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THE EFFECTS AND ITS MECHANISMS OF GINKGO BILOBA RECIPE ON TGF-β1 IN DIABETIC NEPHROPATHY WITH HYPERTENSION RATS

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Objectives To observe the effects of Ginkgo Biloba Recipe (GBR) on transforming growth factor-β_1 (TGF-β_1) in diabetic nephropathy (DN) with hypertension rats and investigate its mechanisms.

Methods DN with hypertension models were made by 4 weeks high-salt diet with high sugar and fat for male Wistar rats, and intraperitoneal injection of streptozotocin (STZ). The model rats were randomly divided into three groups: untreated model group (n=15); metformin group (n=15), orally given metformin; GBR group (n=15), orally administrated GBR, for 8 weeks respectively. Blood pressure was measured before modelling and after treatment of 2, 4, 8 weeks. Fasting blood glucose (FBG), total triglyceride (TG) and total cholesterol (TC) and urine albumin excretion (UAE) of rats were observed and recorded. Renal histomorphology with PAS staining was observed by the light microscope. TGF-β_1 in kidney was detected by immunohistochemical assay and TGF-β_1 mRNA in renal cortex was detected by RT-PCR.

Results The base blood pressure of rats has no significant difference before modelling ($p>0.05$). After 4 weeks of treatment, compared with model group, blood pressure in metformin group decreased ($p<0.01$), blood pressure in GBR group was slightly lower ($p < 0.05$). When 8 weeks, the rebound of blood pressure in metformin group is appropriate with the model, the blood pressure of GBR reduced significantly ($p<0.01$). Compared with model group, FBG, UAE and TG in GBR group and metformin group significantly decreased ($p < 0.01$), TC levels also decreased ($p<0.05$). The level of TGF-β_1 in GBR group and the metformin group decreased ($p<0.01$), and level of TGF-β_1 in GBR group was lower significantly than that in metformin group ($p < 0.05$). The mRNA expressions of TGF-β_1 in GBR group and the metformin group were significantly lower than model group ($p < 0.01$). Pathological changes were ameliorated in GBR and metformin group compared with model group.

Conclusions GBR can regulate blood pressure and improve renal functional morphology through down-regulation of TGF-β_1 and its mRNA expression in DN with hypertension rats. We initially proved that the inhibition effect of TGF-β_1 in GBR is better than metformin, and GBR can lower blood pressure to normal levels with a better step-down smoothly and a long-term efficacy.