

TGF- β Induced Gene Product (β ig-h3) : Biological Roles on Human Peritoneal Mesothelial Cells in Peritoneal Dialysis (PD)

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Human peritoneal mesothelial cells (HPMCs) play an important role in the functional and morphological maintenance of peritoneum. In peritoneal dialysis (PD), repeated exposure of peritoneum to dialysis solution leads to the loss of mesothelial cells with peritoneal fibrosis.

Aim : The current study was performed to evaluate the biological roles of β ig-h3 in mesothelial cell injury during PD.

Methods : Omenta were obtained from patients undergoing elective abdominal surgery and HPMCs were isolated by enzymatic disaggregation. β ig-h3 levels were measured by ELISA and western blot after treatment of TGF- β 1 on HPMCs. Adhesion, spreading, migration and wound healing assay using HPMCs were performed. The integrin profile was assessed by FACS analysis. To evaluate the functional receptor of β ig-h3, function blocking assay was performed using monoclonal function-blocking antibodies to integrins.

Results : We found that β ig-h3 supported adhesion and spreading of HPMCs in a dose-dependent manner and its activities were comparable to that of fibronectin. In scratching test, β ig-h3 enhanced wound healing compared to the control. Each of four fas-1 domains from β ig-h3 was active in mediating HPMCs adhesion. The function blocking assay using monoclonal function-blocking antibodies to integrins revealed that the functional receptor of HPMCs for β ig-h3 was the α v β 3 integrin. FACS analyses showed that HPMCs expressed several integrins including the α v β 3 integrin on their cell surface.

Conclusion : β ig-h3 might be an important adhesion molecule that is involved in mesothelial cell adhesion and migration for re-mesothelialisation process following mesothelial cell injury during PD.