10. PROSPECTS FOR OBTAINING LIPOSOMES WITH STANDARDIZED PLANT EXTRACT

Author: Stahi Cristina; **Co-author:** Yaman Abdin

Scientific advisor: Ciobanu Cristina, PhD, Associate Professor, Department of Drug Technology, *Nicolae Testemitanu* State University of Medicine and Pharmacy, Chisinau, Republic of Moldova

Introduction. In recent years, scientists have shown an increasing interest in incorporating biologically active compounds extracted from plants into nanoparticle delivery systems. Examples of such delivery systems include liposomes, solid lipid nanoparticles, carbon nanotubes, graphene and many others. The need to develop an advanced phytocompound administration system is based on the fact that most biologically active compounds extracted from plants suffer from having low absorption and undergoing intensive metabolism which limits their efficacy and contributes to their lack of selectivity. Therefore, the incorporation of phytocompound into modern nanoparticle delivery systems would indeed increase their therapeutic efficiency and bioavailability.

Aim of study. Firstly, exploring different approaches for generating, analyzing and controlling liposomes reported in the literature, and secondly generating and evaluating liposomes with standardized polyphenolic extract content.

Methods and materials. For the literature review, open access scientific articles from databases such as PubMed and Scopus are collected (n=40 articles). With regard to the preparation of liposomes, dry artichoke extract standardized in chlorogenic acid is used, as a polymer, a mixture of Cholesterol: Lecithin: PEG-600 (0,3:1:1) is utilized. Samples are ultrasonicated and dried using a rotary evaporator (IKA VACSTAR). The resulting Liposomes are evaluated under electron microscope (VWR® Binocular Microscope) and their Zeta potential is determined (Malvern Zetasizer Nano ZS).

Results. Liposomes possess multiple advantages which allow for the availability of several phytocompounds on the nutraceuticals market. The highest percentage of liposomal phytoconstituents refers to those of phenolic nature with antioxidant properties. Thus, for the research, the standardized extract from artichoke leaves cultivated in the collection of the Practical Scientific Center in the Field of Medicinal Plants of *Nicolae Testemitanu* SUMPh was used. The liposomes were obtained by the classic method of preparation with the application of the thin film hydration technique, followed by ultrasound, using soy lecithin, PEG 600, cholesterol and methanol as solvent. The obtained phospholipid vesicles with average diameter of 550 nm were observed under the electron microscope, with electric potential of 0.8, determined by means of the dynamic light diffusion method.

Conclusion. The research results present important opportunities for capitalizing on natural extractive products through the development of new pharmaceutical forms to ensure the population with quality products and high bioavailability.