

INTERNATIONAL CONFERENCE
ST. PETERSBURG, RUSSIA
4 March 2020

Science & Technology City Hall

Krasnoyarsk

.....

**«International Conference on Metrological Support of Innovative Technologies»
ICMSIT-2020**

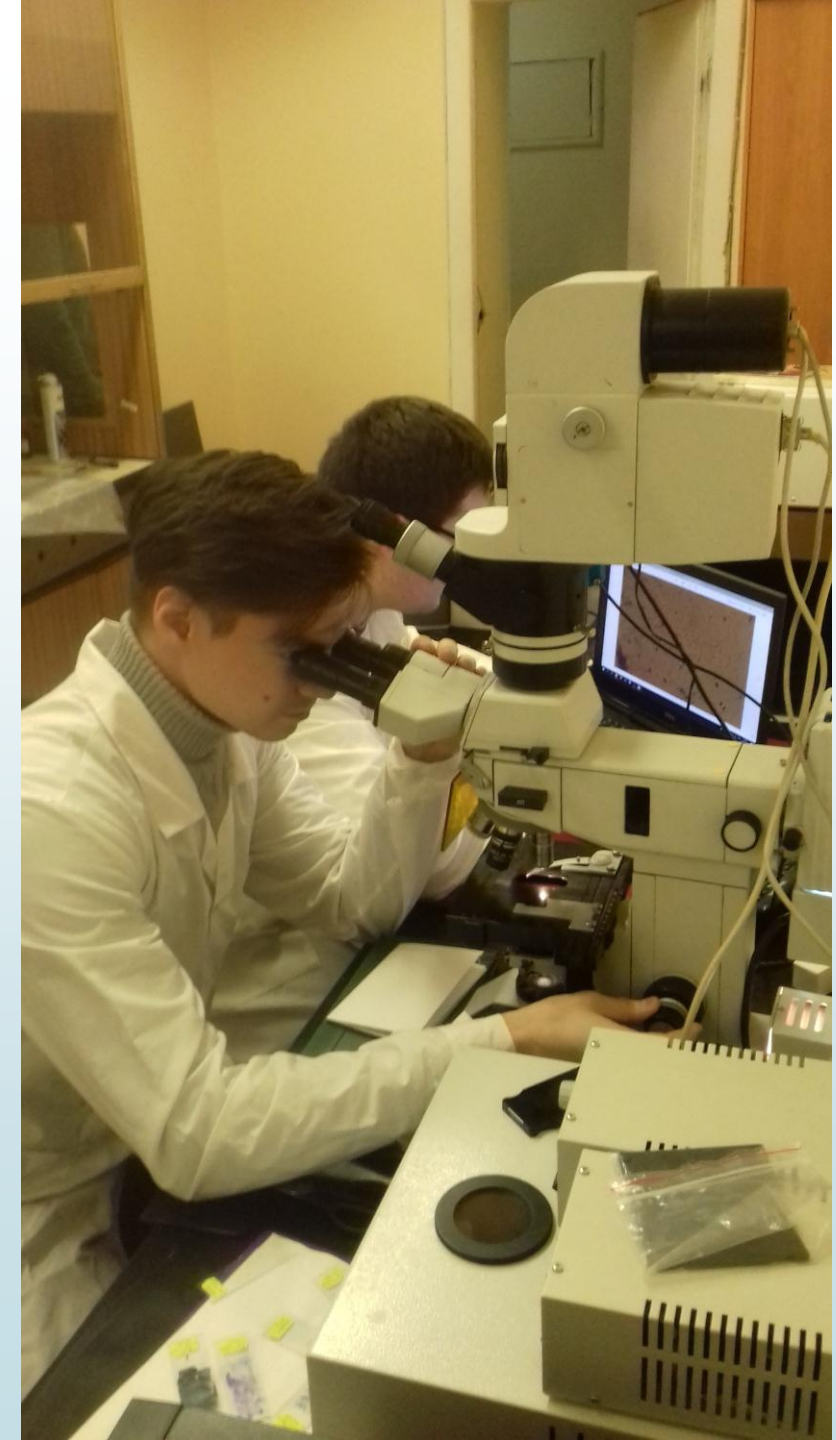
.....

«Application of a microspectral analysis for evaluation of the morphofunctional status of immunocompetent cells in cattle with retroviral diseases»

Authors:

D A Artemev, A V Krasnikov, E S Krasnikova, S A Kalganov, E A Markova

The aim of the study was comparative assessment of the state of agranulocytes *BLV*, *BIV* and *BLV/BIV* - infected and intact animals using microspectral analysis.



- Spectral analysis of the agranulocytes was carried out using a universal color analyzer the LOMO MSFU-K microscope-spectrophotometer (Russia). Measurements were made using a standard MSFU-K monochromator at a power of 800A with a measurement step of 0.5 nm and a scan point diameter of 10-4 mm at 480x magnification (12x40). The intensity of light absorption ($I\lambda$) was recorded in the spectrum range 300 - 700 nm.
- According to the obtained data, the absorption degree of stained lymphocytes was determined in the spectrum of Eosin U and Azure II.



