

# Abstract

J Cell Biochem. 2003 Sep 1;90(1):138-47.

## Vitamin D and androgen regulation of prostatic growth.

Leman ES, Arlotti JA, Dhir R, Getzenberg RH.

Department of Urology, University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania 15232, USA.

**OBJECTIVE:** Vitamin D has been reported to inhibit the growth of prostate cancer cells and model systems. In this study, we examined the interaction between 1,25-dihydroxyvitamin D(3) (1,25 D) in the presence or absence of endogenous testosterone on the growth and development of the adult rat prostate.

**METHODS:** Male Sprague-Dawley rats (165 days old) were either kept intact or castrated. Seven days after castration, the rats were treated with vehicle (control) or 1,25 D for 3 weeks and then sacrificed. Both ventral and dorsal lateral prostates were harvested; whole tissue lysates were collected and AR and VDR protein levels were analyzed by immunoblot analyses.

**RESULTS:** Administration of 1,25 D in the intact animals decreased the prostatic size by 40%, compared to control animals, whereas 1,25 D did not influence the size of the prostate in castrated rats. 1,25 D administration in intact groups also increased both the AR and VDR protein levels by approximately twofold, whereas in castrated groups, 1,25 D only increased the AR protein level by 1.5-2.5-fold. 1,25 D in the presence of endogenous testosterone inhibits prostatic growth, whereas 1,25 D in the absence of endogenous testosterone does not affect prostatic growth. The growth inhibitory activity of 1,25 D in the presence of testosterone may be mediated through the ligand activated AR and VDR pathways.

**CONCLUSION:** These studies may reveal important information about the potential efficacy of 1,25 D as well as hormonal status in understanding the development of prostate diseases.

PMID: 12938163