



- Current Issue
- Browse Issues
- Search
- About this Journal
- Instruction to Authors
- Online Submission
- Subscription
- Contact Us
- RSS Feed

Acta Medica Iranica

2009;47(4) : 19-24

DYS-REGULATION OF EXTRACELLULAR MATRIX PROTEINS TURNOVER BY HIGH GLUCOSE CONCENTRATIONS IN CULTURED HUMAN GLOMERULAR MESANGIAL CELLS

ROHOLLAH HOSSEINI, GERHARD HAMPEL KLAUS JUNG

Abstract:

Diabetic glomerulopathy is generally believed to be the major cause for the development of chronic renal failure in diabetes mellitus. Diabetic glomerulosclerosis is characterized by the accumulation of extracellular matrix proteins such as fibronectin and type IV collagen in the mesangium. In this study, the effect of high glucose (33.6 mM) on fibronectin and type IV collagen concentrations in the supernatant of human glomerular mesangial cell culture was studied. The concentrations of fibronectin and type IV collagen in tissue culture supernatant, assayed by ELISA techniques increased significantly ($P < 0.01$) by the high glucose level (33.6 mM) after 6 days incubation. Direct cell counting and thymidine incorporation methods showed that high glucose concentrations (33.6 mM, 56 mM and 112 mM) inhibit the mesangial cell (MC) proliferation in concentration-dependent manner. To study the osmotic effect of high glucose concentrations, the mesangial cells were also cultured in the presence of mannitol and it was found that mannitol did not have effect on cellular proliferation but increased fibronectin and type IV collagen concentrations significantly ($P < 0.05$) in the supernatants. These results indicate that the increase of synthesis and/or decrease degradation of fibronectin and type IV collagen by MCs may, in part, result from changes in osmolarity induced by high glucose concentration. These results suggest that elevation of fibronectin and type IV collagen production and/or decrease their degradation by the mesangial cells may play an important role in the accumulation of these extracellular matrix proteins which is common to diabetic glomerulosclerosis.

Keywords:

[Fibronectin](#) , [and Collagen](#)

TUMS ID: 4344

Full Text HTML Full Text PDF 761 KB

top ▲

[Home](#) - [About](#) - [Contact Us](#)

TUMS E. Journals 2004-2009
Central Library & Documents Center
Tehran University of Medical Sciences

Best view with Internet Explorer 6 or Later at 1024*768 Resolutions