

Fluorescence spectroscopy usage possibilities for the laboratory rats metabolism evaluation

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THE AIM OF RESEARCH

To find informative points (areas) on the rat skin for tissue oxygenation processes dynamics.

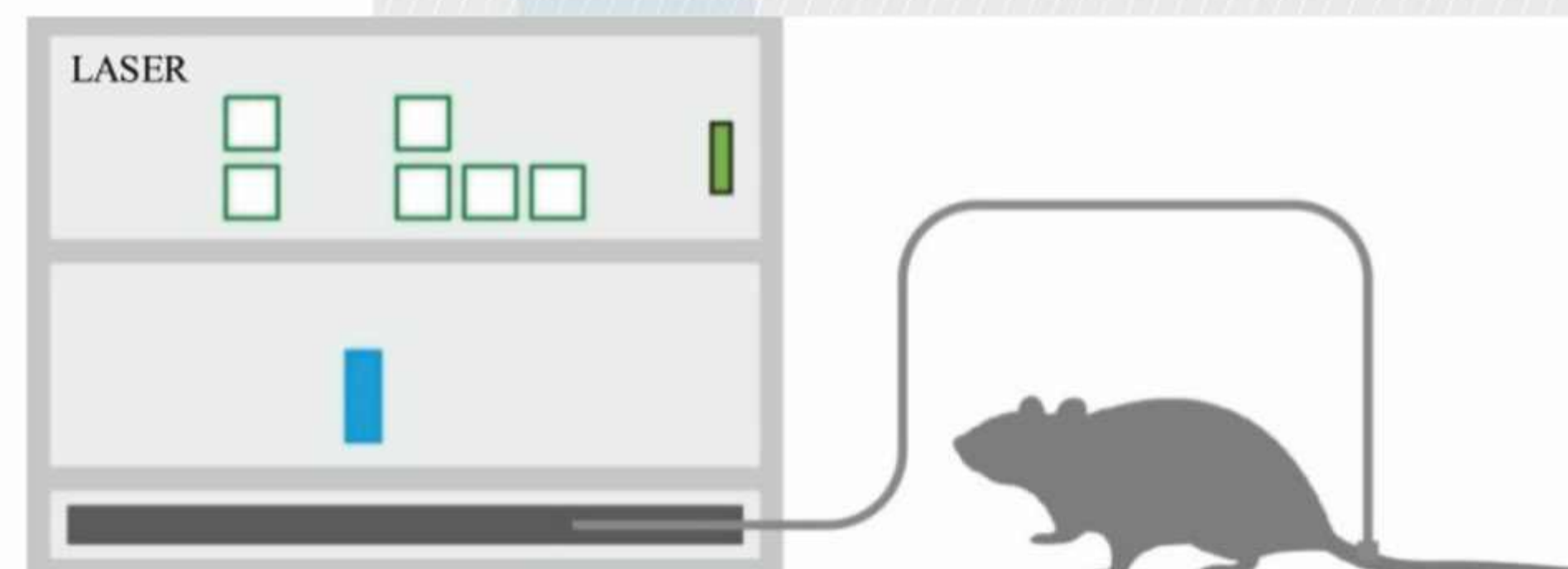
INTRODUCTION

Tissue metabolic processes estimation and evaluation is a modern direction in the scientific research practice. For this purpose a fluorescence spectroscopy (FS) method was applied because of its high sensitivity and non-invasive diagnostics of the tissue oxygen metabolism

