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Invitro determination of alpha amylase inhibitory activity of two selected medicinal plants extracts

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Background: Pancreatic α-amylase inhibitors offer an effective strategy to reduce post-prandial hyperglycemia in the management of diabetes mellitus. In this study, two medicinal plants; *Trianthema decandra* and *Thespesia populnea* were subjected to determine the α-amylase inhibitory activity. Though the alpha amylase activity of these above-mentioned plants has been investigated in different countries, the level of alpha amylase activity presence in these plants has not been investigated so far in Sri Lanka.

Objective: To determine the *in vitro* alpha amylase inhibitory activity of *T.decandra* and *T.populnea* leaves extracts using porcine pancreatic α- amylase enzyme.

Methods & Materials: The leaves of *T.decandra* and *T.populnea* were collected from Jaffna, dried under shade, ground to a powder. The extractions were prepared by maceration with methanol, acetone and petroleum ether. Subsequently, α-amylase inhibitory assay was performed separately on the leaf extracts of *T. decandra* and *T. populnea* by employing acarbose as the standard compound. The IC_{50} values for the extracts were calculated from the respective assay. The statistical significance was evaluated by the analysis of variance (ANOVA) followed by Tukey's test.

Results: The IC_{50} values of leaf of methanol, acetone, petroleum ether extracts were 44.34±2.3 µg/ml, 346.6±4.5 µg/ml, 674.9±2.7µg/ml. Methanol, acetone and petroleum ether leaf extracts of *T. decandra* showed IC_{50} values of 175.93±4.04 µg/ml, 447.6±1.3 µg/ml, and 1020.3±3.2 µg/ml. The methanol extract of *T. populnea* showed significantly α-amylase inhibition comparable to the acarbose (IC_{50} = 83.85±2.64 µg/ml) ($p>0.05$). None of the petroleum ether extracts showed alpha amylase inhibitory activity.

Conclusion: The findings revealed that methanolic extract of *T.populnea* leaf extract exhibited α – amylase inhibitory activity which could be used for further screening of specific bioactive compounds that might responsible for their α amylase inhibitory activity.