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Title: Combinatorial administration of Pyridoxal-5-phosphate and thiamine hydrochloride prevent atheromatous plaque formation and improve renal function in diabetic-atherosclerotic rats

Authors: Sina Mahdavifard and Manochehr Nakhjavani

Abstract: Oxidative stress-glycation-inflammation cycle may be the main cause of vascular complications of diabetes. Here, we investigated the effect of combination of pyridoxal phosphate and thiamine hydrochloride (PLP+THC) on risk factors of atherosclerosis and nephropathy in diabetic-atherosclerotic rats. Formation of the early to end products of albumin glycation and albumin misfolding, glycation and oxidation products of LDL was also investigated in the presence of excess glucose. The streptozotocin-induced diabetic rats on an atherogenic diet were used as a diabetic-atherosclerosis model. Two groups of normal and diabetic rats were treated with PLP+THC, (180 + 180 mg/kg/day in drinking water) for 3 months and two others were received water only. Furthermore, rat serum albumin (RSA) and LDL was purified and incubated with glucose in the presence and absence of PLP+THC. The PLP+THC reduced significantly fasting blood sugar, different glycation and oxidation products of RSA and LDL (in both rats and test tube), reduced Hs CRP and improved kidney function parameters and also showed beneficial effect on insulin function, lipid profile, glyoxalase system activity and oxidative stress ($p < 0.001$). In this study, no atheromatous lesions were observed in the aorta of the treated diabetic- atherosclerotic rats. In conclusion, PLP+THC treatment inhibited both in vitro and in vivo glycation and oxidation products of both RSA and LDL. This treatment reduced other vascular complications of diabetes and protected against nephropathy in the diabetic-atherosclerotic rats.

Presentation: E-Poster