EXPERIMENTAL STUDY

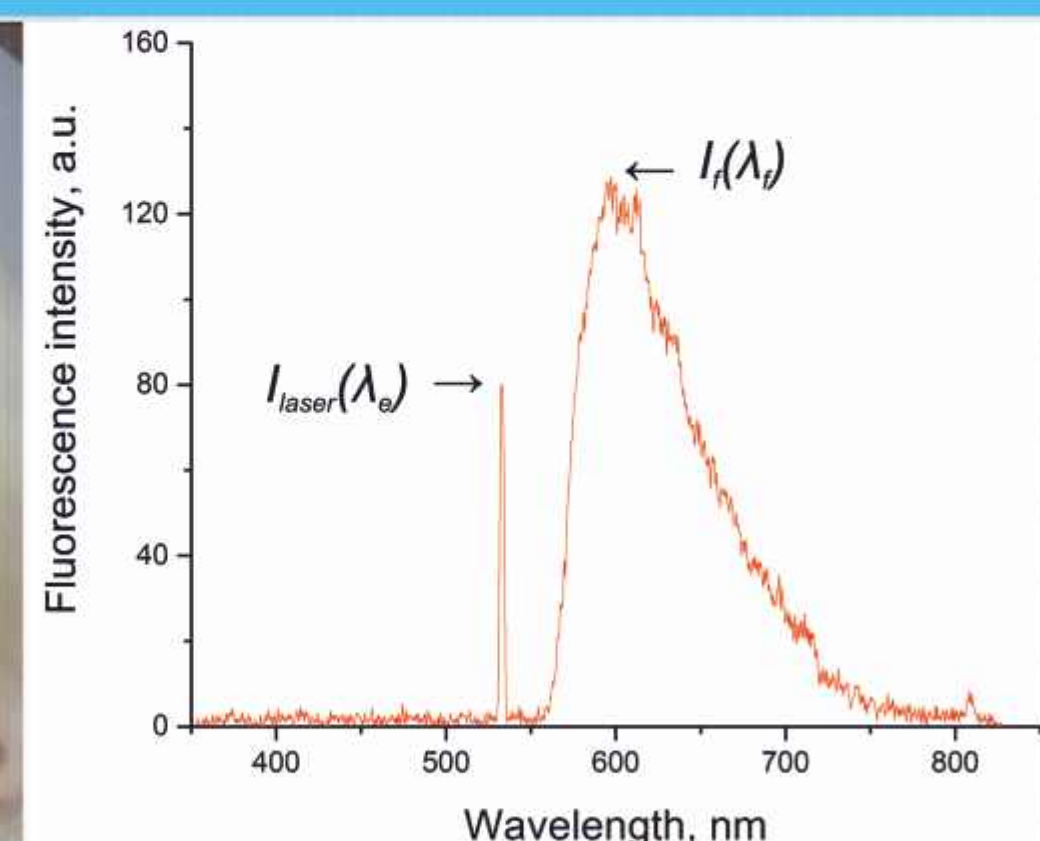
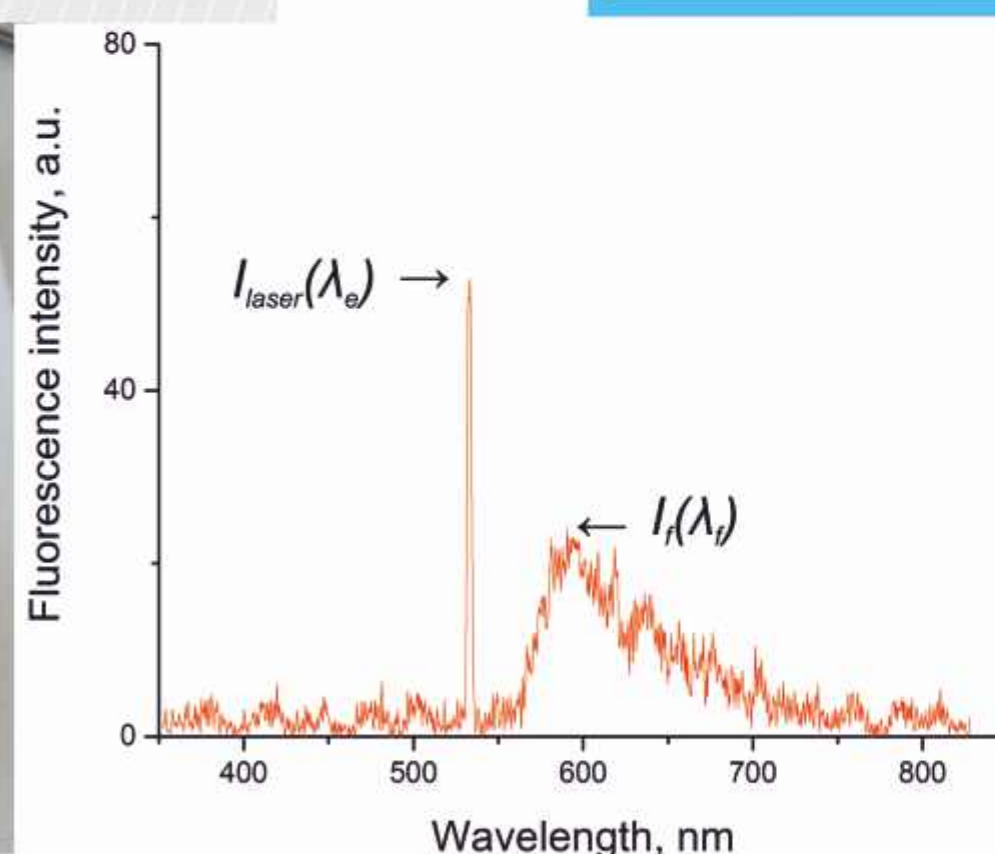
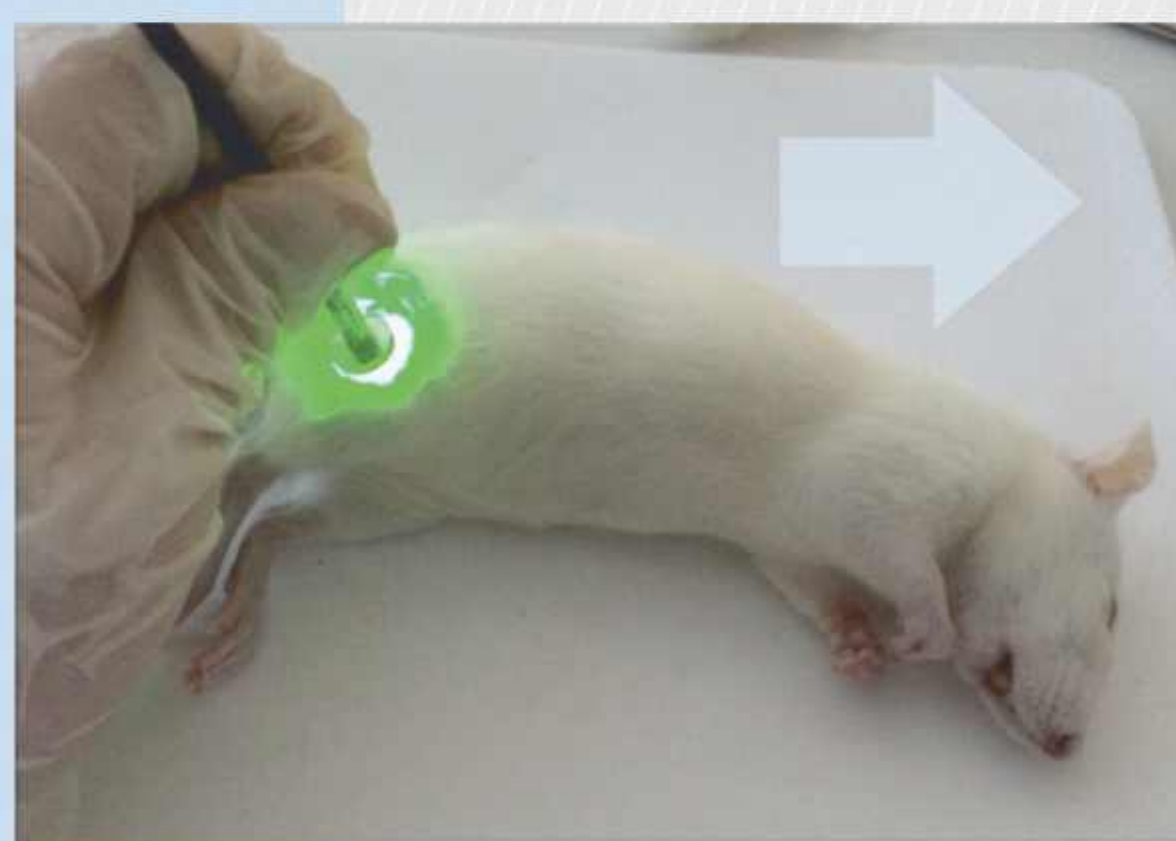
The research was conducted with the LAKK-M system usage (SPE «LAZMA» Ltd, Russia) with a measuring channel of FS at a wavelength of 532 nm.

