

Abstract

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Regulation of 17beta-hydroxysteroid dehydrogenase type 2, type 4 and type 5 by calcitriol, LXR agonist and 5alpha-dihydrotestosterone in human prostate cancer cells.

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BACKGROUND: Vitamin D seems to be involved in the control of prostate cancer cell growth. 17beta-Hydroxysteroid dehydrogenases type 2, type 4 and type 5 are enzymes which regulate intracellular concentration of active sex steroid hormones, which in turn, regulate the development, growth, and function of the prostate and play a role in the development and progression of prostate cancer.

METHODS: Using quantitative real-time PCR we find that calcitriol up-regulates HSD17B type 2, type 4 and type 5 in human prostate cancer LNCaP and PC3 cells but not in stromal cells.

RESULTS: LXR agonist, TO-901317, suppresses the expression of HSD17B2 mRNA and inhibits calcitriol induced HSD17B2 expression. TO-901317 up-regulates the expression of HSD17B5 but not that of HSD17B4. 5alpha-Dihydrotestosterone up-regulates the expression of HSD17B2 and HSD17B4 but it significantly inhibits HSD17B5 expression by 70%. Calcitriol has no effect on DHT mediated expression of the three genes.

CONCLUSION: The regulation of HSD17B2, HSD17B4 and HSD17B5 by ligands of LXR and VDR as well as AR in prostate cancer cells suggests a complex interaction of these signaling systems in the prostate.

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