

Screening of antidiabetic and antioxidant activity of edible greens

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Diabetes mellitus is a group of metabolic disorder characterized by hyperglycemia resulting from defects in insulin secretion, insulin action, or both. The diabetic population is on the rise and is predicted to increase up to the 300 million by the year 2025. Inhibiting the activity of alpha amylase enzyme which is responsible for the breakdown of starch to more simple sugars is one effective method to control diabetes. At present inhibitor drugs used have reported to cause many side effects. Hence searching for new drugs with antidiabetic activity and reduced diabetic complications such as oxidative stress is very important.

In this study we screened greens which are uncommon in the urban areas along with four commonly used greens: viz. *Ipomoea aquatic* (Kankung) *Centella asiatica* (Gotukola) *Murraya koenigii* (Karapincha) and *Alternanthera sessilis* (Mukunuwenna) for their antioxidant and anti-diabetic activity.

Nine of the total leaf extracts were assayed using 3-5, dinitro salicylic acid method for α -amylase inhibitory activity and the leaf extract of *Oxalys zeylanica* (Maella) showed an IC₅₀ of 120.22 ± 2.03 µg/mL. All fifteen extracts showed antioxidant activity as evaluated by the DPPH scavenging activity. The extract of *Cotus speciosus* (Thebu) showed an IC₅₀ of 4.63 ± 0.13 µg/mL with 6 plant extracts exhibiting IC₅₀ below 50 µg/ml. The total phenolic content (TPC) measured using Folin-ciocalteu reagent was highest in *Murraya koenigii* (Karapincha) with 137.39 ± 1.35 Gallic acid equivalents (mg) per gram of extract. No direct correlation was observed between the TPC and the DPPH scavenging activity. The reducing power was evident in all fifteen extracts and the best was in the extract of *Murraya koenigii* (Karapincha). Our results show that the greens used in the sub-burn areas have comparatively better antioxidant and antidiabetic activity in comparison to the commonly used greens. Our results show that these leafy extracts could be used to reduce oxidative stress and also show antidiabetic activity.