Development of liposomes and chitosan nanoparticles for the delivery of antimicrobial peptides

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Antimicrobial peptides (AMPs) are recognized as promising tools to fight multidrug resistance of pathogens and biofilm-associated infections. To enhance the efficacy of AMPs and overcome some limitations to their clinical use, such as low cell permeability, limited stability, and toxicity, we studied the inclusion of two AMPs (2-Myr and 3-Pep), derived from the natural AMP Chionodracine, [1] in chitosan or lipid based nanosystems. The antimicrobial activity of these AMPs against ESKAPE bacteria and different *Candida* species has already been demonstrated [2,3]. The hydrophilic peptide 3-Pep was loaded into chitosan nanoparticles using the ionotropic gelation technique while the lipopetide 2-Myr was loaded into the bilayer of liposomes. Both nanosystems were characterized with different physico-chemical techniques (DLS, DELS, UV-vis spectroscopy, TEM, SEM, CD) to evaluate their size, charge, stability, morphology and AMP entrapment efficacy. Microbiological assays revealed the enhanced antimicrobial and antibiofilm activity of 2-Myr against two *Candida* species when loaded into liposomes.

References

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