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¹Tong Woei Yenn, ¹Darah Ibrahim, and ²Latiffah Zakaria

¹Industrial Biotechnology Research Laboratory, School of Biological Sciences, Universiti Sains Malaysia, 11800 Minden, Penang, Malaysia.

²Plant Pathology Research Laboratory, School of Biological Sciences, Universiti Sains Malaysia, 11800 Minden, Penang, Malaysia.

Corresponding Author: woeiyenn@yahoo.com

Abstract

This study aimed to investigate the antimicrobial activity of the endophytic fungus *Phomopsis* sp. ED2, which was previously isolated from the flower of the medicinal plant *Orthosiphon stamineus* Benth, in Penang, Malaysia. The 14 days-old fungal cultures were extracted with different organic solvents, include hexane, dichloromethane, ethyl acetate and butanol. The antimicrobial activities of the extracts were tested by disc diffusion assay. Based on the results, most antimicrobial compounds were present in the ethyl acetate fraction, and this extract could significantly inhibit the activity of bacteria, yeasts and fungi. The results also indicate that the antimicrobial compounds were mainly associated with the fungal biomass and all the Gram-positive test bacteria were inhibited by the ethyl acetate extract of the fungal biomass. Notably, methicillin-resistant *Staphylococcus aureus* exhibited a high sensitivity to the extract, with a low minimal inhibitory concentration and low minimal lethal concentration. The isolate also effectively inhibited the growth of the dermatophytes *Microsporum gypseum* and *Trichophyton rubrum*. Preliminary phytochemical screening also demonstrated that the extract contains phenols and steroids which possess antimicrobial activity. These results reveal that the endophytic fungus *Phomopsis* sp. is potential source of novel chemotherapeutic agents.

Keywords: Antimicrobial activity, endophytes, *Phomopsis* sp., *Orthosiphon stamineus*.