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Effects of pravastatin or 12/15 lipoxygenase pathway inhibitors on indices of diabetic nephropathy in an experimental model of diabetic renal disease

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Objective: The present study aimed at attenuating the effects of early streptozotocin-induced diabetes on renal functions through supplementation of either pravastatin or 12/15-LO pathway inhibitors.

Materials and methods: The current study was carried out on 88 male Wistar assigned to 3 groups (8 rats/group): Group I: included control rats receiving vehicle. Groups IIa, IIb, IIc, IId, IIe: included normoalbuminuric diabetic rats receiving vehicle, NDGA, NDGA + insulin, pravastatin or pravastatin + insulin respectively. Groups IIIa, IIIb, IIIc, IIId, IIIe included microalbuminuric diabetic rats receiving vehicle, NDGA, NDGA + insulin, pravastatin or pravastatin + insulin respectively. Renal function tests were measured and blood samples were analyzed for glycosylated hemoglobin (HbA1c), serum levels of cholesterol, triglycerides and lipid peroxide and plasma levels of VEGF, total nitric oxide (NO) products and homocysteine (Hcy).

Results: The results of the present study demonstrated favorable effects of both NDGA and pravastatin to the same extent on renal functions and more favorable effects when diabetes is controlled. Microalbuminuri rats received NDGA experienced a decrease in urinary albumin creatinine ratio (ACR) to the same extent as did microalbuminuric rats received pravastatin. Indices of DN and oxidative stress as lipid peroxide, VEGF, and Hcy all were reduced by NDGA or pravastatin therapy with no statistical difference between the two lines of therapy.

Conclusion: 12/15-LO inhibition and statins like pravastatin may be useful as therapeutic strategies for prevention or amelioration of DN. Confirmation of these preliminary observations must await careful long-term studies on experimental DN.

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