

## **Efficacy of *Tithonia diversifolia* leaf extracts to inhibit selected fungal pathogens of ornamental foliage plants**

**M.H.M.M.N. Mapa<sup>1\*</sup>, J.W. Damunupola<sup>1,2</sup> and A.C.A. Jayasundera<sup>2,3</sup>**

<sup>1</sup>Department of Botany, University of Peradeniya,, Sri Lanka, <sup>2</sup>Postgraduate Institute of Science, University of Peradeniya, Sri Lanka, <sup>3</sup>Department of Chemistry, University of Peradeniya, Sri Lanka

\*nisansala.mapa1@gmail.com

Ornamental foliage are used globally for various purposes and has an accelerating demand. However, they are highly susceptible to various pathogenic fungi, which reduce the quality. Growers use synthetic fungicides to overcome these problems, which have led to negative impacts on environment and human health. Consequently, demand for the natural fungicides is increasing and attempts have been taken to produce natural fungicides using various plant species. Though, invasive plants are considered to cause environmental damage, there is a potential to use these plants as natural fungicides due to the presence of bioactive compounds within them. *Tithonia diversifolia*, is an invasive alien plant species in Sri Lanka. The aim of this study was to find the efficacy of *Tithonia diversifolia* leaf extracts to inhibit selected fungal pathogens of ornamental foliage plants by identifying its bioactive compounds. Extractions were done using three types of solvents viz. methanol, dichloromethane and n-hexane and antifungal activity was tested against *Curvularia* sp. *Fusarium* sp. and *Alternaria* sp.; fungi causing leaf spot diseases in ornamental plants. Highest inhibition for *Curvularia* sp. and *Fusarium* sp. were obtained in n-hexane and methanolic leaf extracts respectively. Minimum inhibitory concentration for the *Curvularia* sp. in n-hexane was 0.0175 g/ml and minimum inhibitory concentration for *Fusarium* sp. in methanolic extract was less than 0.0175 g/ml. Leaf anatomical observations revealed three types of trichomes in leaves of *Tithonia diversifolia*. They were non glandular trichomes and two types of glandular trichomes known as capitate and non capitate type. Phytochemical constitution in these three extracts were done through preliminary tests and it reveals that chemical constitution of the three extracts are different from each other where methanolic and dichloromethane were capable in extracting more secondary metabolic compounds. Methanolic and dichloromethane were assayed for total phenolics and methanolic extract had the highest total phenolics content with a 4.4963 µg/ml. Therefore, it can be concluded that leaf extracts from *Tithonia diversifolia* have the potential to be used as a natural fungicide on disease causing fungi in ornamental foliage plants.