EGFR siRNA lipid nanocapsules efficiently transfect glioma cells in vitro.

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Résumé en anglais	Glioma are the most common malignant tumors of the central nervous system and remain associated with poor prognosis, despite the combination of chemotherapy and radiotherapy. EGFR targeting represents an interesting strategy to treat glioma. Indeed, a high level of endothelial growth factor receptors expression (EGFR), involved in the malignancy of the tumor, has been observed in glioma. Our strategy consisted in using EGFR siRNA entrapped into lipid nanocapsules (LNCs) via cationic liposomes. In vitro analyses on U87MG human glioma cells were performed to evaluate firstly the capacity of LNCs to efficiently deliver the siRNA and secondly the effect of EGFR siRNA targeting on U87MG proliferation. Then, the complement protein consumption was evaluated by CH50 assays to verify the suitability of the siRNA LNCs for systemic administration. The EGFR siRNA LNCs exhibited an adequate size lower than 150 nm as well as a neutral surface charge. The IC50 profile together with the 63% of protein extinction demonstrated the significant action of EGFR siRNA LNCs compared to scrambled LNCs. Dose and time-dependent survival assays showed a decrease of U87MG growth evaluated at 38%. Finally, low complement consumption demonstrated the suitability of EGFR siRNA LNCs for intravenous injection. In conclusion, EGFR siRNA LNCs demonstrated their capacity to efficiently encapsulate and deliver siRNA into U87MG human glioma cells, and will therefore be usable in the future for in vivo evaluation.
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