

In Vitro Screening of Anti-Diabetic Properties of Commonly used Ayurvedic Plants in Sri Lanka

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Diabetes mellitus (DM) has become a pandemic worldwide affecting more than 8 % of the adult population. Due to the negative side effects of insulin and synthetic anti-diabetic agents, the interest in the use of medicinal plants for the treatment of DM has increased. The present study was undertaken to assess the anti-diabetic activity of water extracts of ten commonly used Sri Lankan Ayurvedic plants in vitro; Nelli (*Phyllanthus emblica*), Ranawara (*Cassia auriculata*), Belimal (*Aegle marmelos*), Beligeta (*Aegle marmelos*), Iramusu (*Hemidesmus indicus*), Walkottamalli (*Scopariadulcis*), Rasakinda (*Tinosporacordifolia*), Polpala (*Aervalanata*), Babila (*Sidarhombifolia*) and Venivel (*Cosciniumfenestratum*). Alpha amylase and α -glucosidase enzyme inhibitory activities of the extracts were determined using the glucose oxidase (GOD) and the p-nitrophenyl glucopyranoside (pNPG) methods respectively. All experiments were carried out in triplicates and results were analysed using the SAS version 9.1 statistical software. CRD model was used to evaluate the differences in anti-diabetic properties. According to the results, α -amylase and α -glucosidase enzyme inhibitory activities of plant extracts varied from 0.04 ± 0.005 - 9.75 ± 0.53 mg/mL and 0.31 ± 0.0057 - 20.71 ± 0.50 mg/mL respectively. Nelli extract showed the highest α -amylase and α -glucosidase inhibitory activity while the least α -amylase activity was observed in Babila extract. Water extract of Nelli, Iramusu, Ranawara and Walkottamalli showed strong inhibitory effects against α -glucosidase while other extracts did not show any significant activity ($P \leq 0.05$). Nelli extract had promising anti-diabetic activity among selected plants and could have a potential in treating type 2 DM with minimum side effects.

Keywords: Medicinal plants, Diabetes mellitus, Anti-diabetic activity