Background: Glomerular 12/15-LO is found to increase in streptozotocin-induced diabetic rats associated with an early increase in glomerular activated nuclear transcription factor cyclic-adenosin monophosphate-responsive binding protein, thereby implicating the 12/15-LO pathway in the pathogenesis of the expanded mesangial matrix characteristic of diabetic nephropathy (DN). However, the effect of 12/15-LO inhibition in vivo on key indices of DN and its relation to inflammatory mediators of renal injury have not yet been studied. Objective: Attenuate the effects of early streptozotocin-induced diabetes on renal functions through supplementation of either pravastatin or 12/15-LO pathway inhibitors. Methods: The study was carried out at King Khalid University Hospitals (KSA). Rats were assigned to control rats (Group I): receiving vehicle. Groups IIa, IIb, IIc, IId, IIe: normoalbuminuric diabetic rats receiving vehicle, nordihydroguaiaretic acid (NDGA), NDGA + insulin, pravastatin or pravastatin + insulin respectively. Groups IIIa, IIIb, IIIc, IIId, IIIf: microalbuminuric diabetic rats receiving vehicle, NDGA, NDGA + insulin, pravastatin or pravastatin + insulin respectively. NDGA and pravastatin were administered for 4 months. At the end of experiment, renal function tests were measured and blood samples were analyzed for glycosylated hemoglobin, cholesterol, triglycerides, lipid peroxide, vascular endothelial growth factor, total nitric oxide products and homocysteine. Results: Both NDGA and pravastatin have favorable effects on renal functions to the same extent and more favorable effects when diabetes is controlled. Indications of DN and oxidative stress were reduced by NDGA or pravastatin therapy with no statistical difference between the two lines of therapy. Conclusion: Pravastatin and 12/15 LO inhibitor (NDGA) have beneficial effects on STZ-induced DN by improvement of renal function and decreasing indices of DN in microalbuminuric rats. The findings may provide insight in the feasibility of clinical use of pravastatin or 12/15 lipoxygenase pathway inhibitor as a complementary therapy for the prevention/treatment of DN.