Hyperoxia

Hyperoxia effectively alleviates hypoxia in glioma and sensitizes glioma cells to chemotherapy. In a summary of traditional studies, the majority of researchers overlooked the influence of hypoxia on differentiated cells because they only focused on the maintenance of glioma stem cells (GSCs) stemness, which thus resulted in chemoresistance. Because of this background, Wang et al. hypothesized that GSCs may be induced through dedifferentiation under hypoxic conditions, and hypoxia maintains GSCs stemness, which thus leads to resistance to chemotherapy. In contrast, hyperoxia inhibits the dedifferentiation process and promotes GSCs differentiation, which increases the sensitization of glioma cells to chemotherapy. Hypoxia-inducible factor-1 α (HIF1a) contributes substantially to the stemness maintenance of GSCs and resistance of glioma to chemotherapy; thus, they investigated whether HIF1 α regulates the resistance or sensitization of glioma cells to chemotherapy in different oxygen levels. It highlights a novel viewpoint on glioma chemosensitivity from the transformation between dedifferentiation and differentiation in different oxygen levels ¹.

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Wang P, Wan W, Xiong S, Wang J, Zou D, Lan C, Yu S, Liao B, Feng H, Wu N. HIF1α regulates glioma chemosensitivity through the transformation between differentiation and dedifferentiation in various oxygen levels. Sci Rep. 2017 Aug 11;7(1):7965. doi: 10.1038/s41598-017-06086-2. PubMed PMID: 28801626.

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