

Cardioprotective effects of gallic acid in diabetes- induced myocardial dysfunction in rats

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ABSTRACT

Background Normalization of hyperglycemia, hyperlipidemia, and oxidative stress is an important objective in preventing diabetes-induced cardiac dysfunction. **Objective** This study was undertaken to examine the effects of gallic acid in myocardial dysfunctions associated with type-1 diabetes. **Materials and Methods** Diabetes was induced by single intravenous injection of streptozotocin (STZ, 50 mg/kg i.v.). Gallic acid was administered daily at three different doses (100, 50, and 25 mg/kg p.o.) for 8 weeks at the end of which blood samples were collected and analyzed for various biochemical parameters. **Results** Injection of STZ produced significant loss of body weight (BW), polyphagia, polydipsia, hyperglycemia, hypoinsulinemia, hyperlipidemia, hypertension, bradycardia, and myocardial functional alterations. Treatment with gallic acid significantly lowered fasting glucose, the AUCglucose level in a dose-dependent manner; however, the insulin level was not increased significantly at same the dose and prevented loss of BW, polyphagia, and polydipsia in diabetic rats. It also prevented STZ-induced hyperlipidemia, hypertension, bradycardia, structural alterations in cardiac tissue such as increase in force of contraction, left ventricular weight to body weight ratio, collagen content, protein content, serum lactate dehydrogenase, and creatinine kinase levels in a dose-dependent manner. Further, treatment also produced reduction in lipid peroxidation and increase in antioxidant parameters in heart of diabetic rats. **Conclusion** The results of this study suggest that gallic acid to be beneficial for the treatment of myocardial damage associated with type-1 diabetes.

KEYWORDS

Antidiabetic . antihyperlipidemic . *Emblica officinalis* . left ventricular hypertrophy . myocardial dysfunction . oxidative stress . streptozotocin

REFERENCES

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