Journal of Andrology, Vol 16, Issue 6 482-490, Copyright © 1995 by The American Society of Andrology

JOURNAL ARTICLE

Effect of TGF-beta 1, TGF-alpha, and EGF on cell proliferation and cell death in rat ventral prostatic epithelial cells in culture

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A tissue culture system for rat prostatic epithelial cells was developed, and the effect of epidermal growth factor (EGF), transforming growth factor alpha (TGF-alpha), and transforming growth factor beta 1 (TGF-beta 1) on these cells was evaluated. The primary culture was prepared by DNAse/collagenase dissociation of minced ventral prostates. Cells were initially plated in RPMI-1640 medium containing 10% fetal bovine serum to allow the preferential attachment of stromal cells. Twenty-four hours later, the unattached epithelial cells were replated in WAJC-404 medium supplemented with insulin (5 micrograms/ml), transferrin (5 micrograms/ml), and selenious acid (5 ng/ml). Bovine pituitary extract (BPE) (30 micrograms/ml), EGF (10 ng/ml), and TGF-beta 1 (0, 0.1, and 1.0 ng/ml) were added either alone or in combination according to experimental requirements. The rate of cell proliferation was assessed by counting the total cell number and by [3H]thymidine incorporation. Prostatic epithelial cells exhibited a bell-shaped growth curve in a span of 7-8 days, with a growth peak at day 3 or 4 of culture. Treatment of cells with EGF or TGF-alpha resulted in a concentration-dependent increase in cell growth, whereas addition of TGF-beta 1 into the culture resulted in an inhibition of cell proliferation that could be reversed with increasing concentrations of EGF. Cell death was assessed using the terminal deoxynucleotidyl transferase (TdT)-mediated immunoperoxidase-digoxigenin nick end labeling technique and the trypan blue exclusion test. Epithelial cells cultured in media containing EGF had the lowest incidence of cell death. Cells cultured in the absence of EGF demonstrated a marked increase in cells undergoing cell death. The addition of TGF-beta 1 into the EGF-depleted medium caused a further increase of cell death. These results indicated that cell proliferation and cell death in rat prostatic epithelial cells in culture could be modulated by EGF and TGF-beta 1. The former stimulated cell proliferation and prevented cell death, whereas the latter inhibited proliferation in the presence or absence of EGF and induced cell death.

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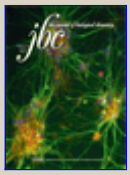

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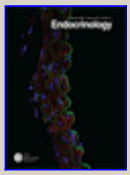

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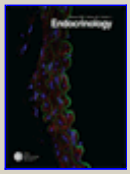

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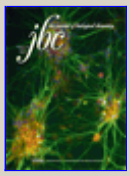

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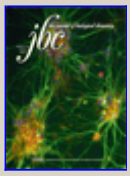

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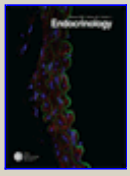

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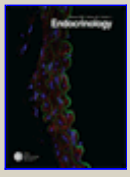

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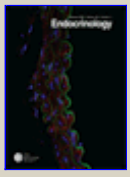

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