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# IDENTIFICATION OF *PELARGONIUM SIDOIDES* ROOT-ASSOCIATED MICROBES AND THEIR POTENTIAL FOR ANTIFUNGAL LIPOPEPTIDE PRODUCTION

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**E**merging and persistent fungal pathogens increasingly threaten human health, agriculture and natural biodiversity on a global scale. It has been suggested that this is due to a gradual loss in drug efficacy as microbes adapt to evade familiar antifungal treatments. In addition to this, slow antifungal drug development has led to developed antifungal drug resistance in a range of fungal pathogens. For this reason, medicinal plants and plant-associated microorganisms are being investigated as sources of novel antifungal compounds. Antifungal peptides (AFPs), for example are rapid acting, biodegradable microbiocides. This study evaluates potential AFP production in microbial isolates associated with *Pelargonium sidoides*. Crude extracts of bacterial and fungal isolates were cultured using a variety of different growth conditions and tested against a panel of medicinally and agriculturally important fungal pathogens. Extracts were also tested for haemolytic activity, biofilm eradication capabilities and analysed by LC-MS to detect known antifungal peptides. Molecular techniques were used to identify microbial isolates using multiple gene regions (16S, Gyr B, Rec A, Atp D, ITS and  $\beta$ -tubulin). Some microbial isolates produced a crude extract with fungistatic activity. The crude extracts inhibited the growth of fungal pathogens *Cryptococcus neoformans*, *Candida albicans*, *Botrytis cinerea* and *Fusarium oxysporum* when grown on solid media. Microbial isolates identified were *Bacillus*, *Pseudomonas* and two *Penicillium* species. Surfactins and fengycins A and B were detected in one very potent *Bacillus* extract called YC2. These compounds are known lipopeptides and with further optimisation could be implemented agrochemical applications and perhaps future medicinal drugs.

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