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The renoprotective effects of epigallocatechingallate and Dipeptidyl peptidase IV inhibitor gemigliptin on tacrolimus-induced nephrotoxicity in mice

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Background: It has been reported that the proteinuria is an early predictive marker in detection of tacrolimus (TAC) nephrotoxicity. The aim of this study was to investigatethe renoprotective effects of eipgallocatechingallate (EGCG)and dipeptidyl peptidaseIV (DPP IV) inhibitor gemigliptin on TAC-induced acute nephrotoxicity in mice.

Methods: The mice (n=20) were divided into 5groups (n=5/group); control group wereintraperitoneally (IP) injected 0.9% saline, TAC group were IP injected TAC2 mg/kg,DPP IV inhibitor group were given inaddition gemigliptin20 mg/kg (G20) by oral gavage. TAC-EGCGgroup were given TAC by IP injection andEGCG 100 mg/kg by subcutaneous injection. TAC-EGCG-G20 group were given with same dosages.

Results: The 24 hours urine protein amounts were significantly increased in TAC group (46.1 ±10.9mg/day) compared to control group (11.3 ±4.4mg/day) and significantly decreasedin TAC-EGCG-G20group (13.1 ±5.9mg/day, P <0.01) compared to TAC group. The nitric oxide (NO) production by TAC was significantly suppressed by EGCG and gemiglipinmanagement. Renal tissue malondialdehydelevel was significantly increased in TAC group compared to control group andsignificantly decreased in TAC-EGCG-G20 group compared than that of TAC group. The renal function and antioxidant enzyme activities were significantly suppressed in TAC group compared with control group and restored in EGCG and gemiglipintreatment group.

Conclusion: EGCG and gemigliptintreatment has beneficialantiproteinuric and renoprotective effects onTAC-inducedacute renal injury in mice.

Keywords: dipeptidyl peptidase IV inhibitor, Epigallocatechingallate, Renoprotective, Tacrolimus