Decreased Expression of Cancer Stem Cell Markers in Esophageal Cancer Cells upon Auraptene Treatment

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Abstract

Cancer stem cells (CSCs) are malignant cells with high proliferation, migration, therapy resistance and tumorigenic abilities that have been detected in several human cancers. CSCs can be isolated from other cancer cells by distinct markers such as CD44 and BMI1. Auraptene is a natural coumarin with various biological activities including anti-inflammatory, anti-microbial, anti-oxidative, anticancer and chemopreventive effects. In present study, we investigated auraptene effects on the expression of CSC markers, CD44 and BMI1, in esophageal stem-like cancer cells for the first time. To study auraptene effects, KYSE30 cells were treated with non-toxic concentrations of auraptene, 10 and 20 Âµg/ml, as well as equal amount of DMSO for 48 and 72h. After the total cellular RNA was extracted and treated with DNase I, cDNAs were synthesized by M-MuLV reverse transcriptase. Real-time RT-PCR was performed using SYBR green master mix, GAPDH transcripts were used as internal control, and normalized values were plotted as relative fold change over DMSO-treated cells. Since KYSE30 cells expressed high levels of CD44 and BMI1, we examined auraptene effects on the expression of these CSC markers by real-time RT-PCR. Results indicated that after 48h incubation of cells with 20 Âµg/ml, the expression of both markers significantly decreased; the fold changed expressions for CD44 and BMI1 were 0.19 Â± 0.08 and 0.39 Â± 0.18, respectively. Present results indicated that auraptene downregulated the expression of CD44 and BMI1 in esophageal stem-like cancer cells. We have previously reported that auraptene has synergic effects on anticancer agents as well. Accordingly, it is recommended to study auraptene effects on other CSC characteristics, such as migration and radiation resistance, in KYSE30 cells.

Keywords: Auraptene, CD44, BMI1, KYSE30 Cells, Cancer Stem Cell

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