Investigation and Identification of Anti-diabetic Activity of Selected Medicinal Plants that Used in Folk Medicine in Sri Lanka

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Diabetes Mellitus (DM) is one of the major non communicable disease encountered by the global community. Even though there are many medicines prescribed for DM, a permanent cure has not been discovered yet. Long term intake of such medicines may cause many side effects. Therefore, the patients are now more concerned of using herbal alternatives to control DM. There are number of medicinal plants that used to treat/control DM in Sri Lanka but most of them are underutilized. This piece of study was conducted to investigate the scientific background of utilizing some selected plants namely Kowakka (*Coccinia grandis*), Malla (*Olax zeylanica*), Bakmee (*Nauclea orientalis*), Thebu (*Costus specious*), Madan (*Syzygium cumini*) Udahalu (*Passiflora foetida*) and Masbedda (*Gymnema sylvestre*) to control/prevent DM in Sri Lankan folk medicine. Hot water extracts were prepared brewing 4g of dried leaf powder of each plant in 100 ml of hot water. Extracts were subjected to α-glucosidase inhibition assay to evaluate their hypoglycemic potential. Antioxidant activity of extracts was measured using DPPH radical scavenging assay and TPC of each extract was determined by Folin & Ciocaiteu's method. Extracts were further subjected to β-glucourinidase inhibitory assay to evaluate the alleviating potential of drug induced liver toxicity.Among the seven types of hot water extracts, the highest activity for α-glucosidase inhibitory assay was detected in *Syzygium cumini, Nauclea orientalis*, and *Olax zeylanica* water extracts respectively. For the β-glucourinidase inhibitory assay highest activity observed in *Gymnema sylvestre* leaf extract. Syzygium cumini showed the highest total phenolic content and the highest DPPH free radical scavenging activity. In view of that *Syzygium cumini*, *Nauclea orientalis*, and *Olax zeylanica*leaves exhibit potential activity towards DM. However further investigations such as isolation of active compounds, *in-vivo* tests, and molecular modelling of active compounds, are planning to continue as further studies.

Keywords: *Diabetes Mellitus, Water Extract, Anti-Diabetic Activity*