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Abstract

The Effect of Trichostatin A on Radiosensitivity in Glioblastoma †

Mehmet Taspinar [1,2,*], Tahir Çakir [3], Mustafa Güven [4], Farika Nur Denizler [2], Bahar Kartal [2] and Aydin Rüstemoğlu [1]

[1] Department of Medical Biology, Faculty of Medicine, Aksaray University, 68100 Aksaray, Turkey; arustamov@yahoo.com
[2] Department of Medical Biology, Faculty of Medicine, Van Yuzuncu Yil University, 65100 Van, Turkey; fdenizler@gmail.com (F.N.D.); bahar_kartal_23@hotmail.com (B.K.)
[3] Department of Biophysics, Faculty of Medicine, Van Yuzuncu Yil University, 65100 Van, Turkey; tcakir2003@yahoo.com
[4] Faculty of Medicine, Van Yuzuncu Yil University, 65100 Van, Turkey; mgguvenmustafa@gmail.com
* Correspondence: mtaspinartr@gmail.com; Tel.: +90-505-485-0811
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Abstract: Glioblastoma (GB) is the most lethal brain tumor that resists standard treatments because of its high malignancy. Radiotherapy (RT) directly affects the clinical success on GB treatment. Epigenetic modifications occur in GB cells at a high rate. Improving the therapeutic efficacy of RT over epigenetic modulators may contribute to the development of a targeted treatment in GB. Trichostatin A (TSA), a histone deacetylase inhibitor, a natural antifungal compound. The aim of this study was to investigate the effect of TSA on radiosensitivity when combined with RT in GB cells. Different concentrations of TSA (in the range of 100–1000 nm) and 8 Gy RT were applied to GB LN-405 cells as alone and combination simultaneously. Cell viability was determined by MTT. In the RT application, 3D conformal technique, which can represent GB clinical practice, was used. Cell viability was significantly reduced in both TSA and TSA + RT combination groups compared to control group ($p < 0.05$). When the TSA was compared with the TSA + RT combination, it was found that TSA increased the radiosensitivity by 17–41% depending on the dose. This is the first study to show that TSA increases the radiosensitivity in GB LN-405 cells in the literature.

Keywords: glioblastoma; Trichostatin A; radiosensitivity

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