

ABSTRACT NO. 26

INOSITOL HEXAPHOSPHATE (IP6): A NOVEL TREATMENT FOR BLADDER CANCER

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INTRODUCTION AND OBJECTIVE: Inositol Hexaphosphate (IP6) is a naturally occurring polyphosphorylated carbohydrate that has been reported to have significant inhibitory effects against a variety of primary tumors. We hypothesized that IP6 would inhibit the cell growth rate of bladder cancer in vitro.

METHODS: T24 and TCCsup bladder cancer cell lines were cultured using standard techniques and treated with titrating doses of IP6 (0.3, 0.6, and 0.9mM/well). Cell viability was measured by MTT. VEGF levels were measured in the cell supernatants by ELISA. Statistical analysis was performed by ANOVA.

RESULTS: Significant reductions ($p < 0.001$) in cellular growth were noted in both cell lines at all doses and time points tested (range 11.7 to 92.9%), with the exception of 0.3mM IP6 at 24 hours in the T24 cell line. VEGF levels (pg/ml) were significantly reduced ($p < 0.001$) in both cells lines at all time points and doses tested. However, to determine whether reduction in VEGF was due to the relative decrease in cell growth as observed by the MTT assay, the VEGF levels (pg/mL) were converted to %change versus control. The percent inhibition of VEGF was significantly higher than that observed by MTT ($p < 0.001$) in the TCCsup cell line at both 48 (MTT = 32.3% vs VEGF = 64.3%) and 72 hours (MTT = 26.2% vs VEGF = 60.8%) with 0.3mM IP6. This observation was also noted in the T24 cells at 24 (MTT = 26.1% vs VEGF = 40.3%) and 48 hours (MTT = 59.2% vs VEGF = 80.9%) with the 0.6mM dose of IP6 and at 72 hours (MTT = 12.6% vs VEGF = 24.0%) with the 0.3mM dose ($p < 0.001$).

CONCLUSIONS: In vitro treatment of bladder cancer with IP6 significantly decreased cellular growth by anti-angiogenic mechanisms. The data presented herein warrants further investigation and the initiation of Phase II clinical trials to evaluate the safety and clinical utility of this agent.