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A study of the bioactivity potential of leaf extract of *Cissampelos pareira* grown in Sri Lanka

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Natural products continue to serve as an important source of bioactive compounds with significant medicinal properties. *Cissampelos pareira* (Diyamiththa), a climbing plant belonging to the Menispermaceae family, has been traditionally used in Sri Lanka for the treatment of various ailments, including bladder stones, scabies, abscesses, ulcers, wounds, and chronic cystitis. In this study, *C. pareira* leaves were collected from the Western Province of Sri Lanka, methanolic leaf extract was obtained from dried leaves and, evaluated for antioxidant, cytotoxic, and phytotoxic properties using the DPPH (2,2-diphenyl-1-picrylhydrazyl) assay, FRAP (Ferric Reducing Antioxidant Power) assay, lettuce seed (*Lactuca sativa*) germination bioassay, and brine shrimp lethality assay. In the DPPH assay, *C. pareira* exhibited a moderate radical scavenging activity with an IC_{50} value of 28.45 ± 5.56 mg L^{-1}, which was lower than that of the positive control, ascorbic acid ($IC_{50} = 7.90 \pm 0.10$ mg L^{-1}). The FRAP assay revealed a relatively high reducing power (1215.91 ± 53.51 µmol $FeSO_4$ g^{-1} at 1000 mg L^{-1}), although this was still less than the Trolox standard (17679.67 ± 505.58 µmol $FeSO_4$ g^{-1}). In the phytotoxicity assay, the extract demonstrated growth-promoting effects, with negative inhibition percentages of -6.36 ± 1.01% for root growth and -16.98 ± 2.35% for shoot growth at 1000 mg L^{-1}. Seedlings treated with the extract showed increased average root and shoot lengths (1.50 ± 0.41 cm and 1.92 ± 0.27 cm, respectively) compared to the control group (1.41 ± 0.39 cm and 1.64 ± 0.22 cm). The brine shrimp lethality assay indicated low cytotoxicity, with an LC_{50} value of 196.47 ± 5.64 mg L^{-1}, substantially higher than the positive control, potassium dichromate ($LC_{50} = 7.97 \pm 0.97$ mg L^{-1}). Overall, the findings suggest that *Cissampelos pareira* possesses moderate antioxidant activity, low cytotoxicity, and plant growth-promoting effects. These results support its potential applications in both medicinal and agricultural fields and warrant further investigation into its bioactive constituents.

Keywords: *Antioxidant, phytotoxicity, cytotoxicity, bioactive*