

In Vitro Inhibitory Potentials of Alpha Amylase and Alpha Glucosidase in *Tricosanthes Dioica*, *Moringa Oleifera* And *Averrhoa Carambola*

Jayawardena Bimali, Ranasinghe Meenakshi,

In recent times type 2 diabetes has become one of the major public health concern in both developing and developed countries. It is defined as an endocrine and metabolic disease defined by elevated blood glucose level (hyperglycemia). Current studies based on medicinal plants have revealed that phenolic and flavonoids compounds present in plants can inhibit key enzymes such as alpha glucosidase and alpha amylase and offer an effective strategy to control post prandial hyperglycaemia. Therefore the purpose of this study was to determine the inhibitory potential of alpha glucosidase and alpha amylase by *Tricosanthes dioica* (Padwal), *Moringaoleifera* (Murunga) and *Averrhoacarambola* (Kamaranga).

Leaves of Padwal, Murunga and fruits of Kamaranga were sliced, dried, powdered and refluxed with 75% ethanol and fractionated with ethyl acetate. 75% ethanol extract, ethyl acetate extract and aqueous layers were obtained. Each layer was tested for the total phenolic content and percentage reducing activity. IC₅₀ values of alpha amylase and alpha glucosidase inhibitions by the extracts were determined using several biochemical assays.

Among the three plants *T. dioica* 75% ethanol extract had the highest amount of phenolic content (50.88±4.90 mg/g) and the highest reducing power was in *A. carambola* 75% ethanol extract (710.91±15.62). The most plant extracts showed higher reducing power compared with standard BHT (317.27±19.10). In the determination of IC₅₀ values for alpha amylase, ethyl acetate layer of *A. carambola* (57.36 ± 16.51 µg/g) showed the lowest value and the highest IC₅₀ value was in *T. dioica aqueous layer* (1225.84±59.57 µg/g). The lowest IC₅₀ value for alpha glucosidase was observed in *M. oleifera* (279.84±35.51 ng/g) aqueous layer and the highest value was in the ethyl acetate extract of *T. dioica* (9.08×10⁵±1.11×10⁴ ng/g).

In the present study the selected plant materials had high phenolic contents and percentage reducing power. *A. carambola* ethyl acetate extract is most effective inhibitor for amylase and *M. oleifera* aqueous layer is effectual inhibitor for glucosidase in vitro among the three plants.

Key words: glucosidase, amylase, inhibitors