

Feasibility of Phenolic Acids Rich Fraction from *Gynura procumbens* as Potential Antihyperlipidemic Agent

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Abstract : *Gynura procumbens* is a popular medicinal plant used as a folk medicine in Southeast Asia to treat kidney diseases, diabetes mellitus and hyperlipidemia. The present study aims to investigate the antihyperlipidemic potential of phenolic acids rich fraction (PARF) from *G. procumbens* in chemically-induced acute and high fat diet-induced chronic hyperlipidemic rats. Ethanolic extract of *G. procumbens* leaves exhibited significant reductions in total cholesterol (TC) and triglycerides (TG) levels ($P < 0.01$ and $P < 0.001$, respectively) of poloxamer 407-induced rats compared to hyperlipidemic control after 58 h of treatment. Upon bioactivity guided fractionation the antihyperlipidemic activity was found to be concentrated in the PARF, which significantly reduced the TC and TG levels ($P < 0.001$). HPLC analysis revealed that 3,5-dicaffeoylquinic acid; 4,5-dicaffeoylquinic acid and chlorogenic acid are the major compounds in the PARF. Likewise, chlorogenic acid (60 mg/kg) exhibited significant reductions in TC and TG levels of hyperlipidemic rats ($P < 0.001$). Both chlorogenic acid and PARF significantly reduced LDL, VLDL and atherogenic index ($P < 0.01$), while PARF increased the HDL ($P < 0.01$) compared to hyperlipidemic control. Both were found to be not cytotoxic against normal and cancer cell lines. In addition, LD50 of orally administered PARF was more than 5,000 mg/kg. Further investigation in high fat diet-induced chronic hyperlipidemic rats revealed that chronic administration of PARF dose-dependently restored the increase in lipids parameters. In summary, the phenolic acids rich fraction of *G. procumbens* leaves showed promising antihyperlipidemic effect in both chemically- and diet-induced hyperlipidemic rats that warrants further elucidation on its mechanisms of action.

Keywords : Antihyperlipidemic, *Gynura procumbens*, phenolic acids, chlorogenic acid, poloxamer-407, high fat diet

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