The Effect of Quercetin, a Plant Polyphenol, on Advanced Bladder Cancer Cell Growth

Khan, Aysha (School: duPont Manual High School)

Quercetin, a flavonoid found in many fruits and vegetables, belongs to an extensive class of polyphenolic compounds. Previous studies reported that Quercetin inhibits the proliferation of various cancer cells and tumor growth in animal models; however, studies about Quercetin's inhibition of advanced bladder cancer are limited. This study investigated the growth inhibition of quercetin on two advanced stage bladder cancer cells (TCCSUP and UMUC3). In addition to this, this study aimed to determine the impact of Quercetin on one cancer-causing gene, ß-catenin, and one cancer suppressing gene, TNF-?. It was hypothesized that if Quercetin was used to treat the UMUC3 and TCCSUP bladder cancer cell lines, then the cell viability of these cancer cell lines would decrease, TNF-? expression would increase, and ß-catenin expression would decrease. The two cell lines were treated with Quercetin for 72 hours. Then, an apoptotic assay and a trypan blue assay were conducted in order to determine how Quercetin affected UMUC3 and TCCSUP bladder cancer cell viability. A quantitative real time polymerase chain reaction was conducted in order to determine how Quercetin affected the expression of TNF-? and ß-catenin. The results of this study suggest that after 72 hours of treatment, UMUC3 and TCCSUP bladder cancer cell viability significantly decreased at the 50 uM concentration. In addition, after being treated with 50 uM concentration of Quercetin, TNF-? expression increased and ß-catenin expression decreased.

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