Protective effect of the standardized extract of ginkgo biloba -(EGb761) against hypertension with hypercholesterolemia induced renal injury in rats: Insights in the underlying mechanisms.

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Abstract:

The potential protective role of the standardized leaf extract of ginkgo biloba (EGb761) on hypertension with hypercholesterolemia-induced renal injury was investigated in rats. Hypertension was induced by L-N(G)-nitroarginine methyl ester (L-NAME) and hypercholesterolemia was induced by feeding rats with a diet containing 1% cholesterol. In these animals repeated treatment with EGb761 produced a progressive reduction in the systolic, diastolic and mean arterial blood pressure (BP). EGb761 increased the progressive reduction in the systolic, diastolic and mean arterial BP induced by repeated administration of losartan with simvastatin. EGb761 corrected the compromised serum lipid profile and enhanced the effect of losartan with simvastatin on lipid profile. EGb761 protected against hypertension with hypercholesterolemia-induced renal injury as assessed by measurement of serum renal function markers and by histopathological examination. EGb761 enhanced the renoprotective effect of losartan with simvastatin in these rats. Concomitantly, hypertension with hypercholesterolemia-induced elevation of renal tissue malondialdehyde (MDA) and nitrite levels and reduction of intracellular reduced glutathione (GSH) level were inhibited by repeated treatment with EGb761. In addition, hypertension with hypercholesterolemia-induced increases in tumor necrosis factor-alpha (TNF-α), interleukin-6 (IL-6) and interleukin-1β (IL-1β) levels in renal tissues were inhibited by treatment with EGb761. Also, EGb761 inhibited hypertension with hypercholesterolemia-induced decrease in endothelial nitric oxide synthase (eNOS) protein expression and increase in the protein expressions of inducible NO synthase (iNOS), TNF-α, IL-6 and IL-1β in the kidney tissues. Losartan with simvastatin produced similar effects on renal tissues oxidative stress, nitrite and inflammatory markers levels and on protein expressions of eNOS, iNOS, TNF-α, IL-6 and IL-1β. EGb761 enhanced losartan with simvastatin effects. These results indicate that EGb761 has the ability to protect against hypertension with hypercholesterolemia-induced renal injury. The ability of EGb761 to provide this renoprotective effect may positively correlate, besides its antihypertensive and antihypercholesterolemic effects, to its ability to suppress renal oxidative stress, nitrosative stress and inflammation.

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