THE EFFECT OF EXOGENOUS MELATONIN ON THE STRUCTURE AND STATE OF CONNECTIVE TISSUE ELEMENTS OF THE RESPIRATORY PORTION OF LUNG

V. A. Berezovskiy R. V. Yanko, E. G. Chaka, M. I. Levashov

Abstract

Aim. We studied the effect of exogenous melatonin on the morphological-functional and biochemical indices of the respiratory portion of the lung (RPL) in young rats.

Methods. The trial was conducted in the spring period (April) on 24 three-month Wistar male rats. Exogenous melatonin (Unipharm Inc., USA) was administered to experimental group of animals daily at 10 am orally at a dose 5mg/kg of body weight. Duration of the experiment was 28 days. The changes in the structure of RPL were assessed by means of histological, morphological, morphometric and biochemical methods.

Results. We found the tendency to reduction of mean diameter, cross-sectional area, depth and entrance size of alveoli after 28-day injection of melatonin. At the same time the total width of respiratory bronchioles, alveolar ducts and alveolar sacs in rats was decreased. Thus the amount of alveoli per vision field and the total alveolar surface area were increased. We have detected the reduction of alveolar wall thickness, concentration of general hydroxyproline and increase of free hydroxyproline in the lungs. This testified for the reduction of amount of connective tissue elements in RPL.

Conclusion. 28-day administration of exogenous melatonin (5 mg/kg body mass) to young rats increased the total alveolar surface area, reduced the amount of connective tissue elements in lungs, improving effectiveness of gas exchange.

Key words: exogenous melatonin, respiratory portion of the lung.

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Vadim A. Berezovskiy
A. A. Bogomolets Institute of physiology NAS of Ukraine
Chief of clinical pathophysiology department
Doctor of medicine, professor
4, Bogomolets str., 01024, Kyiv, Ukraine
Tel./fax: 38 (044) 256-24-95, vadber@biph.kiev.ua