PR02 - Assessment of antioxidant potential of Poruthumaan leaf extracts

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Introduction & Objectives

Poruthumaan is an underutilized medicinal plant growing in wild areas of Northern Province, Sri Lanka. It is traditionally consumed for relieving menstrual problems and arthritis. Despite its extensive ethnomedicinal use, its antioxidant potential remains underexplored.

Methodology

This study aimed to evaluate the antioxidant properties of Poruthumaan leaf extracts prepared using methanol (80% v/v), acetone (80% v/v), and water. Dried leaf powder–solvent mixture (1:10, w/v) was homogenized for 10 minutes and then shaken for 1 hour. The extracts were then separated and concentrated using rotary evaporation. The extracts were subjected to evaluation of total phenolic content (TPC), total flavonoid content (TFC), 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging activity, 2,2-azinobis(3-ethylbenzothiazoline-6-sulfonate) (ABTS) assay, and Ferric Reducing Antioxidant Power (FRAP). All experiments were conducted in triplicate, and the data were statistically analyzed using MINITAB software.

Results

The acetone extract had the highest TPC (498.6 ± 4.92 mg Gallic acid equivalent/g), followed by methanol (411.06 ± 2.01 mg Gallic acid equivalent/g) and water (176.12 ± 4.18 mg Gallic acid equivalent/g) extracts. A similar trend was observed for TFC, where the acetone extract showed the highest TFC (3.33 ± 0.37 mg Quercetin equivalent/g), followed by methanol (1.98 ± 0.16 mg Quercetin equivalent/g) and water (1.087 ± 0.087 mg Quercetin equivalent/g) extracts. Antioxidant assays demonstrated strong radical-scavenging and reducing capacities, with DPPH (IC_{50} = 43.90 µg/mL; standard IC_{50} = 37.53 µg/mL), ABTS (IC_{50} = 28.88 µg/mL; standard IC_{50} = 25.44 µg/mL), and FRAP (45.39 µg/mL; standard = 42.15 µg/mL), with no statistically significant differences ($p > 0.05$) between sample and standard.

Conclusion

The findings indicate significant antioxidant activity of Poruthumaan leaves, however, further research is needed to establish its potential health benefits.

Keywords: Antioxidant, Bioactive compounds, Extraction