Kavain

Numerous studies have indicated that glioblastoma shows remarkable radioresistance and aggressive recurrence.

see Glioblastoma radioresistance

see Glioblastoma recurrence.

Cell growth curve and colony formation assays were used to analyze the radioresistance of GBM. Immunoprecipitation and immunoblotting experiments were carried out to analyze protein expression and interaction.

Yu et al. found that LITAF, lipopolysaccharide (LPS)-induced tumor necrosis factor (TNF)-α factor, is up-regulated both in mRNA and protein in GBM tumors. Meanwhile, we observed that high LITAF expression contributes to radioresistance of GBM cell lines (including U87, U251, DK, and AM38 cells), indicated by knockout or knockdown of LITAF in cells sensitizing them to radiation treatment both in vitro and in vivo. Furthermore, we demonstrated that kavain, an active constituent of Piper methysticum Forst., effectively ablates GSC-like cells' (such as CD133 + U87, U251, DK, and AM38 populations) radioresistance in a LITAF-dependent manner.

In mechanism, the results indicated that 1) the elevation of LITAF in GBM cells activates the NF-κB pathway to promote mesenchymal transition, and 2) kavain disturbs STAT6B/LITAF protein interaction and then expels LITAF from the nucleus. Therefore, they considered that kavain may be a potential candidate to develop an irradiation therapy adjuvant for GBM [1)]

1)
Yu J, Shi J, Yuan F, Yin W, Zeng H, Ge L, Li H, Wang X. Kavain ablates the radio-resistance of IDH-wildtype glioblastoma by targeting LITAF/NF-κB pathway. Cell Oncol (Dordr). 2022 Dec 5. doi: 10.1007/s13402-022-00743-z. Epub ahead of print. PMID: 36464713.