PP 83

Evaluation of total polyphenol, total flavonoid content and alpha amylase inhibitory activity of three selected medicinal plant extracts

De Silva WND[1*], Attanayake AP[1], Arawwawala LDAM[2], Karunaratne DN[3], Pamunuwa KMGK[4]

[1]Department of Biochemistry, Faculty of Medicine, University of Ruhuna, Sri Lanka, [2]Industrial Technology Institution, Sri Lanka, [3]Department of Chemistry, Faculty of Science, University of Peradeniya, Sri Lanka, [4]Department of Horticulture and Landscape Gardening, Faculty of Agriculture and Plantation Management, Wayamba University of Sri Lanka, Sri Lanka.

Background: Nanoencapsulated herbal extracts have gained significant interest in the management of diabetes mellitus. Determination of polyphenol, flavonoid contents, and alpha amylase inhibition activity is a substantial approach to screen herbal extracts and to develop commercially viable nanoencapsulated herbal formulations. The selection of plants was based on previously proven antidiabetic activity in literature and the novelty of development of nanoencapsuled nutraceutcials.

Objective: To determine the Total Polyphenol Content (TPC), Total Flavonoid Content (TFC) and α-amylase inhibition potential in *Coccinia grandis* L. (Ivy Gourd, Family: Cucurbitaceae), *Aegle marmelos* L. (Bael, Family: Rutaceae) and *Catharanthus roseus* L. (Madagascar periwinkle, Family: Apocynaceae) extracts with an aim of selecting herbal extracts to develop nanoformulations with potent α-amylase inhibitory activity.

Method: Dried leaves of *C. grandis*, *C. roseus* and dried fruit of *A. marmelos* were extracted with aqueous (0.06 mg/mL), 95% ethanol (0.03 mg/mL), 50% ethanol (0.03 mg/mL) and 50% acetone (0.03 mg/mL) using ultrasonication method (40 °C, 30 min, 40 kHz). The TPC and TFC were determined using Folin Ciocalteu method and aluminum chloride method respectively. The results of TPC and TFC were expressed as Gallic Acid Equivalents (GAE) and Quercertin Equivalents (QE) respectively. The inhibitory potential in α-amylase inhibition is expressed in terms of IC_{50}. Acarbose was used as the reference compound.

Results: The highest TPC was obtained with 50% ethanol extract of *A. marmelos* (23.25±0.33 mg GAE/g) and the highest TFC was obtained with 95% ethanol extract of *C. roseus* (38.89±0.22 mg QE/g). Aqueous extract of *C. grandis* obtained the lowest value of both TPC (1.51±0.01 mg GAE/g) and TFC (0.46±0.03 QE/g). The 50% ethanol extract of *C. grandis* gained the highest α-amylase inhibitory activity with an IC_{50} value of 3.58±1.16 mg/mL.

Conclusion: The ethanol extracts had high TPC and TFC. The 95% and 50% ethanol extracts of selected medicinal plants were selected for the development of nanoformulations based on comparatively high TPC, TFCs and high α-amylase inhibitory activity.

Acknowledgement: AHEAD DOR -15 for financial assistance.