

论著

结缔组织生长因子在转化生长因子 β 诱导的肾小管上皮细胞转分化中的作用

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摘要 目的: 探讨结缔组织生长因子 (CTGF) 在转化生长因子- β 1 (TGF- β 1) 诱导的肾小管上皮细胞表型转化中的可能作用。方法: 将NRK52E肾小管上皮细胞分组处理, 光镜、扫描电镜、透射电镜观察细胞形态的改变, 细胞免疫组化检测 α -平滑肌肌动蛋白 (α -SMA) 和细胞角蛋白-18的表达, RT-PCR和Western blot检测 I 型胶原的表达。结果: TGF- β 1 10 μ g/L作用3 d, NRK52E小管上皮细胞失去正常的椭圆形, 变得肥大, 胞体拉长, 扫描电镜下, 见成纤维细胞状, 失去上皮细胞特有的顶端-基底极性和表面的微绒毛结构, 透射电镜下胞浆中见到微丝和致密体结构, 骨架标志上肾小管上皮细胞较具特征性的细胞角蛋白-18表达减少, 肌成纤维细胞标志性的 α -SMA表达增多, I 型胶原分泌增多; 加入TGF- β 1中和抗体和CTGF反义寡核苷酸可以大部分阻断TGF- β 的作用, 而正义的CTGF寡核苷酸不能阻断TGF- β 的作用。结论: NRK52E细胞中, CTGF作为TGF- β 的下游效应因子, 介导了TGF- β 诱导的肾小管上皮细胞转分化。

关键词 [结缔组织](#); [生长物质](#); [转化生长因子 \$\beta\$](#) ; [上皮细胞](#)

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Role of connective tissue growth factor in the transdifferentiation of renal epithelial cells induced by transforming growth factor- β

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Abstract

AIM: To investigate the role of connective tissue growth factor (cTGF) in transforming growth factor- β -induced tubular-epithelial myofibroblasts transdifferentiation. METHODS: NRK52E cells were used and divided into several groups. The morphological changes were observed by light and electron microscopy (scanning and transmission). The expressions of cytokeratin-18 and α -SMA were measured by immunohistochemistry. RT-PCR and Western-blot were used to detect the expression of collagen type I. RESULTS: Cultured with TGF- β 1 at concentration of 10 μ g/L for 3 days, part of the NRK52E cells developed elongated shape, loss of microvilli and apical-basal polarity, and appeared bundles of actin microfilaments. The addition of 10 mg/L TGF- β 1 neutralizing-antibody and 30 mg/L CTGF antisense oligonucleotides (ASON) almost completely blocked the morphological changes induced by TGF- β 1, only a little hypertrophy was observed. Cultured with 10 μ g/L TGF- β 1 for 3 days, the expression of cytokeratin-18 significantly decreased, and α -SMA and collagen type I significantly increased. Treated with neutralizing-antibody, the expressions of cytokeratin-18, α -SMA and collagen type I were almost restored. Changes induced by TGF- β 1 were not reversed by CTGF sense oligonucleotides (SON). CONCLUSION: It is demonstrated that CTGF as a TGF- β downstream cytokine mediates tubular-epithelial myofibroblast transdifferentiation.

Key words [Connective tissue](#); [Growth substances](#) [Transforming growth factor beta](#) [Epithelial cells](#)

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