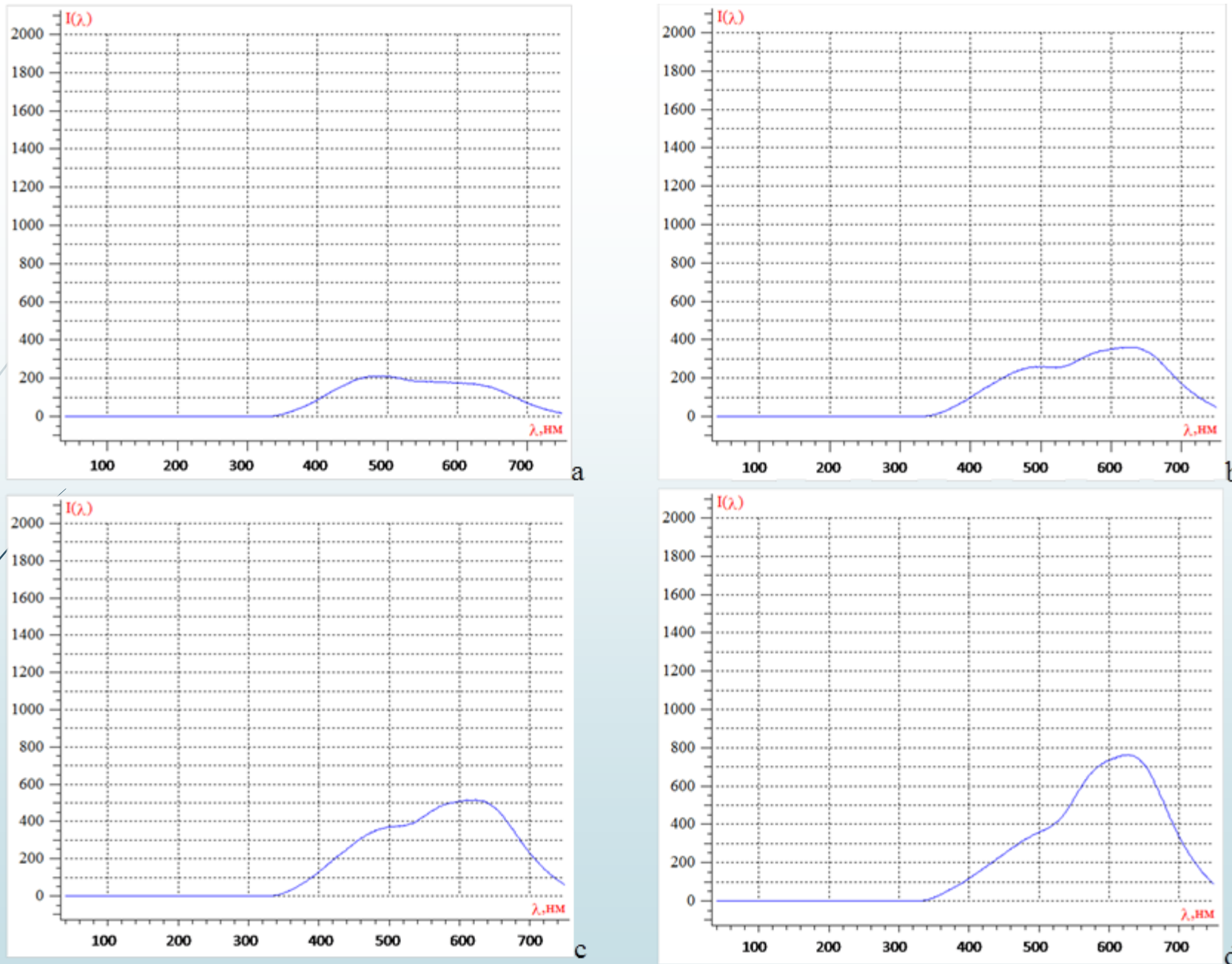


Figure 1. The absorption strength of stained lymphocytes at different wavelengths (a - intact; b - BLV-infected; c - BIV-infected; d - BLV/BIV-infected)

Table 1. Indicators of absorption strength of lymphocytes from intact and retrovirus-infected cattle.

λ , nm	Intact	<i>BIV</i> infected	<i>BLV/BIV</i> infected	<i>BLV</i> infected
350	31.3±1.5	50.1±2.6*#	35.5±1.7	33.3±1.6
400	97.5±4.9	110.3±5.6	110.7±5.5	73.3±3.7*#
450	195.4±9.8	310.4±15.5*#	286.9±14.3*#	115.2±5.8*#
500	210.3±10.5	371.5±18.5*	351.2±17.2*	253.3±12.7*#
550	98.7±4.9	146.6±7.3*	175.5±8.8*#	150.7±7.5*
600	93.5±4.6	189.1±9.5*	188.3±9.4*	148.3±4.7*#
650	173.6±8.6	500.2±24.9*#	751.4±37.6*#	383.3±19.2*#
700	156.2±7.8	461.6±23.1*#	725.2±36.3*#	345.4±17.3*#
750	34.4±1.7	50.3±2.6*	99.6±4.9*#	51.1±2.6*

Note:

* - statistically significant differences between the control and experimental groups ($p < 0.05$);

- statistically significant differences between the experimental groups ($p < 0.05$).

Conclusion:

6

According to our data, in intact animals, the ratio of basophilic and oxyphilic components in the cell was uniformly proportional, that is, the ratio was 0.83 ± 0.04 . For *BIV*, *BLV* and *BLV/BIV*-infected animals, this coefficient has averaged been 1.34 ± 0.06 ; 1.51 ± 0.08 and 2.13 ± 0.11 , that is, it was 1.6; 1.8 and 2.6 times higher than that in intact ones. **We can assume that in this case metabolic acidosis develops in the cells.**