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A Water-Soluble Extract from *Actinidia arguta* (PG102) can Inhibit Kidney Fibrosis

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Objectives: PG102 is a water-soluble extract of hardy kiwifruit *Actinidia arguta*. We aimed to investigate whether treatment with PG102 can attenuate kidney fibrosis.

Methods: Male C57BL/6 mice (7-week-old, n = 14) were purchased. Treatment group (n = 7) was administered with PG102 per oral using Zonde needle at dosage of 100 mg/kg daily for 10 days. Control group (n = 7) was fed with distilled water. After this pre-treatment, unilateral ureteral obstruction operation performed, and mice were administered with PG102 or distilled water at the same dose for 10 days. After 10 days, mice were sacrificed. In addition, human kidney proximal tubular cells were cultured and challenged with TGF- β (2 ng/ml) with or without PG102 (2.5 and 5 μ g/ml).

Results: Mice in both groups showed similar body weight and similar serum creatinine levels between groups. In the histopathologic specimen of Masson's trichrome stain, areas of kidney interstitial fibrosis attenuated in the treatment group (3.6 ± 0.9 % area vs. 8.7 ± 3.0 % area, P = 0.03). In the western-blot analysis, protein abundance of α -smooth muscle actin (50.6% of control, P = 0.01), fibronectin (47.8% of control, P = 0.01), p53 (20.8% of control, P = 0.03) decreased significantly, and protein abundance of e-cadherin increased (325.1% of control, P = 0.03) significantly in the treatment group. In immunohistochemical stain of phospho-p38, PG102 treated group showed decreased tissue expression of phosphorylated p38. In vitro experiment, human kidney proximal tubular cells treated with TGF- β and PG102 showed significantly decreased protein expression of α -smooth muscle actin (47.8% of control, P = 0.03), and phospho-p38 (51.5% of control, P = 0.01).

Conclusions: PG102 attenuates kidney fibrosis in the unilateral ureteral obstruction mice model and TGF- β -treated human kidney proximal tubular cells, p38 MAPK pathway is inhibited after treatment of PG102.

Figure 1. Graphical Abstract

