Institute of Pharmaceutical Technology and Regulatory Affairs

Faculty of Pharmacy

University of Szeged

I. Symposium of Young Researchers on Pharmaceutical Technology, Biotechnology and Regulatory Science

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Basic research methods in the development process of the liposomal formulations

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Probably there would not have been any other era when alternative routes for drug administration or new therapeutic and diagnostic options had as an important part in the pharmaceutical researches as nowadays. Liposomes, a type of nano-carrier systems used for targeted drug delivery are in the centre of the up-to-date nanotechnological investigations [1].

The objectives of this research are the creation and the investigation of formulations made from different phospholipid contents, the incorporation of different types of active pharmaceutical ingredients (APIs) into the vesicles, and the study of the effects when various production methods and parameters are applied.

The first formulations were prepared by the thin-film hydration method [1]. The ratio between the phospholipids and the cholesterol were changed in addition to the temperature, the pressure, and the filtration. The size of the produced particles was determined via dynamic light scattering technique. The zeta potentials were verified to check the charge of the vesicular surface. Furthermore, thermogravimetric analyses and spectrophotometric measurements were done. Fourier-transform infrared and Raman spectroscopies, moreover, small-angle X-ray scattering measurements are planned to be done in the close future.

Most of the liposomal formulations were prepared with vesicles under 100 nm from different combinations of wall contents. The measured zeta potential values were slightly negative except the API-containing formulations.

We would like to prepare and study further liposomal formulations and broaden the scale of the used APIs and the techniques of the production.

References

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