УДК 61:615.1(043.2)
ББК 5:52.82
ISBN 978-985-21-0251-3

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CONTRIBUTION OF CETYLTRIMETHYLMMONIUM BROMIDE C 4,6 WITH DINITROBENZFUROXANE

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Introduction. The phenomenon of solubilization is very effectively used in the pharmaceutical industry. However, the mechanism of solubilization can be different. The study of solubilization in micelles played an important role in the creation of vectors, carriers of medicinal agents or their precursors. Since many biologically active compounds and precursors of drugs have limited bioavailability, its increase at the present time is an actual problem.

Aim: One of the ways to increase the solubility is to use micelles. Due to its specific structure, micelles are capable of encapsulating compounds in a hydrophobic core, polar layer or on the surface of a micelle. Thanks to the research process in the micelle, we can learn about the increase in its solubility and the possibility of using the micelle as a carrier.

Methods and materials. In order to understand the mechanism of solubilization of 4,6-dinitobenzofuroxane in an aqueous medium, we study it in concentrations before and after CMC using a spectrophotometric method containing CTAB + in an aqueous system. In the course of the work, the CTAB model of the "FLUKA" firm was used. For the preparation of solutions used purified water on the installation "Melp system". The initial concentration of surfactant is equal to 1*10-2 mol/l. Spectrophotometric measurements were carried out in the range of 200–600 nm on an Agilent 8453 device. DNBF spectra in various concentrations are from 0 to 5*10-3 mol/l.

Results and discussion. 4,6 - dinitrobenzfuroxan exhibits anti-helminthes property. Its aqueous solubility in aqueous media shows low bioavailability. In water DNBF, the saturated UV spectrum solutions have 4 absorbing bands: 424 nm, 323 nm, 275 nm, and 258 nm. As seen from the figure, the greater the concentration of CTAB toward the critical concentration of the formation of micelles (CMC), the lower the absorption rate of saturated solutions of DNBFO. In the area of critical concentration, the expansion of PP is observed, and at Cstab = 5 mol/L, a sharp increase in the intensity and shift of PP to 46 nm is observed. This means the formation of a molecular micellar complex containing DNBF (-); CTAB (+). The 460 nm absorption bands are complex and must be separated. After the separation process, we obtain a PP of 415 nm and 460 nm. At the same time, the intensity of the PP at 460 nm is twice as high as at 415 nm. i.e., at Cstab = 0.005 mol / l, some of the DNBF molecules are in bulk, and the other part is in the form of the Meisenheimer complex in the CTAB micelle. Confirmation of the formation of the complex is the PP transition at 45 nm. The intensity of the PP at 460 nm increases nonlinearly with increasing concentration. CTAB after critical concentration. This may be, firstly, associated with the transition of spherical micelles of the CTAB to cylindrical. The second reason is that when the concentration of CTAB increases, the degree of transfer will increase, and the concentration of the molecular micellar complex may increase. CTAB micelles are spherical. This is indicated by the method of small angular scattering of neutrons. At Sctab = 0.005 mol/l, they represent a sphere with a radius of 27.2 ± 2.7 A, a volume of 152*103A3 and an aggregation number of N 124 mol.

Conclusions. Thus, it is shown that the 4,6-dinitbenzofuroxane and the CTAB are formed by the molecular-micellar complex, which leads to a sharp increase in the intensity of the PP.