

ABSTRACT

Background: The aim of the study is to evaluate the renoprotective effect of amlodipine and fosinopril in monotherapy and in combination on uninephrectomized STZ induced diabetic rats and on intact STZ induced diabetic rats.

Methods: Right uninephrectomy under anesthesia with thiopentone sodium (30 mg/kg, i.p) was conducted. Diabetes was induced by i.p injection of STZ to male Wistar rats (200-300 g), after 18 h of fasting. The rats with fasting serum glucose level of above 300 mg/dl at 72 h after STZ injection were selected and randomised them to amlodipine (2 mg/kg, b.w), fosinopril (25 mg/kg, b.w) and amlodipine plus fosinopril (2 and 25 mg/kg, b.w respectively) for a period of 42 days. The body weight, serum glucose, food intake, water intake and urine output were checked periodically. While left kidney weight, left kidney weight / body weight, glycosylated haemoglobin, total cholesterol, triglycerides, serum creatinine, urine creatinine, creatinine clearance, blood urea nitrogen, total protein, serum albumin, urine glucose, microalbuminuria and urine albumin excretion were evaluated at the end of the treatment protocol. Histology analysis of the left kidney was also performed at end.

Results: The combination therapy was more effective in reducing left kidney weight, left kidney weight / body weight, water intake, urine output, cholesterol, triglycerides, serum creatinine, blood urea nitrogen, urine glucose, mainly microalbumin and urine albumin excretion. The combination was more effective in increasing urine creatinine, Ccr and serum albumin. Uninephrectomy markedly exacerbated renal injury in the non diabetic and diabetic rats, while the combination treatment significantly diminished renal function. The combination group slowed the body weight reduction. There was no effect found on the serum glucose, glycosylated haemoglobin, total protein and food intake.

Conclusions: This study showed that renoprotective effect was seen in amlodipine and fosinopril but better protective action was found in the combination of the both in uninephrectomized and intact diabetic treated rats. This suggests that combination may be more effective in delaying the progression of severe form of diabetic nephropathy.

Keywords: uninephrectomized; intact; streptozotocin; diabetic nephropathy; microalbumin; amlodipine; fosinopril.

