PCA-051

Effect of all trans retinoic acid on Glioblastoma cancer cell line (A172)

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Background and Aim: Glioblastoma is the most frequent primary malignant brain tumor in adults. Despite advances in surgery and adjuvant therapy, Average survival of patients is generally less than one year from the time of diagnosis. Retinoic acid (RA) is the most common differentiation inducer which has been successfully administrated in acute promyelocytic leukemia. Therefore, this study evaluates the effect of All Trans RA (ATRA) on survival of Glioblastoma cancer cell.

Methods: Glioblastoma cancer cell line (A172) at passage 6-10 were used in this study. Cells were seeded into 96 well plates at a density of 1×103 per well. A day after plating, fibroblasts were treated with increasing concentrations of ATRA for 72 hours; 0.01, 0.1, 0.5, 1, 10, 20 µM. Vehicle received an equal amount of ethanol, as a solvent of ATRA. Cells viability was determined with 3-(4, 5)-dimethylthiahiazo-(-z-y1)-3, 5-di-phenytetrazoliumromide (MTT) dye reduction.

Results: Viability of A172 cell line was significantly affected when cultured with ATRA cells. Cell viability was severely reduced in 0.5, 1, 10 µM concentration of ATRA. Concentrations lower than 0.05µM and higher than10 µM showed moderate effects on survival of the Glioblastoma cell line.

Conclusion:taken together, it seems that retinoic acid in a certain concentration could be applied along with other traditional anti-cancer treatments.

Keywords: Glioblastoma, Retinoic acid, Viability