

스트렙토조토신으로 유발된 당뇨병성 신증 흰쥐에서 신보호에 대한 녹차 추출물과 칸데사탄의 시너지 효과

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Synergic Renoprotective Effects of Green Tea Extract and Candesartan on Streptozotocin-induced Diabetic Nephropathy in Mice

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Background: Diabetic nephropathy (DMN) is one of the most serious complications in diabetes mellitus and has been the most common cause of end-stage renal diseases. Green tea extracts (GTE) have antioxidant properties and are known to be the most abundant in green tea. Inflammatory cytokines, mainly IL-1 and IL-6, as well as TNF- α , are involved in the development and progression of DMN. We examined whether GTE with candesartan (CDS) could be synergic protective effects on DMN and relationship of cytokines in mice.

Methods: The mice (n=50) were divided into 5 groups (n=10 each group). Control group was given intraperitoneal injection of 0.9% saline. Streptozotocin (STZ) group was given intraperitoneal injection of STZ 200 mg/kg and induced diabetic nephropathy. CDS group was received 30 mg/kg CDS by oral route and GTE group was received GTE 100 mg/kg by oral route. GTE+CDS group was received GTE 100 mg/kg with CDS 30 mg/kg from 4 weeks to 16 weeks. Serum glucose, blood urea nitrogen, serum creatinine, urine volume and urine protein amounts were measured. Mouse cytokine array panel A kit was used to examine the relative levels of mouse cytokines and chemokines, and histopathologic staining of mice's kidney were performed.

Results: Compared with control group, STZ-group showed an increase in blood glucose, blood urea nitrogen, creatinine levels and urine protein amounts, and a decrease in body weight. All the above parameters were significantly reversed with GTE treatment, especially GTE+CDS group. IL-1 α/β , IL-16, TNF- α , and C5/C5a levels are significantly elevated in STZ group compared with control group and reversed in GTE and GTE plus CDS groups. GTE+CDS treated mice kidney showed a reduced expression of above parameters and a reserved pathologic findings.

Conclusions: These results suggest that GTE with CDS has synergic renoprotective effects on STZ-induced DMN mice by suppression of inflammatory cytokines. The potential use of GTE with CDS is suggested in the treatment of diabetic nephropathy.

Key Words: 녹차추출물, 당뇨병성 신증, 칸데사탄

Green tea extract, Diabetic nephropathy, Candesartan