

Phytochemical analysis and anti-bacterial screening of leaf and stem extracts of *Combretum erythrophyllum*.

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Abstract

Combretaceae is a large Angiosperm family that is highly sought after due to its pronounced medicinal value. *Combretum* is recognized as the largest genus of this family. In addition, this genus is prevalent in southern Africa due to its extensive use in traditional medicine. This study investigated the phytochemistry and antibacterial properties of the leaves and stems of *Combretum erythrophyllum*. Crude leaf and stem extracts were generated using hexane, chloroform, and methanol as the solvents of choice. Preliminary phytochemical tests indicated the presence of multiple phytocompounds, including carbohydrates, alkaloids, sterols, phenols, fixed oils, and fats. Flavonoids were found within the leaf extracts only, while saponins, mucilage, and gums were specifically identified within the stem extracts. The first reported gas chromatography-mass spectrometry (GC-MS) screening of *C. erythrophyllum* leaf and stem extracts were conducted, yielding the identification of 196 phytocompounds. Major phytocompounds were identified that included, amongst many, sitosterol and lupeol, which may have possible anti-cancer and anti-inflammatory properties. In addition, thin layer chromatography analysis resulted in the visualization of approximately 36 different classes of compounds. The generated methanolic extracts were analyzed for their antibacterial activities against *Escherichia coli, Pseudomonas aeruginosa, Bacillus subtilis,* Methicillin Resistant *Staphylococcus aureus* and *Staphylococcus aureus.* Within leaf extracts, clear zones of inhibition were seen against the different bacterial strains tested, whereas the stem extracts failed to depict a zone of inhibition for *E. coli*. Given these antibacterial properties of the extracts of *C. erythrophyllum*, this species should be considered for its medicinal importance. The isolation and extraction of these beneficial compounds opens further avenues into their use in the pharmaceutical industry.

Biography:

My name is Sahejna Bantho and I am a student at the University of KwaZulu Natal (UKZN). I have completed my BSc (HONS, 2017) and MSc (Summa cum laude, 2019) at UKZN and have worked as a demonstrator in various modules. In this period, I have conducted high quality independent research projects and have exuded independence, responsibility and dedication in all mandatory aspects. In addition, the emanating research has produced novel results. I am currently pursing my PhD at the university of KwaZulu Natal, to further my research. At present, i have 2 articles submitted to the South African journal of Botany and am awaiting a reply. Additionally, i have presented at the South African association of Botanists conference in 2018 and my abstract has been published.

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