

Effects of *Mimosa pudica* on Glycation Induced Protein Cross-Linking and Cell Viability

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Protein glycation is closely associated with hyperglycaemia and is a primary cause for many of the chronic diabetic complications. Advanced glycation end-products (AGEs) produced as a result of glycation, cause cross-linking in long-lived proteins such as collagen. Objectives of this study were to evaluate heat stability and effects of methanol extracts of *Mimosa pudica* whole plant (MP) on glycation-induced protein cross-linking and on viability of normal cells. Lysozyme was incubated with 500 mM fructose in the presence of heated or non-heated extracts (12.5 to 100 µg/mL) for 3 weeks at 37°C. Aminoguanidine was used as the positive control. Reaction mixture without extracts was used as the negative control. Aliquots collected at 7 and 21 days of incubation were assessed for the extent of protein cross-linking using sodium dodecyl sulphate polyacrylamide gel electrophoresis. Cytotoxic effects of extracts (12.5 to 500 µg/mL) were assessed on L929 mouse fibroblasts using 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay. A dose-dependent inhibition was observed by the appearance of high molecular protein bands when tested at day 7 and 21 with MP. Almost complete inhibition of high molecular band formation was revealed with 50 µg/mL at 7 days and with 100 µg/mL at 21 days. Experiment was performed at a stronger glycating environment than what is expected in uncontrolled diabetes (500 mM fructose instead of ~10 mM glucose). Extent of the high molecular weight products formed in the presence of both heated and non-heated extracts were similar, demonstrating the heat stability of constituents. This is important as decoctions are often prepared with medicinal plants in traditional remedies. Cytotoxic effects were not detected up to 62.5 µg/mL. In conclusion, MP showed a dose-dependent inhibition on glycation-induced protein cross-linking under strong glycating conditions. Inhibitory effects were heat stable. Cell viability was not affected at lower concentrations of MP.

Keywords: *Mimosa pudica*, Glycation, Cross-linking, Cytotoxicity

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