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Tumor-associated fibroblast-conditioned medium promotes tumor cell proliferation and angiogenesis

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ABSTRACT. This study aimed to explore how tumor-associated fibroblasts (TAFs) promote the proliferation and angiogenesis of tumor cells via the paracrine mechanism *in vitro*. Conditioned media (CM) of ovarian TAFs and normal fibroblasts (NFs) were collected. Ovarian cancer cells (OCCs) were treated with 2 mL TAFs-CM and NFs-CM in experimental and control groups, respectively; 20 μM SB431512, a specific small molecule inhibitor of transforming growth factor-β (TGF-β), was added in the experimental group as the intervention group. The cell cycle was determined in each group. mRNA expressions of proliferating cell nuclear antigen (PCNA), α-smooth muscle actin (α-SMA), and vascular endothelial growth factor (VEGF), and protein expressions of α-SMA and VEGF were detected in each group. Proliferation of OCCs was significantly promoted in the experimental group compared with that of the control group. The proliferative

effect was obviously inhibited in the intervention group. The mRNA expressions of PCNA, α-SMA, and VEGF, and protein expressions of α-SMA and VEGF were all dramatically up-regulated in each group, and were strongly inhibited by SB-431512. TAFs promote the proliferation of OCCs via paracrine and up-regulated expression of angiogenic genes and proteins, which can be effectively inhibited by inhibiting the TGF-β signaling pathway.

Key words: Tumor-associated fibroblasts; Ovarian cancer cells; Transforming growth factor-β

