

ABSTRACT

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Glioblastoma multiforme (GBM) is one of the most common and aggressive brain tumors in adults. Despite significant advances in treatment, GBM remains to have very poor prognosis and median survival of only 12 to 15 months after diagnosis. Standard treatment consists of maximal possible surgical resection followed by chemo-radiotherapy with antitumor drug temozolomide (TMZ), which use is problematic due to fast developing chemoresistance.

The aim of this study was to examine the effect of potential anticancer drug, anthelmintic flubendazole (FLU) and effect of FLU in combination with TMZ on GBM cells.

For this purpose, two GBM cell lines were used - A172 and T98G. In general FLU reduced cell proliferation more, especially in T98G cells. Moreover, the use of different combinations of TMZ + FLU showed even higher inhibitory effect on the viability of GBM cell lines. The combination of TMZ + FLU reduced the protein level of α -tubulin and β III-tubulin, simultaneously interesting changes in STAT3 and EGFR expression, as well as lower levels of cdc2 and cyclin B1 were observed, indicating possible cell cycle arrest in the G2/M phase.

TMZ + FLU combination also showed inhibitory effect *in vivo*, where the decrease of selected cell cycle markers was detected confirming our previous results. These results suggest possible benefit of the TMZ + FLU combination use prompting further investigation.