

Antioxidant Activity, Total Phenolic Contents and Functional Group Identification of Leaf Extracts among Lemongrass (*Cymbopogon Citratus*) Accessions

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Abstract : Lemongrass leaves are widely used for tea and the treatment of malaria. The present study used Soxhlet extraction with aqueous ethanol (v/v). Fresh and dried leaves of selected ten lemongrasses (*Cymbopogon citratus*) accessions from different geographical regions in Nigeria were examined for total phenolic contents, and antioxidant activities. Aqueous methanol extraction was carried out and further partitioned into hexane, ethyl acetate, and butanol to obtain fractions according to their polarities. Fourier Transform Infrared Spectroscopy (FTIR) was carried out to identify the functional groups that may be present. Among the ten accessions, the leaf extracts at five different concentrations exhibited increasing antioxidant activities using DPPH (2,2-diphenyl- 1- picrylhydrazyl) radical scavenging test, stronger activities for dried leaves ($71.15 \pm 0.14 - 89.79 \pm 0.16 \mu\text{g/ml}$) than fresh leaves ($71.65 \pm 0.45 - 81.94 \pm 0.84 \mu\text{g/ml}$) at $100 \mu\text{g/ml}$ of sample extract. The total phenolic contents of dried leaf extracts revealed higher amounts in all lines ranging from 19.57 ± 0.57 to $43.17 \pm 0.67 \text{mg}$ gallic acid equivalent /100 g DW when compared with fresh leaf extracts, where the values ranged from 9.68 ± 2.20 to $28.5 \pm 3.90 \text{mg}$ gallic acid equivalent /100 g fresh weight except for two lines which showed greater total phenolic contents than in the dried leaves. High total phenolic content may help contribute to the overall high antioxidant activity of the plant. FTIR identified the presence of major active functional groups including alcohol, ester, amide, alkanes, alkenes, carboxylic acid, ketones, and aldehyde in four partitioning solvents (n-hexane, ethyl acetate, butanol, and methanol) leaf extracts of lemongrass samples.

Keywords : antioxidant activity, phenolic content, natural product, FTIR

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