Antiglycation Properties of Aqueous Extracts from Selected Plant Species: An *In vitro* Study

Senevirathne N.H.M.V.N., Mendis B.E.P., Rajapakse R.P.N.P., Perera H.K.I.[1*] and Weerapperuma T.M.K.B.B.
Department of Food Science and Technology,
Faculty of Agriculture, University of Peradeniya, Peradeniya, Sri Lanka

Glycation is a non-enzymatic reaction occurring in human body which leads to occurrence of various non-communicable diseases. In a person with chronic hyperglycemia, glycation occurs at higher rates resulting in chronic diabetic complications. With the objective of identifying potentially safe natural sources with glycation inhibition properties, lemongrass (*Cymbopogon citratus*) whole plant, turmeric (*Curcuma longa*) rhizome, Ceylon cinnamon (*Cinnamomum zeylanicum*) bark, piperine 95, a pure extract from *Piper nigrum* and ginger (*Zingiber Officinale*) rhizome were studied. The plant material for the study was collected through the Department of Export Agriculture. Dried and powdered samples were extracted three times with distilled water using ultra-sonic assisted extraction method. Aqueous extracts were first concentrated through rotary evaporation at 50 ºC and then freeze-dried. Freeze dried samples were re-dissolved in distilled water to obtain the test samples in a concentration series of 200 mg/mL–0.625 mg/mL. Chicken egg lysozyme was incubated with fructose in a phosphate buffer (pH 7.4) at 37 ºC for 30 days in the presence and absence (negative control) of prepared plant extracts. Aminoguanidine was used as standard glycation inhibitor in positive control and blank samples included only plant extracts incubated in lysozyme. Aliquots of samples were obtained on day 7 and 21 of incubation and analyzed along with molecular weight markers (MW) using sodium dodecyl-sulfate polyacrylamide gel electrophoresis (SDS-PAGE) to identify the inhibition effect against glycation induced cross linking of proteins. On day 7 compared to negative and the positive control, *C. zeylanicum* indicated the highest antiglycation activity resulting in a complete glycation inhibition at a concentration of 0.1 mg/mL. On day 21 both *C. citratus* and *C. zeylanicum* showed complete inhibition of cross-linking at 0.5 mg/mL concentration which was the highest inhibition activity. On both days *C. domestica* indicated the lowest antiglycation activity. In conclusion, among the studied plant extracts *C. citratus* and *C. zeylanicum* indicated the highest *In vitro* antiglycation activity.

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[1]Department of Biochemistry, Faculty of Medicine, University of Peradeniya, Sri Lanka
[*]kumuduperera10@gmail.com