

PR-113**STUDY OF VINPOCETINE ADSORPTION ON THE SURFACE OF LIPOSOMES OBTAINED FROM SOYA LECITINE**

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Abstract. Nanocarriers used for the drug delivery to the organs and tissues differ by their size, shape and composite materials [1]. The properties of each nanoparticle are defined by the extent of its payload with a drug, stability, the rate of the drug release and the presence of a ligand for the directed transportation [2].

Vinpocetine is a vasoactive and nootropic preparation that proves to be semisynthetic derivative of the common periwinkle plant alkaloid.

Objective of the investigation: determination of characteristics for adsorption of vinpocetine on the surface of liposomes obtained from soya lecithine.

Characteristics of vinpocetine adsorption on the surface of liposomes were studied by the equilibrium dialysis technique. The choice of this method is stipulated by the fact that quantitative analysis of the equilibrium vinpocetine concentration in the dispersive medium necessary for the determination of the adsorption value is complicated by the presence of dispersive phase - liposomes. Semipermeable membrane with diameter of pores that is sufficient for the penetration of vinpocetine molecules but leakless for liposomes ensures obtaining of vinpocetine solution with the concentration close to that one vinpocetine in the liposomes dispersive medium. Solution prepared in such a way can be analyzed quantitatively with the use of spectrophotometry.

To obtain liposomes from soya lecithine hydration/re-hydration was applied. Soya lecithine solution (Sigma) in ethyl alcohol was evaporated in the rotor evaporator at the temperature of 45°C and pressure of -0,085 MPa. Then 0,01 M solution of hydrochloric acid (pH=2,0) was added. For obtaining of liposomes solutions were subjected to irradiation with ultrasound disintegrator for 15 minutes.

In this study the values of vinpocetine adsorption on liposomes at the different concentrations of vinpocetine were determined as well as the constants in Freundlich and Langmuir equations.

Ultimate adsorption of vinpocetine on liposomes is considerably less than that one on the colloid particles of iron hydroxide (III) sol.

Constant *b* in Langmuir equation (the value of concentration when a half of the ultimate adsorption is attained) proves to be less as compared with that one characteristic for adsorption on the colloid particles of iron hydroxide (III) sol; it means quite efficient adsorption of vinpocetine by liposomes at low concentrations.

According to the results of performed investigations one can make a conclusion that incorporation of vinpocetine into liposomes by its addition to the ready-made colloid solution of liposomes is rather low-efficient.

References

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2. Hong J. S., Stavis S. M., DePaoli Lacerda S. H. Microfluidic directed self-assembly of liposome-hydrogel hybrid nanoparticles. *Langmuir.* 2010. 26(13). P. 11581-8.