



Comparative chemical analysis and antimicrobial activity of the volatile and no-volatile extracts of *Cymbopogon citratus* leave

Amoussatou Sakirigui^{1,2*}, Franck YOVO¹, Eléonore LADEKAN YAYI², Joachim Djimon GBENOU²

¹Laboratory Kaba of Research in chemistry and Applications, Faculty of Sciences and Techniques, UNSTIM/Abomey, Republic of Benin

²Laboratory of Pharmacognosy and Essential Oils, Faculty of Sciences and Techniques/University of Abomey-Calavi, Republic of Benin.

Introduction: *Cymbopogon citratus* which is commonly known as lemongrass belongs to the grass family of Poaceae. Several studies have been conducted on their antimicrobial potentials. Usually the biological activities of the volatile and no-volatile extracts of this plant are studied separately. But the simultaneous comparative study of the two fractions remains unexplored. The aim of this work is to make a comparative study of the antimicrobial activity of the volatile and no-volatile extracts of *Cymbopogon citratus* in order to deduce the most effective fraction.

Material and methods: Extraction of volatile and no-volatile compounds, chemical analysis of extracts, phytochemical screening, determination of the Minimum Inhibitory Concentration (MIC) and Minimum Bactericidal Concentration (MBC).

Results: Chemical analysis of the volatile extract revealed 72.91% of citral and other minority compounds,

Chemical groups identified in no volatile extract: reducing compounds, alkaloids, flavonoids, phenolic compounds, leucoanthocyanins, saponosides, Coumarins and Terpenoids.

The lowest **Minimum inhibitory concentrations** values were obtained against *Micrococcus luteus* (0.3125 mg/ml), *Staphylococcus epidermidis* T22695 (0.625 mg/ml) and *Proteus vulgaris* A25015 (0.625 mg/ml) by volatile extract.

The **bactericidal activity** of volatile extract was only obtained against *Enterococcus faecalis* (1.25 mg/ml)

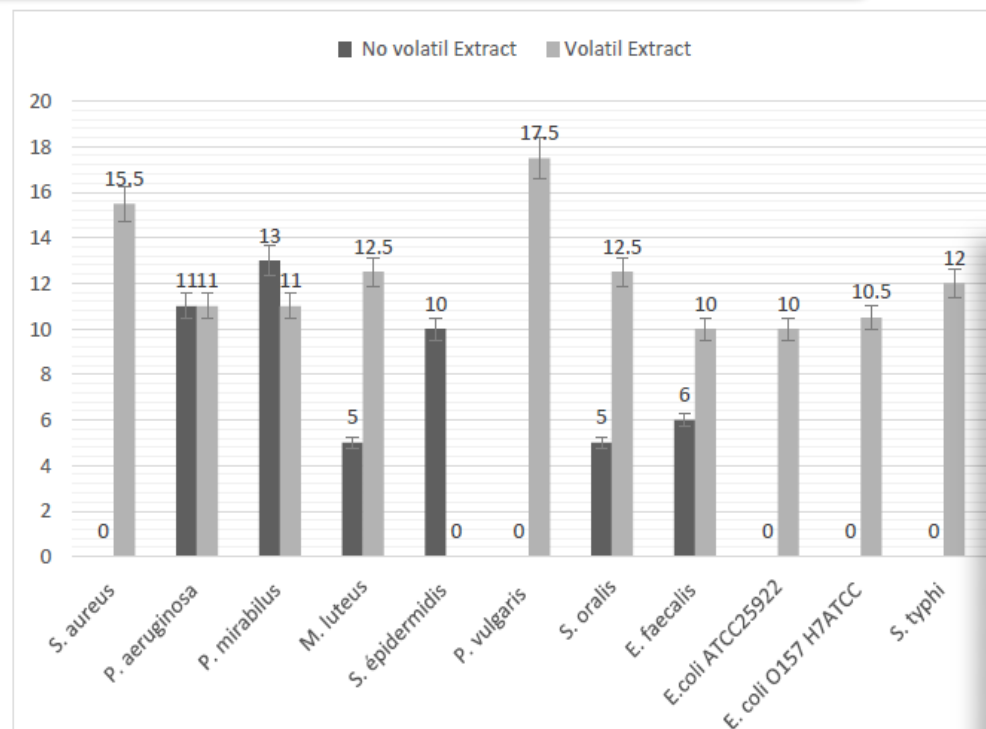
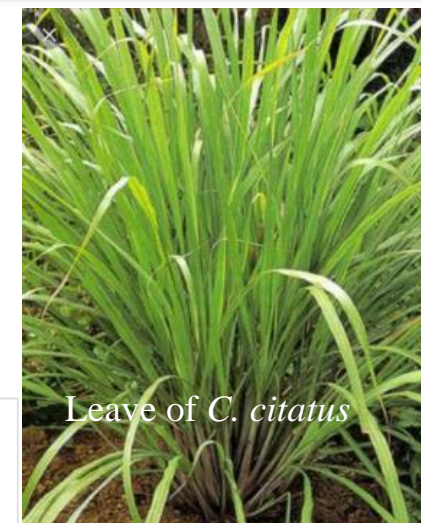


Figure 1: Diameters of inhibition of volatile and non-volatile extract of *C. citratus*

Reference:

Amoussatou SAKIRIGUI, Guevara NONVIHO, Armelle Sabine Yelignan HOUNKPATIN and Kamirou CHABI SIKI, Comparative chemical analysis and antimicrobial activity of the volatile and no-volatile extracts of *Cymbopogon citratus* leave; Int. J. Green Herb. Chem. (2020); 9(4): 492-501.

Conclusion: the best inhibitory and bactericidal activities were obtained by volatile extract in any case.

Formulations of phyto-drugs based on the essential oil of *C. Citratus* would therefore be more effective than those based on its no-volatile extract.