The role of lutein-rich purple sweet potato leaf extract on the amelioration of diabetic retinopathy in streptozotocin-induced Sprague–Dawley rats

ABSTRACT

The objective of this study is to access the effect of purple sweet potato leaf (PSPL) extract on diabetic retinopathy (DR) of streptozotocin (STZ)-induced male Sprague–Dawley (SD) rats. In this study, rats were injected intraperitoneally with a single dose of 60 mg/kg STZ, and diabetes was confirmed on day 7. Rats were further divided into a few groups, which were then orally administered with one of the following treatments: 25 mg/kg of gliclazide (D25G), 200 mg/kg of PSPL extract (DT 200), and 400 mg/kg of PSPL extract (DT 400). However, the normal control (NS) and control group for diabetic (DNS) were given normal saline (NS) for 12 weeks. The results show that the treated group demonstrated a reduction in serum oral glucose tolerance test (OGTT) levels of DT 200 and DT 400, and an increase in the serum and retinal insulin levels, and restored oxidative stress markers in serum and retina on week 12. The PSPL extract exhibited protective effects in maintaining the kidney, liver, retina, and pancreas architecture in 400 mg/kg compared to the 200 mg/kg treated group and D25G, thereby restoring fully transparent lenses in diabetes-induced rats. In conclusion, 400 mg/kg PSPL is the most effective dose for the amelioration of STZ-induced DR pathology in male SD rats.