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Title of presentation: Na+ Entry Alters Ca2+ Handling in a Prostate Cancer Cell Line and Supports Metastatic Potential

Abstract

Prostate cancer accounts for 28% of new cancer cases in men. Voltage-gated sodium channels (VGSC) were found in the leading edge (invadopodia) of cancer cells and aid in their invasion. Our research investigates whether sodium through VGSCs increases intracellular calcium, supporting invadopodia outgrowth. We looked at the presence of sodium-calcium exchangers (NCX) in prostate cancer cells (PC3 cells) as downstream targets. Quantitative analysis and subsequent fluorescent imaging were conducted. Analysis results showed high concentrations of the channels in PC3 cells. The images revealed that VGSC and NCX are located on opposite sides of the cell. These transporters operate to exporting sodium and importing calcium under high concentrations of sodium in the cell. Our observation of NCX in PC3 cell lines is novel; thus, decreasing sodium entry can decrease calcium influx.