Background: *Musa sapientum* Linn is a herbaceous plant of the *Musaceae* family. It has been used in India for the treatment of gastric ulcer, hypertension, diarrhoea, dysentery, and diabetes. The antidiabetic effect of the fruit, root, and flower of *Musa sapientum* Linn has been demonstrated. The aim of the present study was to assess the antidiabetic and antioxidant effects of the fruit peel extract of *Musa sapientum* Linn.

Methods: Diabetes was induced in rats by Streptozotocin injection (45 mg/kg.bwt.i.p.). Diabetic rats were treated for 6 weeks with different doses of fruit peel extract of *Musa sapientum*.L(200 and 400 mg/kg.bwt) to select the most effective dose. The effects of 45 days treatment with this dose (200 and 400 mg/kg) on fasting blood glucose (FBG) levels, Bodyweight, Lipid profile, Creatinine, Albumin, HbA1c, Insulin, Liver enzyme(i.e.ALP,SGOT,SGPT) and liver tissues antioxidants(i.e.LPO,CAT,GPX,SOD), Histopathology of Pancreas, Liver, Kidney, Retina, Histochemical analysis of Liver and Pancreas, Immunohistochemistry of pancreas were evaluated.

Results: The most effective dose of fruit peel extract of *Musa sapientum* Linn. Was400 mg/kg.bwt (BPE) after 45 days treatment with this dose resulted in significant decreases in FBG (p< 0.05). Serum insulin increased (p< 0.05) whereas HbA1c decreased (p< 0.05).

Diabetes induced changes in the Lipid profile,Creatinine, Albumin, Liver enzymes (i.e. ALP,SGOT,SGPT) and liver tissues antioxidants(i.e.LPO,CAT,GPX,SOD) which were restored near to normal levels (p< 0.05). When treated with fruit peel extract of *Musa sapientum*.L and the normal cellular architecture of pancreas,liver,kidney and retina was also restored which was evident in histopathological studies.

Conclusion: Diabetic rats responded favorably to treatment with fruit peel extract of *Musa sapientum*.L, which exhibits Antidiabetic and Antioxidant effects.