Abstracts

HG-13. GLIOBLASTOMA TUMOR CELLS ACHIEVE CANCER STEM-LIKE CELL PROPERTIES AFTER TEMOZOLOMIDE TREATMENT

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Glioblastoma multiforme (GBM) is an aggressive brain tumor with a dismal prognosis. The standard therapy consists of radical tumor resection, radio- and chemotherapy with Temozolomide (TMZ). However, there is evidence that clinically relevant doses of TMZ can lead to the conversion of differentiated tumor cells to a stem-like cell phenotype. Those converted cells show a

higher tumorigenicity and might promote the occurrence of a relapse. We confirmed that untreated, differentiated GBM cells show a significantly lower in vitro tumorigenicity than cancer stem-like cells cultivated from the same GBM cases. Furthermore, we could demonstrate that stem-like cells and differentiated tumor cells treated with 50 μ M TMZ show higher in vitro tumorigenicity compared to untreated tumor cells. To suppress the conversion of GBM tumor cells into tumor stem-like cells after chemotherapy, the use of Doxycycline (DOX) has shown potential in previous studies. DOX inhibits protein biosynthesis by binding to the small subunit (30S) of the bacterial ribosomes. It was shown, that the 30S subunit of bacterial ribosomes is similar to the 28S subunit of mitochondrial ribosomes, which could be a critical part of the metabolism of stem-like cells. Using a combination of TMZ and DOX for treatment, we could demonstrate a suppression of in vitro tumorigenicity. In summary, chemo-resistance complicates GBM therapy. It is possible that conversion into a stem-like cell phenotype after chemotherapy is a mechanism of resistance towards treatment. DOX can suppress that effect in vitro, and therefore could be a new option to support the standard therapy of GBM.