DNA Nanostructures for enhanced cellular uptake

Sergio Serantes, Carme Fábrega, Anna Aviñó, Anna Clua, Arnau Domínguez, Natalia Navarro, Ramón Eritja.

Institute for Advanced Chemistry of Catalonia (IQAC-CSIC), Jordi Girona 18-26, E-08034 Barcelona, Spain.
Networking Center on Bioengineering, Biomaterials and Nanomedicine (CIBER-BBN), Jordi Girona 18-26, E-08034 Barcelona, Spain.
Contact sergio.serantes@iqac.csic.es (S.S.), recgma@cid.csic.es (R.E.).

A remarkable strategy with increasing relevance in the desing of antitumoral therapies is based on the conjugation of anti-cancer drugs to molecules such as lipids or receptor ligands. [1] This results in the improvement of both their administration and their pharmacological properties. Following this approach, several studies have been performed to analyze oligonucleotide-molecule conjugates. [1,2]

In this work, a study regarding the properties of conjugates comprising an anti-metabolite nucleotide drug (floxuridine), with anti-tumoral activity, and a fatty acid has been performed. Therefore, the first step done was the incorporation of the desired fatty acid onto a solid support, allowing its use for the solid phase synthesis of the oligonucleotide conjugate.

Moreover, we studied the internalization effect of these molecules in tumoral cell lines sucha as HeLa and HCC2998. Finally, the cytotoxicity of these conjugates was assessed in the same cancer cell lines. Such conjugates are expected to show antiproliferative activity due to their metabolic activation by nuclease degradation, generating floxuridine mono-phosphate.

References

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