

The aim of the present study is to check the antidiabetic and antioxidant activity of aqueous extract of *Annona squamosa* leaf after 30 days of treatment in Streptozotocin-Induced diabetic rats and results were compared with reference drug, Glibenclamide.

The effect of aqueous extract of *A. squamosa* on body weight, liver tissue weight, tissue glycogen content, blood glucose, hemoglobin, plasma Insulin, serum lipid profile, protein and albumin, serum glutamate oxaloacetic transaminase, serum glutamate pyruvic transaminase and the levels of lipid peroxides and antioxidant enzymes, such as catalase, superoxide dismutase, glutathione peroxidase and reduced glutathione were examined in the liver and kidney tissues of control and experimental groups. Results shows that after 30 days of treatment with *Annona squamosa* leaf extract leads to decrease in serum glucose, total cholesterol, HDL, LDL, VLDL, triglycerides, SGOT, SGPT and Malondialdehyde, while results in increase in Serum Insulin, tissue Glycogen, Hemoglobin, total protein, albumin, reduced glutathione, superoxide dismutase in *Annona squamosa* treated diabetic rats. The *Annona squamosa* aqueous extract supplementation is useful in controlling the blood glucose level, improves the plasma Insulin, lipid metabolism and is beneficial in preventing diabetic complications from lipid peroxidation and antioxidant systems in experimental diabetic rats. Therefore, it could be useful for prevention or early treatment of diabetes mellitus.