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Title: Aggregation of erythrocytes in the dynamics of phototherapy in rats with experimental model of COPD

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Body: Aim: To study erythrocyte aggregation in rats with experimental model of COPD in the dynamics of phototherapy with lamps with ceramic coating. Methods: An experimental model of COPD was reproduced in 22 white rats under the influence of tobacco smoke in a special chamber, where they were placed daily for 30-40 minutes for 2 months. Control group (11 rats) is contained in similar conditions but without exposure to tobacco smoke. For the treatment of half of the rats with experimental COPD we used the method of phototherapy with infrared light from ceramic-coated lamps with a narrow emission spectrum (wavelengths of 2-40 microns). Phototherapy on the area of lungs was carried out daily for 10 days: 5 minutes of the first 5 procedures and 10 minutes of the next 5 ones. Spontaneous aggregation of erythrocytes was quantitatively evaluated by a special system of criteria for micrographs (made by a camera connected to a microscope) of aggregates of red blood cells. Results: In the 1st group without phototherapy erythrocyte aggregation was $11,8 \pm 0,47$. In the 2nd group after 10 days of phototherapy the index was $7,78 \pm 0,97$. It is by 34% less than in the 1st group ($p < 0,05$). In both groups of COPD erythrocyte aggregation was higher than in healthy rats ($6,4 \pm 0,75$). But when we tested the differences in groups, a statistically significant difference ($p < 0,05$) was not detected between the 2nd and control groups. Conclusion: Erythrocyte aggregation increases in rats with experimental model of COPD. During the 10-day course of treatment with infrared light from lamps with ceramic coating this indicator tended to normalize.