Anti-glycation and Cross-linking Inhibitory Effects of *Curcuma longa*, *Jasminum officinale*, *Persia americana* and *Vernonia cineria*

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Non-enzymatic glycation occurs as a consequence of uncontrolled diabetes resulting in the formation of advanced glycation end-products (AGEs) which are key mediators of diabetes induced chronic complications like nephropathy. Intermolecular cross-linking is instigated by some AGEs affecting the structure and function of biomolecules such as Collagen. The objective of this study was to investigate the inhibitory effects of *Curcuma longa* (CL), *Jasminum officinale* (JO), *Persia americana* (PA) and *Vernonia cineria* (VC) extracts on glycation and glycation induced cross-linking. Methanol extracts of the plants were used. Bovine serum albumin (BSA) and lysozyme were incubated along with 0.5 M fructose for 4 weeks at 37 °C and pH 7.4, in the presence or absence of extracts (0.05 – 0.5 mg/mL). The standard inhibitor used was Aminoguanidine (1 mg/mL) along with appropriate controls. Aliquots form BSA and lysozyme were analyzed using native polyacrylamide gel electrophoresis and sodium dodecyl polyacrylamide gel electrophoresis respectively. Nitroblue tetrazolium assay was done to compare the effect of extracts on fructosamine formation. Glycated BSA showed a comparable increase in the migration towards the anode. High molecular weight bands were visible depending on the extent of lysozyme cross-linking. VC, JO and CL showed inhibitory effects on glycation and glycation induced protein cross-linking at all the concentrations used from 0.05 to 0.5 mg/mL and reduced percentage fructosamine, while PA did not show any effects. In conclusion, VC, JO and CL showed *in vitro* inhibitory effects on glycation and glycation induced protein cross-linking, indicating the value of further *in vivo* studies.

Keywords: Glycation, AGEs, Cross-links