The synergistic effects of cotreatment with the histone deacetylase inhibitor panobinostat and bromodomain inhibitor JQ1 or OTX015 were validated using cell viability assays in GBM cell lines. Furthermore, the inhibitory mechanisms were investigated via an EdU proliferation assay, an apoptosis assay, qPCR, Western blot and RNAseq analyses.

Meng et al. from the Department of Pediatric Neurosurgery, Key Laboratory of Cell Differentiation and Apoptosis of the National Ministry of Education, Department of Pathophysiology, Xin Hua Hospital Affiliated with Shanghai Jiao Tong University School of Medicine, Shanghai, found that the cotreatment with panobinostat and JQ1 or OTX015 synergistically inhibited cell viability in GBM cells. The cotreatment with panobinostat and JQ1 or OTX015 markedly inhibited cell proliferation and induced apoptosis in GBM cells. Compared with treatment with each drug alone, the cotreatment with panobinostat and JQ1 induced more profound caspase 3/7 activation and cytotoxicity. Mechanistic investigation showed that combination of panobinostat with JQ1 or OTX015 results in stronger repression of GBM-associated oncogenic genes or pathways as well as higher induction of GBM-associated tumor-suppressive genes.

The study demonstrated that HDAC inhibitor and bromodomain inhibitor had synergistical efficacy against GBM cells. The cotreatment with HDAC inhibitor and bromodomain inhibitor warrants further attention in GBM therapy [1].

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Meng W, Wang B, Mao W, Wang J, Zhao Y, Li Q, Zhang C, Tang Y, Ma J. Enhanced efficacy of histone deacetylase inhibitor combined with bromodomain inhibitor in glioblastoma. J Exp Clin Cancer Res. 2018 Oct 1;37(1):241. doi: 10.1186/s13046-018-0916-y. PubMed PMID: 30285808.