

### **Bio Inhibitory Potential of *Clidemia hirta* and *Mikania micrantha* on Selected Postharvest Fungal Pathogens and Weed Seed Germination**

S.M.D.S. Gayathri<sup>1\*</sup>, N.C. Bandara<sup>2</sup>, N.S. Gama-Arachchige<sup>1</sup>, and J.W. Damunupola<sup>1</sup>

<sup>1</sup>*Department of Botany, Faculty of Science*

<sup>2</sup>*Postgraduate Institute of Science*

*University of Peradeniya, Peradeniya 20400, Sri Lanka*

*\*sadhanasmd@gmail.com*

Botanical biocides are a trending sustainable strategy for agricultural pest and disease management. This study was focused on the bio inhibitory ability of two noxious invasive plant species in Sri Lanka; *Mikania micrantha* and *Clidemia hirta*. Air-dried plant materials were extracted into 50% dichloromethane/methanol using the bottle extraction method. Antifungal activity of the two extracts was tested against four postharvest fungal pathogens: *Cladosporium cladosporioides*, *Colletotrichum musae*, *Fusarium sp.*, and *Aspergillus niger*. Disc diffusion method (2 mg of extract/disc) was used with negative (50% dichloromethane/methanol) and positive (Mancozeb<sup>®</sup> and Propineb) controls for screening the antifungal activity. The herbicidal potential of the two extracts at different concentrations (0, 250, 500, 1000, and 2000 ppm) was evaluated using seed germination assay against three common weeds; *Pennisetum polystachion*, *Tridax procumbens*, and *Ludwigia perennis*. *M. micrantha* extract (2 mg) showed antifungal activity against *C. musae* and *Fusarium sp.* while *A. niger* and *C. cladosporioides* were insensitive to both plant extracts. *C. hirta* extract was not effective against the selected fungal pathogens. All three test species were non-dormant with germination percentage >70%. Seed germination of *P. polystachion* and *T. procumbens* was reduced to <7% by 1000 ppm *C. hirta* extract. Two thousand ppm extract of *M. micrantha* significantly reduced seed germination of *T. procumbens* and *P. polystachion* to 23% and 6%, respectively. . Seed germination of *L. perennis* was not significantly affected by either extract. The early seedling growth of the three weed species was affected by all four concentrations of the two plant extracts. In-general, 1000 ppm extracts of *C. hirta* and *M. micrantha* were effective in significantly reducing shoot and root lengths of all three weed species. Hence, the plant extracts of *M. micrantha* and *C. hirta* can be used as a potential eco-friendly solution in controlling the tested fungal and weed species.

**Keywords:** Antifungal, Invasive plants, Postharvest fungal pathogens, Seed germination, Weeds