

**COMPARISON OF ANTI-DIABETIC, ANTI-OBESITY ACTIVITIES AND
TOTAL ALKALOID CONTENT OF *Murraya koenigii* LEAVES
FROM THREE CLIMATIC ZONES IN SRI LANKA**

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Murraya koenigii (curry leaves) is widely used in curry preparations and known to possess various medicinal properties. The chemical profile of a plant could be changed due to geographical variations. The phytochemical and bioactivity variations of curry leaves with respect to the geographical zone have not been studied extensively. Hence, this study aimed to compare the phytochemical and bioactivity differences of curry leaves collected from three agro-climatic zones (dry, wet, and intermediate) in Sri Lanka. Nine extracts were prepared using leaves of *M. koenigii* collected from three different zones by sequential extraction with n-hexane, ethyl acetate, and methanol. Anti-diabetic and anti-obesity activities were determined using the α -amylase inhibition assay and pancreatic lipase inhibition assay, respectively. In addition, the total alkaloid content (TAC) was determined using the bromocresol green (BCG) reagent method [piperine equivalent (PE)]. The highest pancreatic lipase inhibition activity was observed for the ethyl acetate extract of the intermediate zone sample (IC₅₀ = 27.05 ppm), while the highest alpha-amylase inhibition activity was resulted for the hexane extract of the wet zone sample (IC₅₀ = 156.36 ppm). The highest alkaloid content was given by methanol extract of the wet zone (21.83 mg PE/g). There is no significant difference ($p > 0.05$) in TAC between methanol extracts of different geographical zones. However, the Pearson Correlation Coefficient data showed that there is a positive correlation between alpha-amylase inhibition activity and TAC for hexane ($r = 0.897$, $p < 0.05$) and ethyl acetate ($r = 0.884$, $p < 0.05$) extracts. These data indicate that the alkaloids may significantly affect the amylase inhibition activity. In contrast, no significant correlation was found between lipase inhibition and TAC, nor for the bioactivities of methanol extracts. It can be concluded that the TAC in curry leaf extracts varies according to the geographical zone, which may be a reason for the differences in bioactivities observed in curry leaf samples collected from different environmental regions.

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