ANTIOXIDANT AND ANTIMICROBIAL ACTIVITY OF FIVE MEDICINAL PLANTS WITH POTENTIAL ANTICANCER PROPERTIES

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The present study focuses on screening antioxidant and antimicrobial activity of 5 medicinal plants used in cancer related traditional therapies. The plant materials used for the study include leaf of *Annona muricata* Linn (katu anoda, Annonaceae; AL), *Flueggea leucopyrus* Willd (hin-katupila, Euphorbiaceae; FL), *Semecarpus nigroviridis* Thwaites (Badulla, Anacardiaceae; SL), *Ruellia tuberosa* Linn (Hin amukkara, Acanthaceae; RL), leaf and stem (aerial part) of *Cissus quadrangularis* Linn (hiressa, Vitaceae; CL) and the root of *Ruellia tuberosa* Linn (RR). Methanol extracts of plant parts, prepared by sonication were tested for antioxidant efficacy using 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging capacity and ferric reducing antioxidant power (FRAP) assay. Folin-Ciocalteau method was used to determine the total phenolic content (TPC). Antimicrobial activity of plant extracts was tested against 10 pathogenic microorganisms using the agar well diffusion assay and the agar dilution procedure. The bioactivity of the FL extract was monitored by the brine shrimp lethality assay.

DPPH radical scavenging capacity measured as EC_{50} value of the plant extracts, ranged between 11.1±0.0 and 179.7±2.7 mg/L. FL had the lowest EC_{50} value (11.1±0.0 mg/L) among the extracts and the standard, α-tocopherol (13.1±0.3 mg/L). FRAP value and TPC of plant extracts follow the order of FL>SL>AL>CL>RL>RR and FL>AL>SL>CL>RR>RL, respectively. The correlation between TPC with EC_{50} (DPPH assay) (r^2= 0.780) and FRAP value (r^2=0.912) were strong. FL extract displayed mean zone of inhibition of 17.3, 26.7 and 15.3 mm against *Staphylococcus aureus* (NCTC 6571), *Candida albicans* (ATCC 90028) and clinical isolates of methicillin resistant *Staphylococcus aureus* (MRSA), respectively. Other plant extracts failed to inhibit the growth of selected microorganisms at 5000 mg/L concentration level of the extract. FL extract exhibited the strongest Minimum inhibitory concentration (MIC) value against the standard culture of *S. aureus* (NCTC 6571) (MIC, 300 mg/L). SL extract also exhibited good antimicrobial activity (MIC, 2000 mg/L) against *S. aureus* (NCTC 6571). FL extract exhibited 1263.3±118.8 mg/L of LC_{50} value for brine shrimp lethality assay indicating less cytotoxicity.

In conclusion, *F. leucopyrus* exhibited the highest antioxidant and antimicrobial activity compared to other plants used in the study suggesting the suitability of *F. leucopyrus* for extended studies.