it is noticed that there is a divergence between the results, as in the study carried out by Moreira (2019) where only the presence of alkaloids and anthraquinones was found, whereas in the tests by Santana et. al. 2018 flavonoids, saponins, anthraquinones and coumarins were found. Despite the divergence, this result is expected since the production of secondary metabolites is directly influenced by environmental conditions such as seasonality, water availability, temperature, nutrient, among others. (NETO, L.G.; LOPES, N.P., 2007). The minimum inhibitory concentration test shows that dilutions of the extract are capable of inhibiting the growth of the Gram-positive bacteria tested, *Staphylococcus aureus* and *Bacillus cereus* at a concentration of 95 mg/mL, *Streptococcus agalactiae* and *Enterococcus faecalis* were inhibited at a concentration of 23,7 mg/ml. In the case of Gram-negative bacteria, no concentration tested was able to prevent their development. As already previously mentioned in the text, the antibacterial activity is little studied and controversial, in the results he obtained, Pozetti (2005) evaluated the hydroalcoholic extract of different parts of the plant at concentrations of 25mg/ml and 50mg/ml on various bacteria species, among which *Staphylococcus aureus*, *Bacillus sp*, *Escherichia coli*, however, no inhibiting activity was observed. In the studies by Moreira (2019) the ethanol extract at a concentration of 20 ml/dL was tested and also no positive result was obtained against strains of *Staphylococcus aureus*, *Enterococcus faecalis*, *Pseudomonas aeruginosa* and *Escherichia coli*. On the other hand, Borges (2016) obtained positive results against *Staphylococcus aureus*, *Escherichia coli* and alpha hemolytic *Streptococcus*. According to the results obtained, we can conclude that the plant material studied has great phytochemical potential, since the preliminary study was able to detect the presence of anthraquinone heterosides, flavonoids, tannins and coumarins. In addition, it demonstrated the antibiotic capacity of its hydroalcoholic extract, obtaining satisfactory results when tested against gram-positive bacteria.