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**Anti-apoptotic effects of green tea extract and gemigliptin on tacrolimus-induced nephropathy in mice**

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**Case Study:** Title;

Anti-apoptotic effects of green tea extract and gemigliptin on tacrolimus-induced nephropathy in mice

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Abstract

**Background** : The aim of this study was to investigate the anti-apoptotic effects of green tea extract (GTE) and dipeptidyl peptidase IV (DPP IV) inhibitor gemigliptin on TAC-induced nephropathy in mice. **Methods** : The mice (n=30) were divided into 5 groups (n=6/group); control group were intraperitoneally (IP) injected 0.9% saline, TAC group were IP injected TAC 2.5 mg/kg, DPP IV inhibitor group were given in addition gemigliptin 20 mg/kg (G20) by oral gavage. TAC-GTE group were given TAC by IP injection and GTE 100 mg/kg by subcutaneous injection. TAC-GTE-G20 group were given with same dosages. **Results** : The 24 hours urine protein amounts were significantly increased in TAC group ( $46.1 \pm 10.9$  mg/day) compared to control group ( $11.3 \pm 4.4$  mg/day) and significantly decreased in TAC-GTE-G20 group ( $13.1 \pm 5.9$  mg/day,  $P < 0.01$ ) compared to TAC group. Serum creatinine levels were significantly increased in TAC group ( $1.03 \pm 0.26$  mg/dL) compared to control group ( $0.17 \pm 0.02$  mg/day) and significantly decreased in TAC-GTE-G20 group ( $0.23 \pm 0.05$  mg/day,  $p = 0.008$ ) compared to TAC group. In Western blot analysis of apoptotic protein, the BCL-2 protein expression by TAC was significantly suppressed by GTE and gemigliptin injection but, the p53 protein expression by TAC was significantly resolved by GTE and DPP IV inhibitor. There are proximal tubular edema and mild interstitial inflammation in the kidney of mice after TAC injection but no significant pathologic changes by GTE injection and DPP IV inhibitor injected group. **Conclusion** : GTE and DPP IV inhibitor gemigliptin treatment has beneficial anti-apoptotic effects on acute TAC-induced renal injury in mice.

**Key word** : Tacrolimus, Apoptosis, Green tea extract, Dipeptidyl peptidase IV inhibitor