Objectives The evaluation of the plant’s effectiveness against diabetes and atherosclerosis where we lack safe modern drug, has led to an increasing demand of research on antidiabetic and antiatherogenic natural products that produces minimal or no side effects. In the present investigation, the hydroalcoholic extract of seeds of H. rhamnoides L. (HASHR) was evaluated for antidiabetic in alloxan-induced diabetic rats and antiatherogenic activity in atherogenic diet treated rats. Antidiabetic activity Diabetes was induced in overnight fasted male albino wistar rats (150-250 gm) by alloxan (110 mg/kg, s.c.). HASHR (286 and 667 mg/kg, p.o.) and glibenclamide (1 mg/kg b.w., p.o.) treatment was given to diabetic rats for 21 days and blood glucose levels were estimated at different time intervals. On 21st HAESH (286 and 667 mg/kg, p.o.) pretreatment was given to atherogenic diet treated rats for 5 days. On 6 day, all the animals were sacrificed; blood samples and livers of each animal were collected and biochemical parameters such as glucose, cholesterol and HDL levels from serum and liver glucose-6-phosphatase activity and liver glycogen level were estimated. HAESH showed dose-dependent reduction in serum glucose, cholesterol and HDL levels and increase in liver glycogen levels whereas, decrease in glucose-6-phosphatase activity.

Antiatherogenic activity

HAESH (286 and 667 mg/kg, p.o.) pretreatment was given to atherogenic diet treated rats for 5 days. On 6 th day, all the animals were sacrificed; blood sample, aorta and coronary artery were collected immediately. Biochemical parameters such as serum glucose, cholesterol and nitric oxide levels in coronary artery were estimated. Histopathological studies of aorta were performed to assess the extent of aortic atherosclerosis generation/ protection. HAESH showed dose dependent protection against raise in blood glucose, cholesterol and MDA levels and decrease in coronary artery nitric oxide level. The treatment protected the atherosclerotic lesion formation in rat aorta.

Interpretation and conclusion

A significant antidiabetic and antiatherogenic activity of HAESH observed in the present investigation could be the result of synergistic/potentiative action of its medicinal phytoconstituents such as flavanoids and vitamin C, E, carotenoids and a diverse array of active principles which are able to target multiple mechanisms involved in the pathophysiology of diabetes and atherosclerosis.

Keywords Antidiabetic; Serum Glucose, Liver glucose-6-phosphatase activity and Glycogen level, Antiatherogenic status; Coronary artery nitric oxide level, Lipid peroxidation.