

**THE PROCESSES OF LIPID  
PEROXIDATION WITHIN  
THE PATIENTS WITH CHRONIC  
OBSTRUCTIVE LUNG DISEASE**

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According to modern concept, the pathophysiological base of progressive obstruction of airways is a chronicle inflammatory process in lungs, when in answer to the action of destructive factors of external environment there is breaking the balance between the activeness of pro- and antioxidant, proteoclastic and antiproteoclastic processes [5, 6, 7].

The aim of our research is studying of the level of products of lipid peroxidation and activeness of ferments of antioxidant protection (AOP) in the blood plasma and condensate of breathed out air within patients with COLD of different degree of severity at the phase of intensification, as supplementary diagnostic criterions of course of inflammatory process.

**Materials and methods**

In all there were examined 55 men, who suffered from COLD of average and severe degree of severity, the average age of which was  $56,7 \pm 4,6$  years. The criteria of selection to the group of researched patients with COLD were the presence within them of volume of forced exhalation in 1 second ( $VFE_1$ )  $< 80\%$ ,  $VFE_1/\text{Maximal Expiratory Flow Volume} < 70\%$ , lasting experience of smoking more than 20 years, at the average –  $34,4 \pm 1,8$  years. The criteria of exception were: bronchial asthma, accompanying diseases at the stage of decompensation. From the whole number of patients in the I group there were included 28 patients with COLD of average degree of severity, the average age of which was  $52,6 \pm 2,8$  years, experience of smoking –  $29,2 \pm 5,1$  years, The index of smoking person (IS) –  $200,4 \pm 46,8$ , period of disease –  $14,7 \pm 2,5$  years, volume of forced exhalation in 1 second ( $VFE_1$ ) was –  $56,9 \pm 3,9\%$ , maximal expiratory flow volume (MEFV) –  $87,7 \pm 3,4\%$ ,  $VFE_1/\text{MEFV} = 64,9 \pm 4,9$ , maximal speed of Exhalation (MSE) –  $357,8 \pm 23,4$  ml, average pressure in the lung arteries (APLA) –  $27,4 \pm 1,2$  mm of mercury, carbonation of oxygen ( $\text{SaO}_2$ ) –  $95,5 \pm 0,31\%$ . Into the II group there were included 27 patients with COLD of severe degree of severity, the average age of which was  $59,8 \pm 1,7$  years, experience of smoking –

$38,6 \pm 4,2$  years, IS –  $334,4 \pm 24,6$ , period of disease –  $19,4 \pm 1,1$  years,  $VFE_1 = 31,1 \pm 3,6\%$ , MEFV –  $45,8 \pm 4,7\%$ ,  $VFE_1/\text{MEFV} = 67,9 \pm 6,4$ , MSE –  $181,4 \pm 13,68$  ml, APLA –  $38,3 \pm 3,1$  mm of mercury,  $\text{SaO}_2 = 89,6 \pm 1,18\%$ . The control group was made out of 27 practically healthy men of corresponding age.

The biochemical methods of research included definition in the blood plasma and CBA of initial products of lipid peroxidation – diene conjugates (DC), second – ketodienes (KD) and joint trienes (JT) by the method of Volchegorskiy and others [4], malondialdehyde (TBA – reactive product) by the method of Karpishenko A.I. [7], and also final products of lipid peroxidation – Schiff basis (SB) by the method of Volchegorskiy I.A. and others [4]. The level of activeness of lipid peroxidation and peroxydase of plasma was estimated by the methods of Terekhina N.A. and Petrovich U.A. [6], catalase – by the methods of Koroluk M.A. and others [8]. The statistic treatment of material was carried out with the help of standard methods of variative statistic of medico-biological profile with the help of computer program «Statist».

**Results and discussion.**

Within examined patients with COLD of average and severe degree of severity at the phase of intensification there were observed abnormalities at the system of lipid peroxydation – antioxidant protection, which was characterized by the presence of system oxidative stress, which is expressed by the considerable hyperproduction of free radical metabolites and increase of second and final products of lipid peroxidation.

Free radical oxidation has one of the key role at the molecular mechanisms of pathogenesis of COLD [2, 3, 5, 6]. From this < there was carried out the comparative analysis of content of products of lipid peroxidation in the plasma and CBA within patients with COLD of I and II groups. While the analysis of average values of concentration of products of lipid peroxidation in the blood plasma and CBA within patients with COLD of I and II groups at the phase of intensification there was observed statistically meaningful increase ( $p < 0,05$ ) KD, JT, SO and TBA of products in comparison with control. With the increase of degree of severity of disease the intensiveness of processes of lipid peroxidation in the researched spheres increased. It was revealed, that within patients with COLD of severe degree at the phase of intensiveness the content of final products of lipid peroxidation (SB) at the blood plasma and CBA is considerably higher ( $p < 0,05$ ) in comparison with patients with COLD of average degree of severity.

Within researched patients there was studied the activeness of ferments of antioxidant protection (MSE, catalase, peroxidase) at the blood plasma and CBA. The analysis of average values of activeness of researched ferments showed, that within patients with COLD Of I and II group there occurs exhaustion of antioxidant protection in comparison with control, mainly at the late stages of disease. Within patients of II group at the blood plasma the activeness of peroxidase was decreased in comparison with patients of I group ( $p < 0,05$ ).

Carried out researches confirm the increasing number of proves, that while the COLD there occurs disbalance at the system of oxidants-antioxidants to the side of oxidants [2, 3, 6]. Within observed patients with COLD of average and severe degree of severity at the stage of intensiveness the markers of oxidative stress were found at the blood plasma and condensate of breathed out air.

### Conclusions

1. Chronic obstructive lung disease at the phase of intensification is characterized by the strengthening of peroxidation of lipids and depression of fermentative link of antioxidant protection in the blood plasma and condensate of breathed out air, which are progressing by the measure of increase of the severity of disease.

2. The change of the level of products of lipid peroxidation and activeness of ferments of antioxidant protection in the condensate of breathed out air within patients with COLD at the phase of intensification allows to use this non invasive method for the estimation of condition of system oxidants-antioxidants within this group of patients.

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### NEW DIRECTION IN TREATMENT OF A DIABETES 2 TYPES

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One of unknown factors in pathogenesis of type II diabetes are insufficiency of adsorption-transport function of erythrocytes. Therefore complex therapy of diabetes 2 types should include actions and medications improving this function of erythrocytes.

Erythrocytes adsorb different substances on its surface. Proportion of adsorbed substances differs, from corresponded indexes of plasma. Erythrocytes easily flow through tighter, than erythrocytes diameter, arterial part of capillaries. Erythrocytes deformation and rotation promote this process. On my hypothesis has been arisen that during passage of each erythrocyte via blood capillaries to exist exchange and mix substances of paraendotelial exchange layer on molecules adsorbed on erythrocytes [1, 2]. After that these substances firstly participate in transcapillary exchange.

Erythrocytes are natural sorbents of substances with high chemical activity. At the same time during denaturation process proteins' adsorbing ability increases. Proteins and lipids with increased adsorbability partially displace glucose