In vitro analysis of antifungal properties of *Parthenium hysterophorus* extracts against *Rhizoctonia solani*

U.G.S.I. Vimalaveera [1,*]

[1] Department of Bio-science, University of Vavuniya, Sri Lanka.
[*] Corresponding author email: saduniiresha828@gmail.com

Abstract: Sheath blight is a disease caused by the infection of fungus *Rhizoctonia solani*, which seriously affects the rice cultivation in Sri Lanka. Application of fungicide to control the disease is high cost and not an environmentally friendly method. The present study was aimed at analysis of the antifungal properties of leaves and flowers of *Parthenium hysterophorus*. Leaves and flowers of *Parthenium hysterophorus* were subjected to different chemical test to detect the occurrence of phytochemicals including glycosides, tannins, saponins, proteins, carbohydrates, flavonoids, terpenoids, and phenol to confirm antimicrobial properties. Cold extraction method was followed for the extraction process using different solvent such as hexane, acetone and distilled water. Stock solutions prepared by adding 10 mL of solvents to the crude extracts (hexane, acetone, and distilled water) for antifungal assay. Antifungal assay was performed by a poisoned food technique method. All phytochemicals except terpenoids were present in *Parthenium hysterophorus* leaves. Glycosides, protein and carbohydrates were present in *Parthenium hysterophorus* flowers, which confirmed the antimicrobial properties of leaves. Acetone and distilled water extracts of leaves and flowers of *Parthenium hysterophorus* showed antifungal properties against *Rhizoctonia solani*. Hexane extracts of leaves and flowers of *Parthenium hysterophorus* failed to show antifungal properties against *Rhizoctonia solani*. The antifungal activity was high in the distilled water extract of Parthenium hysterophorus leaves with 67% of growth inhibition compared to other solvent extracts. The study confirmed the fungicidal properties of distilled water extract of *Parthenium hysterophorus* leaves against *Rhizoctonia solani*.

Keywords: Antifungal assay, Cold extraction, Phytochemicals, Sheath blight