Abstract

The Effect of the Combinations of 5-Fluorouracil, Leptin and Leptin Antagonist in Glioblastoma †

Filiz Taspinar [1,*], Farika Nur Denizler [2] and Mehmet Tapinar [2,3]

[1] Department of Physiology, Faculty of Medicine, Aksaray University, 68100 Aksaray, Turkey
[2] Department of Medical Biology Van, Faculty of Medicine, Van Yuzuncu Yil University, 65100 Van, Turkey; fdenizler@gmail.com (F.N.D.); mtaspinartr@gmail.com (M.T.)
[3] Department of Medical Biology, Faculty of Medicine, Aksaray University, 68100 Aksaray, Turkey
[*] Correspondence: flzozkaya@gmail.com; Tel.: +90-505-485-0811
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Abstract: Glioblastoma (GB) is the most aggressive form of brain tumor and resistant to chemotherapy. New therapeutic approaches are needed to improve the efficacy of chemotherapy. It was reported that there may be a relationship between obesity and poor prognosis in GB treatment. However, there is no study investigating the relationship between leptin, leptin receptor and chemotherapy in GB. The aim of this study was to investigate the cytotoxic effects of 5-Fluorouracil (5-FU) in the treatment of GB in the presence of leptin and leptin receptor antagonist SHLA. LN-405, T98G and U373-MG GB cell lines were used for this purpose. The cytotoxic effects of these molecules in both single and combination were determined by MTT. The sensitivities of GB cell lines to 5-FU were found to be different and leptin and SHLA had no cytotoxic effects in GB cells. It was determined that leptin increased 5-FU toxicity by 8–57% depending on 5-FU dose and cell type in all three cell lines in combination groups. A similar effect was detected in combinations of SHLA with 5-FU (6–58%). This is the first study to show that combinations of 5-FU with leptin and SHLA increase the cytotoxicity of 5-fluorouracil in cancer.

Keywords: Glioblastoma; 5-Fluorouracil; leptin