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BIOACTIVE COMPOUNDS FROM MIMOSA TENUIFLORA: CHEMICAL PROFILING, CYTOTOXICITY AND ANTIPLASMODIAL EVALUATION

Lucas Tavares dos Santos[1*], Renato P. de Sousa[1], Claudia do Ó Pessoa[2], João Victor de M. Pereira[2], Pedro M. da Silva Costa[2], Fernando de P. Varotti[3], Amanda L. da Fonseca[3], Ana Claudia de S. Pinto[3], Fernanda A. de Oliveira[3], Bruno A. M. Sanchez[4], Gerardo Magela Vieira Júnior[1]

lucas.tavares2k18@gmail.com

1- Department of Chemistry, UFPI, Teresina, PI, 64049-550, Brazil. 2- Laboratory of Experimental Oncology, UFCE, Fortaleza, CE, 64023-275, Brazil. 3- Laboratory of Medicinal Biochemistry, UFSJ, São João del-Rei, MG, 35501-296, Brazil. 4- Laboratory of Immunopathology and Tropical Diseases, UFMT, Sinop, MT, 78550-728, Brazil.

Mimosa tenuiflora (Willd.) Poir., popularly known as "jurema preta," is a species of the Fabaceae family widely distributed in Northeast region of Brazil, particularly in the caatinga biome. In traditional medicine, its bark is used for treating burns and inflammations. The species' chemical composition includes flavonoids, phenoxychromones, indole alkaloids and saponins[1]. Pharmacological studies have demonstrated its antinociceptive, antimicrobial, antioxidant, and wound-healing potential[2]. This work aimed to conduct a phytochemical investigation of the aerial parts and stem bark of *M. tenuiflora*, along with the evaluation of its cytotoxic and antiplasmodial activities. The ethanolic extracts from the root bark (RBEE) and aerial parts (APEE) were obtained by exhaustive extraction (72h) at room temperature. Both extracts underwent liquid-liquid partitioning, yielding hexane (RB-H, AP-H) and ethyl acetate (RB-Ac, AP-Ac) fractions. The RB-Ac fraction was analyzed by UPLC-MS, which enabled the identification of six proanthocyanidins (**1–6**). Chromatographic fractionation of the AP-Ac fraction led to the isolation of six additional compounds: two flavones (**7** and **8**), one phenoxychromone (**9**), and three chalcones (**10–12**) (Fig. 1). Compound identification was achieved using 1D and 2D NMR (^{1}H and ^{13}C), DI-ESI-IT/MS^n, and comparison with literature data. The *in vitro* cytotoxicity of the root bark fractions was assessed by the MTT assay[3] against the HCT116 (colorectal carcinoma) and HL60 (leukemia) tumor cell lines. RB-H and RB-Ac fractions exhibited promising cytotoxic activity against HL60, with IC_{50} values of 53.80 µg mL^{-1} and 61.57 µg mL^{-1}, respectively, while showing no cytotoxicity toward the non-tumorigenic L929 murine fibroblast cell line (IC_{50} > 250 µg mL^{-1}). Additionally, the antiplasmodial activity of the aerial parts was evaluated against chloroquine-resistant *P. falciparum* W2 strain using the SYBR Green I assay. The PA-H fraction exhibited the highest antimalarial potential, with an IC_{50} value of 26.39 µg mL^{-1}. These findings underscore the chemical and pharmacological potential of *M. tenuiflora*, constituting the first report of *in vitro* antimalarial activity for this species. Furthermore, compound **8** is reported for the first time in the *Mimosa* genus.

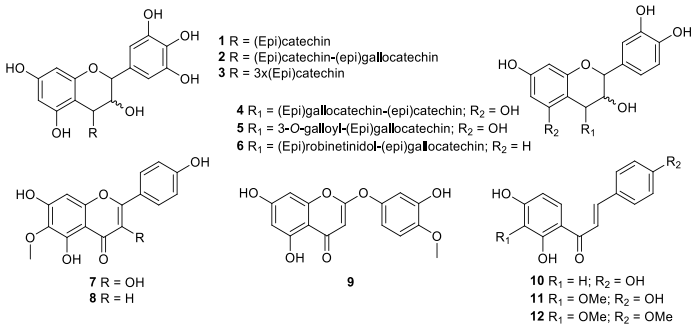

Fig 1. Chemical structures of the compounds identified in *M. tenuiflora*

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