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Methanol Extract of Moringa Oleifera Rejuvenate Pancreatic B-Cells in Experimental Type 2 Diabetic Model Rats

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Introduction : This study evaluated the antidiabetic potentials of flavonoid-rich aqueous fraction of methanolic extract of Moringa oleifera (MOE) on the pancreatic β-cells of streptozotocin (STZ) and high-fat diet induced type 2 diabetes mellitus (T2DM) in rats.

Methods : Diabetes was induced intraperitoneally in rats by a single dose of streptozotocin (55 mg/kg) and treated with MOE (50, 100, 200 mg/kg b.wt) for six weeks. The rats were randomly divided into normal (NC), T2DM, metformin (Met), low, middle (Mid), and high (Hig) does of MOE groups. After six weeks of continuous administration of MOE, the serum indices and tissue protein expression were determined, and the pathological changes in liver and pancreas tissues were observed.

Results : The results showed that compared with the type 2 diabetes mellitus group, the fasting blood glucose (FBG), total cholesterol (TC), and triglyceride (TG) levels in the serum of rats in the dose dependent MOE treatment groups were significantly ($P<0.05$). decreased, while superoxide dismutase (SOD) and glutathione peroxidase (GSH-PX) levels were noticeably increased. The expression of Fas ligand (FasL), cytochrome C (Cyt-c), and caspase-3 in pancreatic and liver tissue was obviously decreased, and the pathological damage to the liver and pancreas was improved. These indicate that MOE can reduce oxidative stress in rats with diabetes mellitus by improving blood lipid metabolism and enhancing their antioxidant capacity, thereby regulating the mitochondrial apoptotic pathway to inhibitβ-cell apoptosis and improve β-cell

Conclusions : The study concluded that possible antidiabetic mechanism of MOE in STZ diabetes is through induction of β-cell regeneration and its strong antioxidant potential.

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