IMAGING OF RHODAMINE-LOADED CAPSULES DISTRIBUTION *IN VIVO* BY FLUORESCENCE SPECTROSCOPY

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Presently non-invasive methods of optical diagnostics based on spectrophotometry and fluorescence analysis find a wide application in biomedicine, pharmacology, chemistry, etc. [1]. Fluorescence spectroscopy has a high potential in the field of drug research not only for drug development, but also during preclinical and clinical trials [2]. An important aspect is the control of the effectiveness of the penetration of drug carriers [3].

In this paper, fluorescence spectroscopy was used to investigate the efficiency of propagation in the circulatory system of fluorescent-labelled (rhodamine TRITC) nanocapsules. A fluorescence channel with a fibre-optics probe in series with the multifunctional laser-based non-invasive diagnostic laser system "LAKK-M" (SPE "LAZMA" Ltd, Russia) was used for fluorescence spectroscopy (λ_{ex} = 532 nm). Twelve 100-120 g Wistar rats were divided into two groups: treated with rhodamine-loaded capsules (n = 6) and control (n = 6). Fluorescence spectra were recorded from thighs of anesthetized rats for 90 min with 10 min intervals.

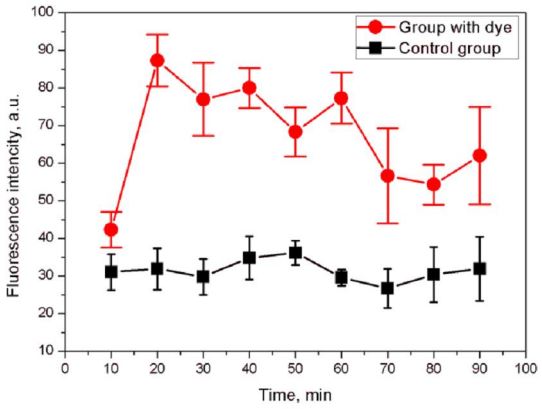

Fig. 1: Dynamics of the detected fluorescence intensity.

The fluorescence spectra show a statistically significant increase of the fluorescence intensity in a group of rats that received nanocapsules with rhodamine. In this group, a marked increase (210% of the baseline level) in the average peak fluorescence intensity from 42±5 to 87±7 a.u. was registered. The results can be used in the field of drug control and in the process of high-throughput screening during drug testing.

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