

Antioxidant and antimicrobial activity of flower and leaf extracts of *Calotropis gigantea*

P. K. R. S. Kumari and E. M. R. K. B. Edirisinghe*

Department of Chemical Sciences, Faculty of Applied Sciences, Rajarata University of Sri Lanka, Mihinthale, Sri Lanka.

*Corresponding author: ranjith_e@hotmail.com

Calotropis gigantea is latex bearing medicinal plant belonging to the family Apocynaceae. Two forms of *C. gigantea*; white-flowered form and purple-flowered form can be found native to Sri Lanka. The objectives of the current study were to investigate the antioxidant activity and antimicrobial activity of methanolic extracts of the leaves and flowers of both white-flowered and purple-flowered forms of *C. gigantea*. The antioxidant assay was carried out by DPPH free radical scavenging method. The antimicrobial assay was determined by an antimicrobial susceptibility test against E-coli, *Staphylococcus aureus*, and *Candida albicans*. The flower extracts possessed significant antioxidant activity (Inhibition percentage is

90.58 ± 0.57) compared with the positive control Ascorbic acid (Inhibition percentage is 97.47 ± 0.08). While the purple-flowered form showed a lower IC_{50} value (820.20 ppm) than the white-flowered form (875.13 ppm). *C. gigantea* showed a significantly higher zone of inhibition against *Candida albicans* (14.76 ± 0.72 mm) followed by E-coli (14.01 ± 0.50 mm) and *Staphylococcus aureus* (13.24 ± 0.75 mm). The findings of the study suggest that the *C. gigantea* is an important medicinal plant which should be further investigated for its antioxidant and antimicrobial potential.

Keywords:

Calotropis gigantea, Antioxidant, Antimicrobial

Development and validation of a multi residue method for analysis of pesticide residues in fruits and vegetables with liquid chromatography tandem mass spectroscopic (LC-MS/MS) detection

M. S. R. Anthony¹, W. V. D. S. Poornima¹, G. V. V. Liyanaarachchi^{2*} and M. N. A. Mubarak²

¹ College of Chemical Sciences, Institute of Chemistry Ceylon, Rajagiriya 10107, Sri Lanka.

² Industrial Technology Institute, 363, Bauddhaloka Mawatha, Colombo 7, Sri Lanka.

*Corresponding author: vimarshi@iti.lk

Fruit and vegetables are an important part of the diet of humans, and pesticides are used to control pests and weeds in agriculture. Since pesticide contamination in commodities which are used for human consumption above the tolerance limit can lead to serious health problems, it is crucial to understand the extent of contamination in fruit and vegetables. During this study, three commodities were taken to validate a method for multi-residue analysis: cucumber, lime, and mixed fruit jam, which belong to three categories such as those with high water content, high acid content with high-water content, and high sugar content with low water content, respectively for the residues of 6 pesticides. A modified quick, easy, efficient, cheap, rugged, and safe

(QuEChERS) method was used for the preparation of samples followed by LC-MS/MS technique in electron spray ionization (ESI) mode with positive polarity for the analysis. Multiple-reaction monitoring (MRM), which measures the qualifier to quantifier mass fragment ratios, was utilized to verify the specificity for each pesticide using MS/MS detection. The accuracies were assured through percentage recoveries until the laboratory participates in the proficiency testing program. The regression analysis has shown coefficient values greater than 0.995 obtained with six calibration levels tested to achieve acceptable linearities. The pesticides, toltenpyrad, difenoconazole, hexythiazox, bitertanol, propargite, and flufenoxuron have shown recoveries between 70% and