Combined anti-Galectin-1 and anti-EGFR siRNA-loaded chitosan-lipid nanocapsules decrease temozolomide resistance in glioblastoma: In vivo evaluation

Titre	Combined anti-Galectin-1 and anti-EGFR siRNA-loaded chitosan-lipid nanocapsules decrease temozolomide resistance in glioblastoma: In vivo evaluation
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Résumé en anglais	Glioblastoma is the most frequent primary malignant brain tumor in adults. Despite treatments including surgery, radiotherapy and chemotherapy by oral Temozolomide (TMZ), the prognosis of patients with glioblastoma remains very poor. This is partly due to the resistance of malignant cells to therapy particularly TMZ. Overexpression of epidermal growth factor receptor (EGFR) and Galectin-1 by tumor cells significantly contributes to TMZ resistance. The purpose of this study was to evaluate in vivo, the effect of local administration by convection enhanced delivery (CED) of the anti-EGFR and anti-Galectin-1 siRNAs administered separately or in combination on (i) the survival of nude mice-bearing orthotopic U87MG glioblastoma cells and on (ii) the EGFR and Galectin-1 expression in excised U87MG tumor tissue. Both siRNAs were carried by chitosan lipid nanocapsules (LNCs). Survival of mice treated 14 days after tumor implantation by the combination of anti-EGFR and anti-Galectin-1 siRNAs and TMZ (40mg/kg) was significantly increased compared to animals treated by single anti-EGFR or anti-Galectin-1 siRNAs carried by chitosan-LNCs. This was confirmed by a decreased EGFR and Galectin-1 expression at the protein level in excised U87MG tumor tissue, 8 days post-transfection, visualized by immunofluorescence. This study demonstrates the potential of our strategy in glioblastoma therapy.
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