THE ROLE OF RSU-1 IN GLIOMA CELLS METASTASIS

Introduction Ras Suppressor-1 (RSU-1) was recently found to be associated with Focal Adhesion (FA) proteins. The main objective of this research work was the in vitro characterisation of a panel of glioma cancer cells in terms of aggressiveness, and the investigation of RSU-1 role on invasion of glioma cancer cells.

Material and methods A panel of four human neuroblastoma cell lines was used (H4, SW1088, A172, U87-MG). Invasion assay with matrigel-coated transwell and soft agar growth assay were performed in order to characterise the aggressiveness of glioma cell lines. The RSU-1 expression for glioma cells was tested by real time PCR and immunoblotting. Finally, glioma cells were transfected with siRNA against RSU-1 in order to find out the role of RSU-1 in glioma cells.

Results and discussions In order to assess the invasive potential of the four glioma cell lines, a transwell invasion assay was performed and A172 and U87-MG cells found to be more invasive than H4 and SW1088 cells. To determine the aggressiveness of the studied cell lines, soft agar assay was also performed. The number of colonies for the U87-MG and A172 was significantly larger than the H4 and SW1088, with the latter cell lines only forming a few small colonies.

We then sought to find out whether RSU-1 gene is differentially expressed in the four cell lines and whether its expression is correlated with invasiveness. It was found that the more aggressive A172 and U87-MG cell lines, overexpress RSU-1 compared to the less aggressive H4 and SW1088 cell lines.

Subsequently, two cell lines were selected to be used for further experiments, H4 and A172 which are the least aggressive and more aggressive cells, respectively. Our results show that upon RSU-1 silencing, the invasion of A172 cells was significantly decreased whereas invasion of H4 cells was increased with respective changes observed in the expression of Matrix Metalloproteinase 13 (MMP13), a fundamental pro tease in cancer cell metastasis.

Conclusion Results confirmed that the A172 and U87-MG glioma cells are more aggressive than H4 and SW1088. Also, RSU-1 was found to be overexpressed in most aggressive cells in comparison to less aggressive cell lines. More aggressive A172 cells lacking RSU-1 showed decreased invasion while H4 cells showed increased invasion. Collectively, RSU-1 found to be critical for glioma cell invasion and further investigation of the implicated molecular mechanism is underway.