# Protective effect of the n-butanol *Toona sinensis* seed extract on diabetic nephropathy rat kidneys

**W.Z. Li[1], X.H. Wang[1], H.X. Zhang[2], S.M. Mao[3] and C.Z. Zhao[3]**

[1]College of Pharmacy, Weifang Medical University, Weifang, China
[2]School of Clinical Medicine, Weifang Medical University, Weifang, China
[3]Department of Pharmacology and Applied Pharmacology Laboratory, Weifang Medical University, Weifang, China

Corresponding author: W.Z. Li
E-mail: liwzhong_l@163.com

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**ABSTRACT.** The objective of this study was to observe the protective effect of the n-butyl alcohol phase of *Toona sinensis* seed extract on the kidneys of diabetic nephropathy (DN) rats and its preliminary mechanism. Male wistar rats were administered a normal or high-fat diet for 1 month. DN rats were divided into a model group and a petroleum ether phase of *T. sinensis* seed extract intervention group. The intervention group was administered 5 mg·100 $g^{-1}$·$day^{-1}$ extract. After treatment for 10 weeks, the rats were sacrificed and blood samples and the renal cortex were collected. Biochemical indicators in the serum and renal indices were assessed. Pathological changes of the renal tissues were also determined. Changes in the renal structure and protein levels were detected. Compared with the normal group, the blood glucose, urinary albumin, renal index, and oxidative stress index were sharply increased in the model group. The protein levels of TGF-β1, collagen IV, and connective tissue growth factor (CTGF) were increased. Compared with the model group, the n-butyl alcohol phase of *T. sinensis* seed extract significantly reduced the blood glucose, urinary albumin, renal index, oxidative stress index, serum creatinine,

 

and urea nitrogen levels. The renal pathology abnormality was improved in DN rats. The protein levels of TGF-β1, collagen IV, and CTGF were increased. The expression of TGF-β1, collagen IV, and CTGF decreased. In conclusion, the n-butyl alcohol phase of *T. sinensis* seed extract has protective effects on DN rats via the inhibition of oxidative stress and protein expression of TGF-β1, collagen IV, and CTGF.

**Key words:** N-butyl alcohol phase; *Toona sinensis* seed extracts; Diabetic nephropathy; Oxidative stress

 