Effects of mycophenolate mofetil on the expression of monocyte chemoattractant protein-1 and fibronectin in high glucose cultured human mesangial cells

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ABSTRACT. The effects of high glucose on the expression of monocyte chemoattractant protein-1 (MCP-1) and the main component of the extracellular matrix, fibronectin (FN), were explored in human mesangial cells (HMCs), along with the intervention effects of mycophenolate mofetil (MMF) on these indicators. Cultured HMCs were divided into five groups: 1) normal control group (5 mM glucose); 2) high glucose group (30 mM glucose); 3) mannitol osmotic pressure control group (5 mM glucose + 25 mM mannitol); 4) high glucose + MMF-10 group (30 mM glucose + 10 μg/mL MMF); 5) high glucose + MMF-100 group (30 mM glucose + 100 μg/mL MMF). At 24, 48, and 72 h, reverse transcription-polymerase chain reaction and enzyme-linked immunosorbent assay methods were used to detect the effects of MMF on MCP-1 mRNA and protein and FN expression in HMCs under...
high glucose conditions. MCP-1 mRNA and protein expressions and FN secretion significantly increased in HMCs of the high glucose group compared with the normal control group (P < 0.01), with the highest expression observed at 48 h. MMF could reduce the MCP-1 mRNA and protein and FN expression levels (P < 0.01), and the inhibition occurred in a dose- and time-dependent manner (P < 0.05). In conclusion, MMF could inhibit MCP-1 expression and the secretion of FN, indicating that it may delay the progression of glomerulosclerosis and interstitial fibrosis in diabetic nephropathy to ultimately achieve protective effects on the kidney.

**Key words:** Diabetic nephropathy; Human mesangial cells; Fibronectin; Monocyte chemoattractant protein-1; Mycophenolate mofetil