

## **Comparing the Effects of Apigenin against a Derivative Apigenin Compound On Metastatic Prostate Cancer Cell Line**

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Prostate cancer is the second most common cancer and the second leading cause of cancer-related deaths in the United States men due to its metastatic progression as cancer cells start to spread to other organs eventually leading to organ failure. The standard of care for advance-stage cancer remains specifically on high intensity focused radiotherapy and chemotherapy involving new investigational agents. Our lab has conducted extensive research on apigenin (4',5,7-trihydroxyflavone), a phytochemical, that has shown to possess anticancer properties. Apigenin has a short life span in systemic circulation and is unavailable to the target tissue due to its fast degradation. We envision developing a derivative to make apigenin more efficient as a prodrug attaching a phosphate group through a linker easily cleaved by alkaline phosphatase (ALP). ALP is an enzyme more commonly known for its non-specific bone turnover marker for evaluation during chemotherapy having ability to predict the survivability of men with advanced prostate cancer. Human prostate cancer metastatic cell lines DU145, PC-3M and its parental counterpart, PC-3 were exposed to apigenin-ALP (AA-ALP) and was compared it to the parental compound, apigenin. Firstly, we measure the constitutive levels of ALP in these cells. PC-3M and PC-3 cells displayed higher concentrations of ALP compared to the DU-145 and the transformed prostate epithelial RWPE cells which had no/minimal ALP activity. Furthermore, AA-ALP was more effective than apigenin in inhibiting cell proliferation and migration; and this effect was higher in PC-3M and PC-3 cells than DU145 cells. The data provide evidence that AA-ALP is more efficacious than apigenin in inhibiting proliferation and metastatic progression in cancer cells possessing high levels of ALP. Further detail studies are warranted.