

Screening of Alpha Amylase Inhibitory Activity and Antioxidant Activity of Selected Sri Lankan Medicinal Plants

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Diabetes mellitus (DM) is one of the global health emergencies that characterized by high blood glucose levels. Adding antioxidants to the therapy of DM is intended to reduce complications caused by oxidative stress. In the treatment of diabetes, alpha-amylase inhibitory activity and antioxidant activity are playing a significant role. The medicinal plants grown in Sri Lanka have been proven to retard the absorption of glucose by inhibiting the carbohydrate hydrolyzing enzymes, such as pancreatic amylase. Thus, this study was conducted to investigate alpha amylase inhibitory activity and antioxidant activity of *Vernonia zeylanica* (Pupula), *Leucas zeylanica* (Gatathumba), *Trichosanthes integrifolia* (Dummella) and *Crateva adansonii* (Lunuwarana). Aerial parts of the selected plants were air dried and extracts were obtained using 80% acetone with 20% water. The alpha amylase inhibitory activity was performed using 3,5-dinitrosalicylic acid (DNSA) method and starch iodine method and the antioxidant activity was measured using 2,2-diphenyl-1-picrylhydrazyl radical DPPH assay and ABTS radical cation scavenging assay. In DNSA assay, *Vernonia zeylanica* extraction showed the highest significant mean inhibition (29.8 %, $p < 0.05$) at 1000 mg l⁻¹ concentration. Out of all plant extracts, the highest significant mean inhibition (51.25 %, $p < 0.05$) for the starch iodine assay was shown by *Crateva adansonii* at 1000 mg l⁻¹ concentration. Extracts from *Vernonia zeylanica* showed the lowest IC₅₀ value (less than 10 mg l⁻¹) for the DPPH assay of the antioxidant activity compared with the IC₅₀ value of the standard (ascorbic acid, 7.24 mg l⁻¹). The best IC₅₀ was observed from *Leucas zeylanica* for the ABTS assay with the value of 100.7 mg l⁻¹ with respect to ascorbic acid (4.75 mg l⁻¹). It was identified that out of all selected plants, *Vernonia zeylanica* possess both alpha amylase inhibitory activity and antioxidant activity.

Keywords: Alpha amylase inhibitory activity, Antioxidant activity, Medicinal plants