

**PHYTOCHEMICAL AND ANTIOXIDANT POTENTIAL OF THE  
CRUDE EXTRACT AND FRACTIONS FROM *Miconia albicans* (Sw.)  
Triana (Melastomataceae)**

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**ABSTRACT**

**BACKGROUND:** Oxidative stress is a pathological state that occurs in the body as a result of an imbalance between the generation of free radicals and antioxidant substances during metabolic processes [1]. Free radicals can cause structural and functional damage to organic biomolecules, as well as cellular mutations, leading to neoplasms, inflammatory, and degenerative diseases [2]. Several synthetic antioxidant molecules, such as butylated hydroxyanisole (BHA), have carcinogenic and toxic effects [3]. In this context, *Miconia albicans*, commonly known as “canela-de-velho”, represents a promising alternative due to its traditional use in the treatment of inflammatory processes, such as osteoarthritis and arthritis, as well as urinary infections and gastrointestinal issues [4]. **OBJECTIVES:** To perform a qualitative phytochemical screening of the ethanolic extract (MaEtOH) and the hexane (MaFHex), dichloromethane (MaFDCM) and ethyl acetate (MaFAE) fractions of the aerial parts of *M. albicans*. In addition, the total phenolic, tannin and flavonoid content of the samples in which these compounds are identified will be quantified and the antioxidant potential evaluated. **METHODS:** The plant material was collected in the municipality of Barreiros/PE. A sample was deposited at the Agronomic Research Institute of Pernambuco under the number 92548. The MaEtOH was obtained by exhaustive maceration using absolute ethanol as solvent. The MaEtOH was subjected to liquid-liquid extraction to obtain the fractions. Phytochemical screening was conducted according to foam formation, colorimetric reactions, and precipitate formation assays. Phytochemical screening was carried out by foaming, colourimetric reactions and precipitation assays. The total phenolic and tannin contents were determined by the Folin-Ciocalteu colorimetric method and expressed as milligrams of tannic acid equivalents per gram of extract (mg TAE/g), while the flavonoid content was determined determined by the aluminium chloride colorimetric method and expressed as milligrams of rutin equivalents per gram of extract (mg RE/g). The antioxidant potential of the extract and of the fractions was investigated using different *in vitro* antioxidant assays (DPPH, ABTS and phosphomolybdenum). **RESULTS AND DISCUSSION:** The percentage yields (%) of MaEtOH and the MaFHex, MaFDCM, and MaFAE fractions were 16%, 13%, 15%, and 20.4%, respectively. The liquid-liquid extraction is in line with green chemistry principles through the recovery, reuse and reduction of organic solvents. Phytochemical screening of MaEtOH and MaFAE revealed the presence of saponins, flavonoids, tannins, coumarins, triterpenes, and steroids. MaFHex presented only coumarins, while MaFDCM showed coumarins, triterpenes, and steroids. The compound quantifications (total phenolics, tannins, and flavonoids) were conducted with MaEtOH and MaFAE, as these metabolites were identified only in these samples in the phytochemical analysis. The phenolic content of MaEtOH and MaFAE, expressed as mean  $\pm$  standard deviation, was as follows: total phenols, 292.54  $\pm$  2.68 mg TAE/g and 589.45  $\pm$  2.48 mg TAE/g; tannins, 73.9  $\pm$  4.43 mg TAE/g and 116.7  $\pm$  2.19 mg TAE/g; and flavonoids, 141.69  $\pm$  0.79 mg RE/g and 222  $\pm$  6.31 mg RE/g, respectively. Antioxidant activity was expressed as the mean  $\pm$  standard deviation of the IC<sub>50</sub> value (concentration of sample required to reduce radical activity by 50%) for the DPPH and ABTS assays. For the phosphomolybdenum assay, results were expressed as the mean  $\pm$  standard deviation of the percentage of total antioxidant capacity (CAT%). The IC<sub>50</sub> and CAT% values in the DPPH, ABTS, and phosphomolybdenum assays were reported for each extract and fraction as follows: MaEtOH (17,49  $\pm$  0,19; 691,53  $\pm$  2,1; 32,20  $\pm$  0,22), MaFHex (292,56  $\pm$  2,65; 6708,01  $\pm$  0,88; 16,28  $\pm$  4,14), MaFDCM (77,59  $\pm$  1,60; 3021,61  $\pm$  29,65, 20,98  $\pm$  2,7), and MaFAE (10,19  $\pm$  0,35; 248,73  $\pm$  6,34; 27,08  $\pm$  1,10). **CONCLUSION:** The results of this study suggest that MaFAE showed better antioxidant activity compared to the extract and the other

fractions. This effect may be related to the presence of phenolic compounds and triterpenes in this sample.

**References:**

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