

ABSTRACT

Temozolomide (TMZ) stands as the primary chemotherapy choice for glioblastoma multiforme (GBM), yet resistance frequently emerges in patients, leading to tumor recurrence and worsened prognoses. A recent study reported upregulation of glutamine and glutamate transport and metabolism in TMZ-resistant GBM *in silico*, particularly highlighting the upregulation of Gene X. Given the reported glutamine addiction in gliomas, the current study aims to investigate the role of Gene X in the tumorigenesis and TMZ resistance in GBM by inducing Gene X knockdown in TMZ-sensitive Pt#3 and TMZ-resistant Pt#3-R GBM cell lines through shRNA-mediated knockdown by lentivirus transduction. The effects of Gene X knockdown were evaluated towards cell proliferation and migration. While repetition of the experiment remains necessary due to anomalous data of one transduction batch and inconclusive knockdown validation at a protein level, the current findings still suggested the role of Gene X in mediating TMZ resistance of Pt#3-R cells by affecting their proliferation and migration capabilities.

Keywords: temozolomide resistance, glioblastoma multiforme, glutamine transport and metabolism