The work was made on 100-120 g Wistar rats (n=5)



AREAS OF INTEREST

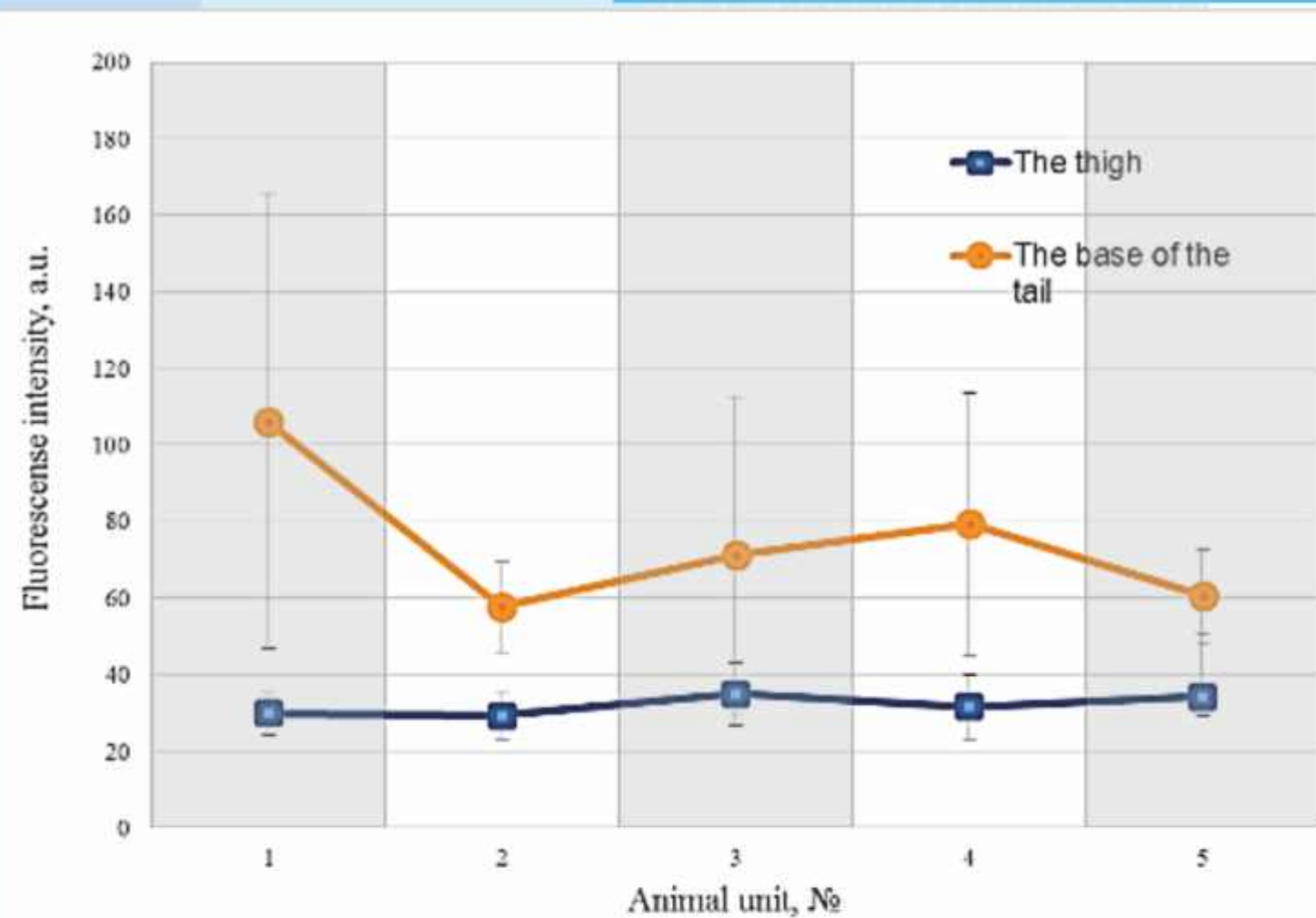
The fluorescence spectra were recorded for two hours



RESULTS

The intensity of the fluorescence signal and the maximum intensity of the laser radiation were analyzed. The fluorescence index were calculated.

$$\eta(\lambda_f)_{\lambda_e} = \frac{I_f(\lambda_f)}{(I_f(\lambda_f) + I_{laser}(\lambda_e))}$$



