Abstract

The present thesis investigates *Sesbania sesban* and *Adenanthera pavonina* pharmacologically in the treatment of diabetes mellitus and its complications in streptozotocin (STZ)-induced diabetic rats. In the chronic model extracts were administered to normal and diabetic rats at various doses 30 days. The fasting blood glucose Levels (BGL) and biochemical data such as glycosylated haemoglobin, total cholesterol (TC), triglycerides (TG), high density lipoproteins (HDL) and low density lipoproteins (LDL) were evaluated and the results were compared to that of the known anti-diabetic drug glibenclamide.

The renal protective effects of these extracts were evaluated in streptozotocin (STZ)-induced diabetic rats for 13 weeks at same dose level. Blood glucose, serum parameters like albumin, creatinine, total protein, urea, lipid profile, glycated haemoglobin (HbA1c) and urine parameters like urine protein and albumin were estimated. These changes were inhibited by SSLAE and APSAE which could be beneficial in preventing the progression of diabetic nephropathy.

Similarly neuroprotective effects in diabetic rats were studied for 12 weeks. Cold and hot water immersion tests, photoactometer and rotarod tests were performed to assess degree of colder, thermal, spontaneous motor activity and motor co-ordination changes respectively at different time intervals i.e., week 0, 4, 8 and 12. Tissue superoxide anion and total calcium levels were determined after 12 weeks to assess biochemical alterations. SSLAE and APSAE increased tail flick latency significantly in diabetic rats with marked reduction in superoxide anion and total calcium levels. These results suggested that SSLAE and APSAE attenuated development of diabetic neuropathy in streptozotocin-induced diabetic rats.