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Abstract book

LIPOSOMES COATED WITH HPMA-BASED COPOLYMER: FORMATION AND CHARACTERIZATION OF STRUCTURE

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Highly stable liposomes were developed by coating phosphatidylcholine liposomes with amphiphilic N-(2-hydroxypropyl)methacrylamide copolymer. Two approaches in the preparation of coated liposomes were employed: the copolymer was added during (*in prep*) or after (*ex post*) the liposome formation (Figure 1A). The influence of polymer concentration and coating method were evaluated using the cryo-TEM, DLS and SAXS techniques. The *in prep* modification significantly increases, up to four weeks, the stability of liposomes against aggregation and makes the liposomal membrane non permeable towards an inorganic salt. Such enhanced longevity is attributed to the different structure of *in prep* coated liposomal membranes proved by SAXS technique (Figure 1B). More detailed investigation of the internal structure of liposomal nanocontainers coated with amphiphilic HPMA-based copolymer was performed by SANS. The combination of SAXS and SANS data provided an opportunity to describe the liposomal membrane in detail.

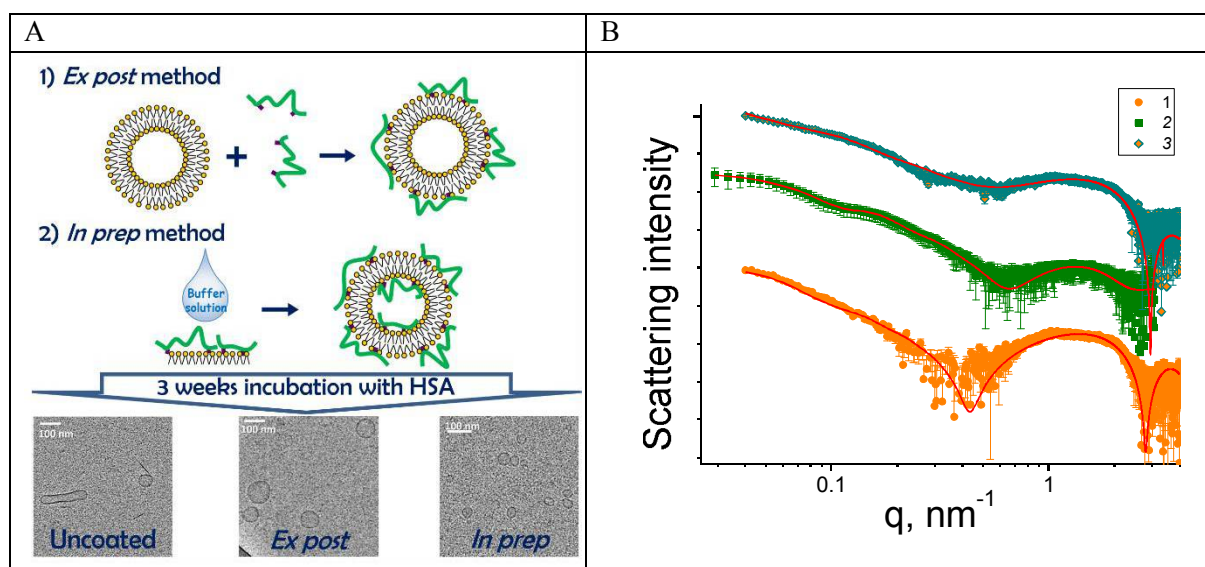


Figure 1 – (A) Scheme of *in prep* and *ex post* methods of preparation; (B) SAXS data for uncoated liposomes (1), *in prep* liposomes (2) and *ex post* liposomes (3).

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References

[1] Zaborova, O. V.; Filippov, S. K.; Chytil, P.; Kováčik, L.; Ulbrich, K.; Yaroslavov, A. A.; Etrych, T. *Macromol. Chem. Phys.* **2018**, doi: 10.1002/macp.201700508