The base of the tail

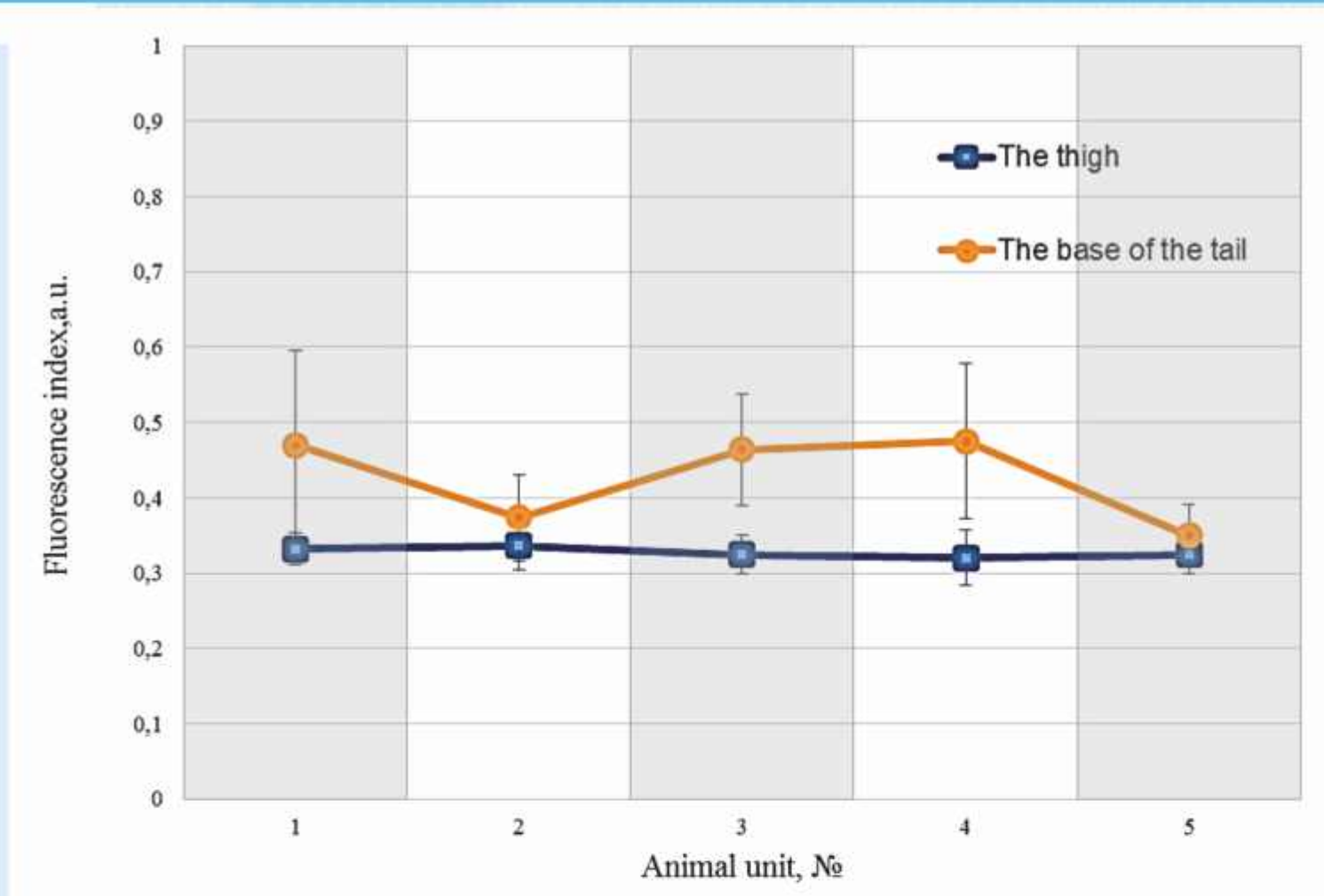
The thigh

The fluorescence intensity, a.u.

74.7±38.1 **35.9±12.6**

The fluorescence index, a.u.

0.36±0.07 **0.44±0.1**



The range of parameters in the fluorescence intensity analysis at the point on the thigh was 14-30%, at the point on the base of the tail – 20-58%.

The range of parameters in the fluorescence index on the thigh it was 6-13%, at the point at the base of the tail – 12-27%.

CONCLUSION

Thus, the evaluation of the parameters of the maximum intensity and the fluorescence index showed that the point on the thigh of the skin is optimal for the given tissue metabolic processes research using the FS method according to the scatter criterion (coefficient of variation). Obtained results can be used in the field of preclinical drug testing.