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Drug loading levels affect in vitro release of vinorelbine from thermosensitive liposomes

Max Regenold[1], Jessica Steigenberger[2], Elisa Siniscalchi[1,3], Heiko Heerklotz[1,2] & Christine Allen[1]

[1]Department of Pharmaceutical Sciences, Leslie Dan Faculty of Pharmacy, University of Toronto, Toronto, Canada

[2]Lehrstuhl für Pharmazeutische Technologie und Biopharmazie, Albert-Ludwigs-Universität Freiburg, Freiburg, Germany

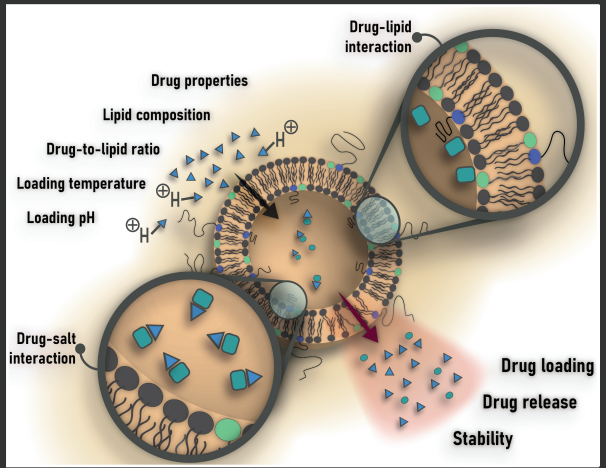
[3]Department of Biomolecular Sciences, School of Pharmacy, University of Urbino Carlo Bo, Italy

UNIVERSITY OF TORONTO
LESLIE DAN FACULTY OF PHARMACY

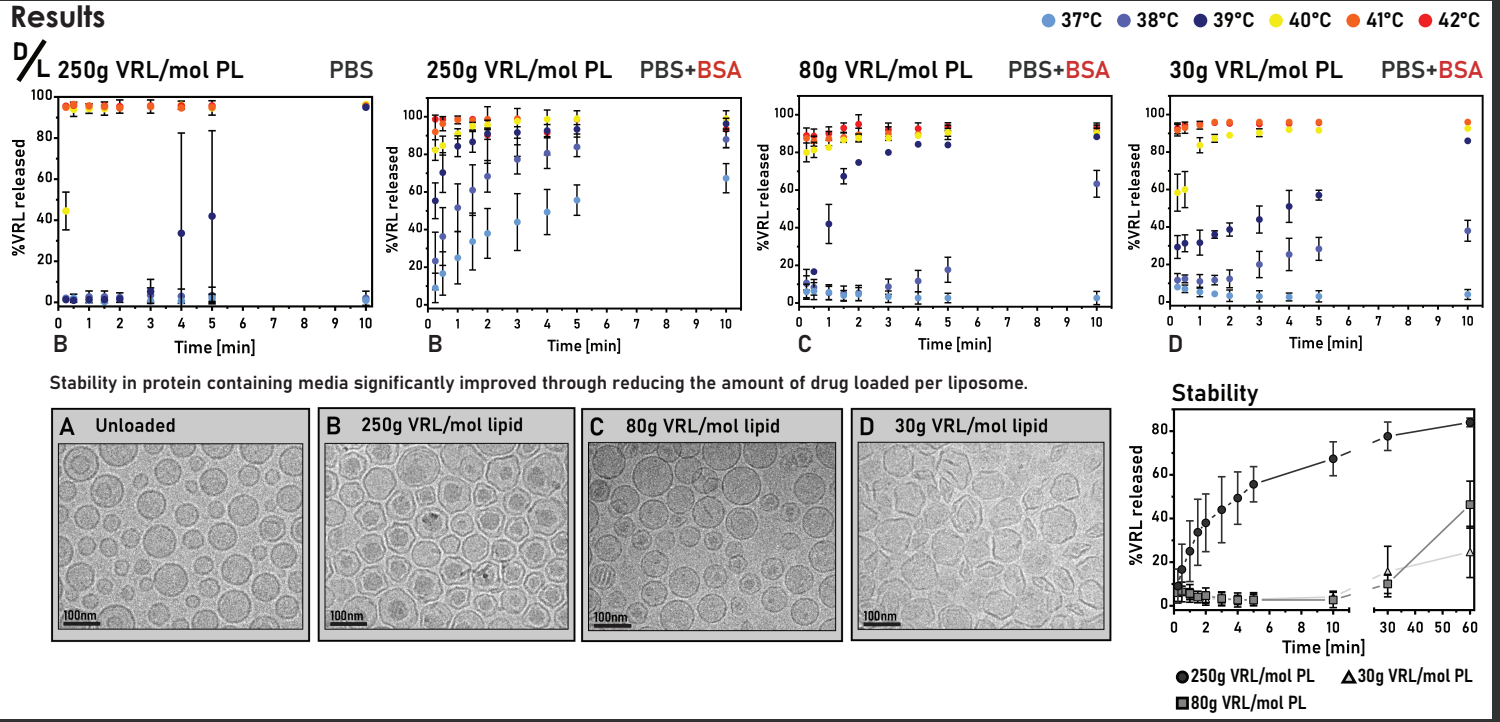
ALLEN LAB

Introduction

Triggered drug release from thermosensitive liposomes (TSL) has been proposed as a strategy to address limitations associated with conventional liposomal drug delivery: heterogenous drug uptake and distribution as well as limited drug release at the target site. Ongoing clinical studies with a TSL formulation of doxorubicin are highlighting the potential of this treatment and delivery approach. Many other drugs would benefit from the same localized and targeted delivery strategy as it can result in significant improvements in therapeutic index. Our lab has developed TSLs loaded with cisplatin, alvespimicyn and the vinca alkaloid vinorelbine (VRL). Here we aimed to understand how formulation parameters (e.g. drug loading level, internal/external buffer) influence the performance (e.g. drug release, stability) of a TSL formulation encapsulating VRL (Figure 1).



Results



Conclusions

The current studies demonstrate the importance of thorough in vitro characterization during development of a TSL formulation. The results highlight that previously determined formulation characteristics and their influence on a formulation's performance cannot be easily translated from non-thermosensitive liposomes to their thermosensitive counterparts.

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