

Letter to the Editor

EXPRESSION OF PROSTATE-SPECIFIC ANTIGEN IN HUMAN PROSTATE SPECIMENS IN IN VITRO THREE-DIMENSIONAL HISTOCULTURE

Dear Editor:

We have recently utilized an *in vitro* three-dimensional histoculture technique on collagen sponge gels (Hoffman, 1991; Leighton, 1951) for the measurement of androgen sensitivity in prostate tissue from patients with benign prostatic hyperplasia (BPH) (Geller et al., 1992). The ultimate goal is to develop such an assay for use in prostate cancer. The basis for an assay for androgen sensitivity is the measurement of ^3H -thymidine incorporation into histocultured tissue when dihydrotestosterone (DHT) is added to the culture media and compared to parallel histocultures with regard to uptake of ^3H -thymidine when DHT activity is blocked by hydroxyflutamide (HF). HF is an anti-androgen whose mechanism of action is to block androgen receptor binding to DHT and thereby to block effectively androgen-mediated action. We call this ratio the DHT/HF or histoculture androgen sensitivity index and have shown this index to be high in BPH in histoculture (Geller et al., 1992). The question we wished to ask here is does the histocultured prostate tissue maintain expression of a key differentiation and diagnostic antigen, prostate specific antigen (PSA) (Wang et al., 1979, 1981; Jobsis et al., 1978; Nadji et al., 1980, 1981).

Prostate tissue obtained at surgery was immediately placed in ice-cold MEM media. The tissue was cut into small 1.0 mm³ pieces and then placed on hydrated flexible sponge gels derived from the

extracellular matrix of pigskin on plates, each of which contained 6 wells. After histoculture for 5 days, the specimens were fixed in formalin, embedded in paraffin and slides made. Following the blocking of non-specific reactivity with protein blocking agent (PBA), excess PBA was tapped off and the area around the tissue was wiped. An antibody to prostate specific antigen (PSA) (Immunon, Pittsburgh, PA), which consisted of pre-diluted primary antibody (0.05 M Tris in normal saline, pH 7.4 with 0.2% sodium azide) and was suitable for fixed and routinely processed paraffin-sectioned or frozen-sectioned material, was applied to the appropriate section of tissue. The tissue was then incubated for 30 to 60 min at 22° C. After incubation, the standard immunostaining protocol was carried out.

As can be seen from Figure 1, PSA is highly expressed in the histocultured BPH specimens. Thus an important differentiation antigen of the prostate can be continually expressed in culture. We have previously shown other differentiation antigens to be expressed in histoculture (Guadagni et al., 1991). This report suggests that histoculture can be used to study fundamental problems in differentiated prostate tissue, both tumor and normal and to develop specific therapies for malignancy based on the properties studied.

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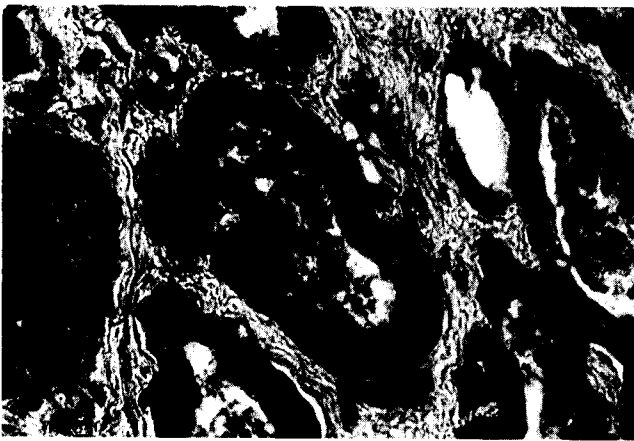


FIG. 1. Prostate specific antigen (PSA) expression in sections of histocultured prostate tissue from a patient with benign prostatic hypertrophy (BPH). Tissue was histocultured for 5 days and stained with antibodies to PSA as described in the text. The red-brown-cytoplasmic staining indicates expression of PSA in the cells of the histocultured prostate.

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