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MAPPING THE METABOLIC DIVERSITY IN SIX BIGNONIACEAE PLANT SPECIES

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Introduction: Considering the magnitude of Brazilian biodiversity, there are still few studies on the natural products biosynthesized by plant species found in six distinct biomes, a valuable body of scientific and applied research that remains understudied and economically exploited. The Bignoniaceae family, composed of approximately 800 species, is widely distributed throughout the country and is an example of a taxon that has been little investigated regarding natural products, their biological functions, and pharmacological properties. This project aims to develop an approach based on the state-of-the-art metabolomics of species in this Angiosperm family, which is also the objective of this project. **Material and Methods:** Six Bignoniaceae plant species were used in this study, each one representing a specific clade in the family. Individual plant extracts were analyzed via UHPLC-QTOF-MS. The data obtained were converted to ".mzML" format and preprocessed using MZmine 4 software. The ".csv" and ".mgf" files were used for statistical analysis using MetaboAnalyst and for metabolite annotation using GNPS and SIRIUS. For molecular networks, the Feature-based Molecular Networking analysis mode was used. **Results and discussion:** PCA analysis of the metabolic profiles of Bignoniaceae species demonstrated chemical differentiation among plant species. This is the first evidence that each species has its own chemical identity within the Bignoniaceae family, potentially linked to different classes of secondary metabolites. Through molecular networks, it was possible to identify different classes of natural products in the six plants studied, including flavones, cinnamic acids and derivatives, iridoids, phenylethanoids, flavonols, flavanones, xanthones, chalcones, lignans, and secoiridoids. Flavonoids were the most predominant class in the samples, being reported in all six plant species studied. The authors would like to thank INCT/CNPq Proc. No. 465637/2014-0; FAPESP Thematic No. 2014/50926-0 and fellowship 2024/02602-2).

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