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Comparative C₁₉-Radiosteroid Metabolism in Primary Monolayer Cultures of Epithelial Cells and Fibroblasts from Rat Ventral Prostate, Canine Prostate, and Rat Lung

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Stromal-epithelial cell interactions may be important for the regulation of normal and abnormal prostatic growth. While androgen transformation by rat ventral prostate and canine prostate has been investigated *in vivo* and in organ culture, little is known about metabolic pathways in cultures of epithelial cells and fibroblasts. Metabolism of radioisotope-labeled 17 β -hydroxy C₁₉-steroids was studied in primary cultures of highly-enriched rat ventral prostate and canine prostate epithelial cells and fibroblasts isolated by selective attachment procedures. The fibroblasts contained little testosterone 5 α -reductase in contrast to high activity in epithelial cells. We found high levels of 5 α -androstane-3 α ,17 β -diol (3 α -diol) dehydrogenase and the terminal 5 α -androstane-3 β ,17 β -diol (3 β -diol) hydroxylases in both cell types; 3 α -diol was a more effective precursor of 5 α -dihydrotestosterone than was testosterone. For prostatic fibroblasts these pathways seem to be differentiated functions, since rat-lung fibroblasts converted 3 β -diol to 5 α -dihydrotestosterone and 3 α -diol. We conclude that epithelial cells and fibroblasts make interactive contributions to prostatic androgen metabolism.

Key words: rat ventral prostate, canine prostate, epithelial cells, fibroblasts, primary cell culture, testosterone 5 α -reductase, 3 α -hydroxysteroid oxidoreductase, 3 β -hydroxy 5 α -C₁₉-steroid hydroxylases

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