Potential effects of some medicinal plant extracts on atherogenic dyslipidaemia and oxidative stress in alloxan induced diabetic rats

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Potential effects of some medicinal plant extracts on atherogenic dyslipidemia and oxidative stress in alloxan induced diabetic rats

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OBJECTIVE To determine and compare the effect of refluxed aqueous extracts of *Gmelina arborea* Roxb (Family: Verbenaceae), *Spondias pinnata* (Linn. f.) Kurz (Family Anacardiaceae), *Coccinia grandis* (L.) Voigt (Cucurbitaceae) against dyslipidemia, atherogenecity and oxidative stress in alloxan induced diabetic rats. **METHODS** Diabetes mellitus was induced in Wistar rats by alloxan monohydrate (150 $mg\,kg^{-1}$, ip) thereafter diabetic rats (n=6 per group) were treated with the three selected plant extracts at their optimum effective therapeutic doses (1.0 $g\,kg^{-1}$, 1.0 $g\,kg^{-1}$, 0.75 $g\,kg^{-1}$ respectively) and glibenclamide (0.50 $mg\,kg^{-1}$, positive control) for 30 days. The percentage of glycated hemoglobin (HbA_{1C}), concentrations of serum insulin and C peptide, selected lipid parameters and oxidative stress markers were estimated. In addition, cardio-protective index (CPI), atherogenic (AI) and coronary risk indices (CRI) were calculated. **RESULTS** Administration of the three extracts in diabetic rats exhibited different degree of antihyperglycemic effects by up-regulating the concentrations of serum insulin and C-peptide in diabetic rats. Administration of the three plant extracts at their optimum effective therapeutic dose attenuated elevated levels of AI and CRI to near normal while CPI was increased ($P<0.05$). In addition, the cardio-protective effect of the three selected plant extracts was better than the effect of glibenclamide in diabetic rats. Furthermore, a significant improvement in the antioxidant potential was also shown in plant extracts treated diabetic rats ($P<0.05$) **CONCLUSION** The present study reveals that the bark extracts of *G. arborea*, *S. pinnata* and leaf extract of *C. grandis* at their optimum effective therapeutic dose exert beneficial effects against dyslipidemia, atherogenesity and oxidative stress in alloxan induced diabetic rats. The highest antihyperlipidemic, antiatherogenic, antioxidative activities were obtained from the bark extract of *G. arborea* followed by *S. pinnata* and *C. grandis* in diabetic rats.

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