

POSSIBILITY OF APPLICATION OF HIRUDOTHERAPY TO RESTORE THE RESPIRATORY ORGANS WITH COVID-19

Aminov R.F.

*Zaporizhzhia National University,
department of Biology, Zaporizhzhia*

Key words: hirudotherapy, biologically active substances, respiratory organs, Covid 19.

Resume: The scientific work is devoted to the review of hirudotherapy as a possible method for prophylaxis, complex treatment and rehabilitation in Covid-19. Review of biologically active substances of medicinal leech in this pathology.

Topicality. Over the past two years, the number of patients with the dangerous infectious disease Covid-19 caused by the coronavirus SARS-CoV-2 has increased. Etiology, epidemiology and pathogenesis of this disease have been identified during preclinical and clinical experimental studies [1, 2]. In the mild form, there is mainly a respiratory infection, which is manifested by fever, cough, shortness of breath, fatigue, sore throat, runny nose, nausea and vomiting, loss of smell and taste [3-7]. In severe cases, there is progressive pneumonia and thrombosis due to impaired coagulation, impaired homeostatic regulation of the immune system. Later, the pulmonary endothelium is affected, microvascular thrombosis occurs and alveolar damage occurs. Then in a more severe form there is a septic condition, which is manifested by damage to all important organs [5-8]: lungs, heart, esophagus, kidneys, bladder, ileum, etc. The use of medicinal plants (*Curcuma angustifolia*, *Cuminum cyminum*, *Allium sativum*, *Terminalia bellirica*, *Cinnamomum* species, *Piper nigrum*, *Vitis vinifera*), which have immune-boosting and antiviral properties and can be used in the adjuvant treatment of Covid-19 [9]. According to the previous sections of the animal body, the therapeutic effects of biologically active substances of medicinal leech, which provide antithrombotic, thrombolytic, antihypertensive, antiatherogenic, antihypoxic, regenerative, antimicrobial, antiviral, immunomodulatory and analgesic, anti-inflammatory and anti-inflammatory effects, have been widely studied [10, 11].

Tasks: determine the mechanism of damage in Covid-19; Find out the possibility of using hirudotherapy.

Materials and methods. Conducting a review of scientific literature and the formation of a hypothesis on the use of hirudotherapy.

Results and its discussion. One of the adverse scenarios of SARS-CoV-2 virus disease is pneumonia.

SARSCoV-2 virus infecting pneumocytes, causes their desquamation in the alveoli of Figs. 1, resulting in edema and bleeding, impaired gas exchange, which leads to respiratory failure.

