

Cationic vesicles based on non-ionic surfactant and synthetic aminolipids mediate delivery of antisense oligonucleotides into mammalian cells

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Abstract

A formulation based on a synthetic aminolipid containing a double-tailed with two saturated alkyl chains along with a non-ionic surfactant polysorbate-80 has been used to form lipoplexes with an antisense oligonucleotide capable of inhibiting the expression of *Renilla luciferase* mRNA [1]. The resultant lipoplexes were characterized in terms of morphology, zeta potential, average size, stability and electrophoretic shift assay. The lipoplexes did not show any cytotoxicity in cell culture up to 150 mM concentration. The gene inhibition studies demonstrated that synthetic cationic vesicles based on non-ionic surfactant and the appropriate aminolipid play an important role in enhancing cellular uptake of antisense oligonucleotides obtaining promising results and efficiencies comparable to commercially available cationic lipids in cultured mammalian cells (Figure 1). Based on these results, this amino lipid moiety could be considered as starting point for the synthesis of novel cationic lipids to obtain potential non-viral carriers for antisense and RNA interference therapies.

References

[1] Santiago Grijalvo, Adele Alagia, Gustavo Puras, Jon Zárata, Jose Luis Pedraz and Ramon Eritja, *Colloids and Surfaces B: Biointerfaces* **119**, (2014) 30-37.

Figure 1

