Development of novel aptamer-functionalized liposomes for oral cancer therapy

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Introduction

Conventional anticancer therapies present low specificity, leading to several secondary effects. AS1411 is a G4 aptamer able to recognize nucleolin and is being used as an agent for anticancer drug delivery. AS1411 derivatives have been proposed, with improved toxicity and high affinity to nucleolin.

AIM: To synthesize AS1411 derivatives-functionalized liposomes to improve the selectivity of Imiquimod and C4 into oral cancer cells.

Methodology

Liposomes Synthesis

Liposomes Characterization

Biological Evaluation

NH₄⁺ Apatmers Functionalization

Results

Conclusions

- Liposomes with sizes up to 200 nm, polydispersity index below 0.4 and functionalization yields up to 85% were obtained.
- UPCI-SCC-154 cells express nucleolin in their surface.
- Through the functionalization of liposomes with the AS1411 derivatives we expect to improve the selectivity of Imiquimod and C4 into oral cancer cells (UPCI-SCC-154 cell line) and to decrease the toxicity in normal epithelial cells (Het-1A cell line).