THE REGULATORY EFFECTS OF CYTOKINES ON LYMPHATIC ANGIOGENESIS

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ABSTRACT

The effects of fibroblast growth factor basic (bFGF), transforming growth factor α (TGFα), recombinant human epidermal growth factor (EGF), recombinant human tumor necrosis factor α (TNFα), and recombinant interleukin 1α (IL-1α) on lymphatic angiogenesis were assessed in cultured newborn bovine lymphatic endothelial cells (NBLEC). bFGF, TGFα, and EGF stimulated the proliferation of NBLEC in a dose-dependent manner, but the combination of either two growth factors did not show synergistic effects on NBLEC DNA synthesis. TNFα and IL-1α suppressed the multiplication of NBLEC. Treatment with bFGF markedly increased the migration of NBLEC. The tissue plasminogen activator (t-PA) activity was enhanced by bFGF. TNFα also promoted NBLEC t-PA activity.

These results suggest that bFGF is a major multifunctional lymphatic endothelial cell targeted cytokine, and both growth and pro-inflammatory cytokines exert differential regulatory effects on lymphatic endothelial cell proliferation, migration and t-PA activity.