Suppression of sialylation increases sensitivity of glioblastoma cells to cisplatin and 5-fluorouracil

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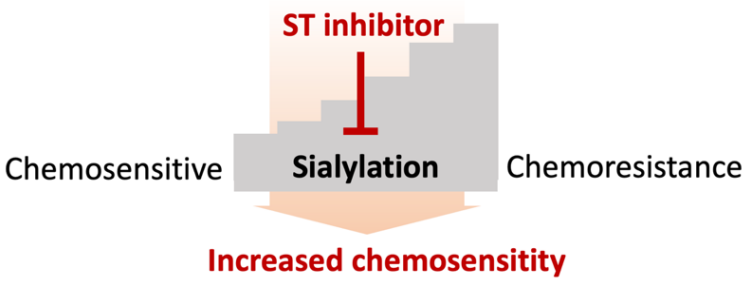
Abstract: *Background and objective*: Aberrant sialylation was found to promote tumorigenesis and progression of many cancer types. We aimed to investigate the involvement of sialylation in chemosensitivity of glioblastoma cells. *Materials and Methods*: Expression of sialylated glycans in glioblastoma cell lines (U373, U251, and U87) was determined by lectin fluorescence using *Maackia amurensis* lectin II (MAL-II) and *Sambucus nigra* agglutinin (SNA). The sensitivity of glioblastoma cells to cisplatin and 5-fluorouracfil (5-FU) was investigated by sulforhodamine B assay, after suppression of sialylation by a pan-sialylation inhibitor (3Fax-peracetyl-Neu5Ac, 3Fax). *Results*: By lectin fluorescence staining, α2,3- and α2,6- sialylated glycans were found to differentially express in U373, U251, and U87 glioblastoma cell lines. Cell viability of U373, U251, and U87 were significantly decreased after combined-treatment of cisplatin or 5-FU with 3Fax, comparing with chemo-drugs or 3Fax alone. This information suggested the involvement of sialylation in chemoresistance of glioblastoma cells. *Conclusions*: Sialylation was demonstrated in our study to play an important role in chemoresistance of glioblastoma cells, suggesting the potential of using sialylation inhibitor as a chemosensitizer for treatment of glioblastoma in the future.

Graphical abstract:



Keywords: gliomas; chemosensitivity; sialyltransferase inhibitor; sialylation

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