Interaction of Membrane Proteins (Cx43, E-cadherin and Zo-1) in Prostate Cancer Cells

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Prostate cancer (PC) can be very aggressive due to high rates of metastasis. In normal cells epithelial cadherin (E-cadherin) forms junctions between cells and may help regulate the formation of gap junctions by connexin43 (Cx43). Preliminary work showed that E-cadherin mRNA was enhanced in cells lacking Cx43. To confirm the inverse relation of Cx43 and E-cadherin, we compared E-cadherin protein expression in the PC3 test cell line, shRNA-Cx43 #75, lacking Cx43 to that in the vector control line, shRNA-scramble control. We also tried to determine the status of the third cell membrane protein zona occluden-1 (Zo-1). Our hypothesis was that prostate cancer cells with reduced Cx43 would have a higher level of E-cadherin and Zo-1. The purpose of this study is to investigate the relationship between three membrane proteins: Cx43, E-cadherin and Zo-1 in PC cells with different metastatic potentials. The hypothesis was tested by examination of E-cadherin and Zo-1 protein levels using immunofluorescence microscopy in PC cells engineered for reduced levels of Cx43. Our analysis of immunofluorescence microscopy showed that there was a lack of significant E-cadherin and Zo-1 staining in both the shRNA-scramble control PC cells (as expected) and the shRNA-Cx43 #75 transfected PC3 cells (not expected). Our hypothesis could not be supported due to lack of E-cadherin staining in the test cell line shRNA-Cx43 #75 and inconclusive Zo-1 staining.