

Pharmacologic Intervention of immunosuppressant-induced diabetes mellitus

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The guideline for the management of new-onset diabetes after transplantation still controversial. We tested current oral hypoglycemic agents and Korean ginseng in animal model of sirolimus (SRL) or calcineurin inhibitor (CNI) -induced diabetes mellitus and in vitro study. The results showed that dipeptidyl peptidase IV (DPP IV) inhibitor improves pancreatic islet function (blood glucose level and insulin secretion) and attenuates oxidative stress and apoptotic cell death in SRL or tacrolimus (TAC)-induced diabetes mellitus. As a potential mechanism, we propose that TAC-induced diabetes mellitus is associated with autophagy cell death in pancreatic islet cells, and DPP IV inhibitor is effective in increasing autophagy clearance. We also propose that SRL treatment impairs mitochondrial respiration at subcellular level but addition of exendin, a substrate of DPPIV, decreases SRL-induced oxidative stress and improves mitochondrial respiration. We also tested protective effect of Korean ginseng against CNI-induced nephrotoxicity and pancreatic islet injury, and immune modulating effect when combined treatment with CNI.

I am presenting diverse pharmacologic approaches for immunosuppressants-induced diabetes mellitus and rationale for use of DPPIV inhibitors in clinical practice.