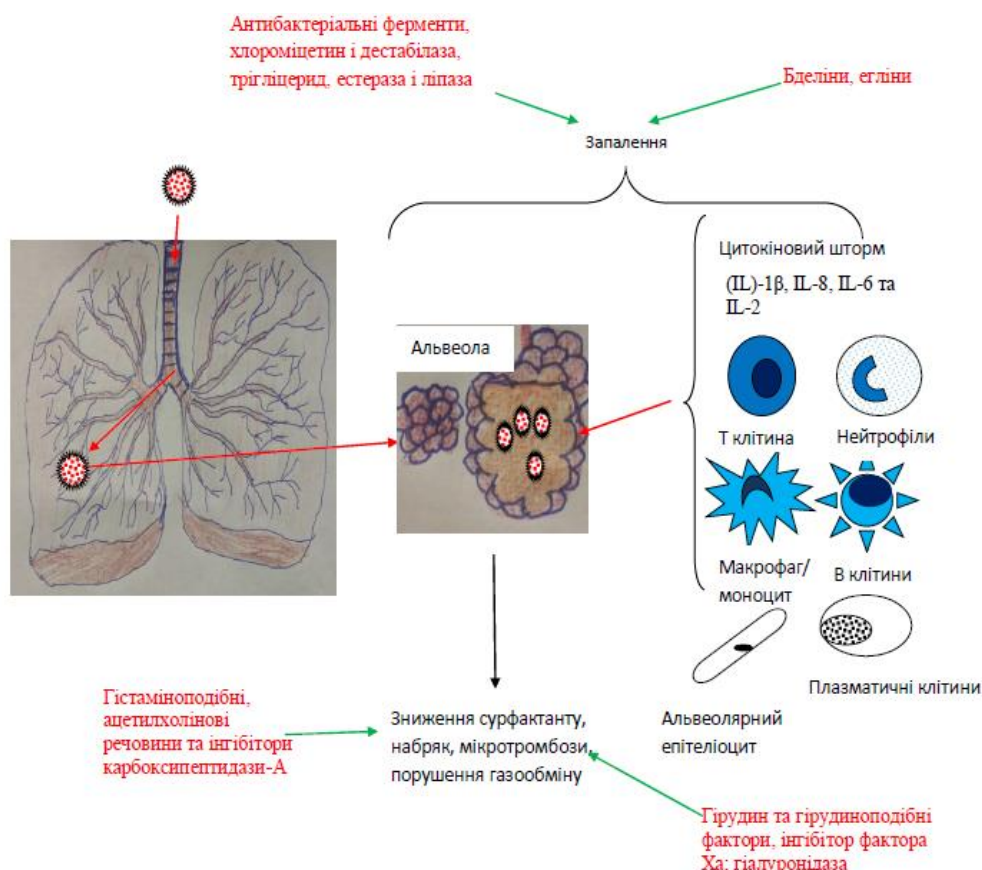


Fig. 1 - Scheme of lung damage Covid-19 and the possibility of their functional recovery after hirudotherapy (Notes: red arrows - virus penetration and spread; black arrows - damage caused by the virus; green arrows - a focus on the restorative effects of biologically active substances of medical leeches)

At the same time, the amount of surfactant changes, and, apparently, the building of the leg is reduced, expanding and squeezing under the act of breathing, which can cause the leg to collapse under the hour of vidihu. In the world, the alveoli are filled with native, growing insufficiency, and in a more severe depression, intoxication leads to septic shock. Even more severe inflammation of the leg develops through intense cytokine response to SARSCoV-2. Pro-inflammatory cytokines and chemokines, including IL-6, TNF α , IL-1 β Fig. 1, attract ignition cells to the infection site. Neutrophils and cytotoxic T-cells, in the order of cytokines, cause tissue damage, including increased vascular permeability and stimulation of liver fibrosis.

Based on the results of the teachings of the medical leeches, it is widely used in the treatment of inflammatory processes in the respiratory organs: chronic bronchitis, laryngitis, bronchial asthma, chronic pneumonia, chronic sinusitis). Among them: vigilant, yaki volodiyut protizapalny diayu and ignoring trypsin, plasmin and acrocin rice. one; antibacterial enzymes - of biologically active substances, yaki zmitsnyuyut immunnuyu system to fight z infektsieyu; other protizapalny zabobi, yaki help to change the inflamed, zadjaki why the blood can easily pass into the veins and sting the sour throughout the body. Detoxification of the body can be done with the help of other bipolar disorders. For example, triglyceride BAR, as a detoxifying drug, esterase and lipase take part in the splitting of fats and reduce cholesterol levels, and also may detoxify drugs fig. 1, the other two important BARs are chloromycetin and destabilase, which may affect antimicrobial activity. Destabi-

lase water with β -glycosidase activity, as it directly destroys β 1-4 bonds, which are necessary in the peptidoglycan ball of the walls of bacterial cells. To show a dose-dependent bacteriostatic effect is demonstrated by a non-existent form of destabilase on *Staphylococcus aureus*, *Escherichia coli* and *Pseudomonas aeruginosa*. Chloromycetin is an anti-anxiety antibiotic that is avenged by leeches. In addition, theromyzin, peptide B and teromacin also exhibit antibacterial effects. Researchers have reported that courses of hirudotherapy can help to improve the frequency and frequency of dyspnea in patients of mature and senile age after suffering from coronary virus disease aggravated by chronic bronchitis and bronchial asthma.

Based on the analysis of the best data and the of biologically active substances pressure complex, hirudotherapy can effectively be used as an additional benefit for the rehabilitation of the respiratory organs during the inflammation with Covid-19.

Conclusions: as a result of a review of scientific preclinical and clinical studies, it was found that the medical leech contains biologically active substances that can restore the respiratory system after Covid-19.

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