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Bioactivity of compounds from Diploclisia glaucescens

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Background: *Diploclisia glaucescens* ("Ata thiththa wel") belongs to the family Menispermaceae, is a creeper which grows in the mid-country regions of South India and Sri Lanka. The leaves have been used in the treatment of biliousness and venereal diseases.

Objectives: To study the chemistry and bioactivity of secondary metabolites isolated from the stem of *D. glaucescens*.

Methods: 50g of Methanol extract of dry mature stem of *D. glaucescens* was chromatographed over silica gel (*n*-hexane-EtOAc-MeOH) followed by HPLC. All the isolates were screened for antioxidant activity using DPPH, antifungal activity against *Cladosporium cladosporioides*, phytotoxicity (lettuce seed germination assay), brine shrimp toxicity (*Artemia salina*) and enzyme inhibitory assays on α -amylase, α -glucosidase, acetylcholinesterase and lipase.

Results: The methanol extract furnished six compounds 3-deoxy-1 β -20-hydroxyecdysone (1), abutasterone (2), 20-hydroxyecdysone (3), makisterone (4), diploclisin (5), 20-hydroxyecdysone 2,3,22-triacetate (6). Compounds 1, 2 and 3 showed moderate brine shrimp lethality at 98.69 ppm, 46.39 ppm and 54.94 ppm, respectively. Strong antioxidant activity was observed for compounds 1 and 6 against DPPH at 30.18 ppm and 0.12 ppm, respectively. Compound 3 showed shoot inhibition of lettuce seedlings at 135.65 ppm while compound 2 showed root inhibition of lettuce seedlings at 330.29 ppm. Moderate α -glucosidase inhibitory activity was observed for compounds 3 at 16.19 ppm and 6 at 9.69 ppm. None of the compounds exhibited α -amylase, lipase and acetylcholinesterase inhibitory activities and antifungal activity against *C. cladosporioedes*.

Conclusion: *Diploclisia glaucescens* can be considered as a potential source for the isolation of new therapeutic agents.

Keywords: Antioxidant, Brine shrimp lethality, Diploclisia glaucescens, Enzyme inhibitory activities



Bioactivity of aerial parts of Mussaenda frondosa

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Background: Natural products are metabolic compounds which are produced by living organisms such as plants, or micro-organisms which possess vast diversity and involve in vital biochemical pathways, help to continue life on the earth. *Mussaenda frondosa* ("Mussanda") is a tropical shrub belonging to family Rubiaceae and distributed in South Asia. It is commonly used in traditional medicinal practices such as for treatment of asthma, ulcers, leprosy, diuretic, wounds, swells and eye infections.

Objectives: To determine the bioactivity of *M. frondosa*.

Methods: Samples were collected from Central Province Sri Lanka. Aerial parts of *M. frondosa* (15g) were air dried and powdered using grinder and then sequentially extracted into ethylacetate (EtOAc) and methanol (MeOH) using sonicator. Crude extracts were screened for antioxidant activity using DPPH radical scavenging method, antifungal activity against *Cladosporium cladosporioides*, phytotoxicity by lettuce seed germination assay, brine shrimp toxicity against *Artemia salina*, and enzyme inhibitory assays for α -amylase, α -glucosidase, acetylcholinesterase and lipase.

Results: After solvent evaporation it resulted 0.57g of EtOAc and 1.33g of MeOH extracts. Both EtOAc and MeOH extracts showed moderate brine shrimp lethality with IC₅₀ 6.0 ppm and 17.0 ppm respectively. Strong antioxidant activity was observed for EtOAc extract against DPPH radical with IC₅₀ 0.58 ppm and MeOH extract at 0.67 ppm. Strong α -glucosidase inhibition was observed for both EtOAc and MeOH crude extract with IC₅₀ 0.56 ppm and 1.88 ppm respectively. None of above crude extracts exhibited antifungal property against *C.cladosporioides* and phytotoxicity against lettuce seed germination assay. Both EtOAc and MeOH extracts did not exhibit α -amylase, lipase and acetylcholinesterase inhibitory activity.

Conclusion: *Mussaenda frondosa* can be considered as a potential source for isolation of new therapeutic agents especially for cancer and diabetes mellitus.

Keywords: Antioxidant activity, Bioassay, a-glucosidase, Mussaenda frondosa