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Dynamics of free radical indicators of exhaled breath condensate in smokers

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Abstract

Objective: to study the indicators of free radical status in exhaled breath condensate (ESC): the level of total concentration of nitrates and nitrites(NO2-/NO3-), malonic dialdehyde (MDA) and iron concentrations in young smokers without diagnosed diseases of the respiratory system and older smokers with COPD II during the stable phase.

The study involved young smokers aged 15–23 years with smoking experience of 1 and more years, smokers aged 37–69 years, suffering from COPD II for three or more years. The control group consisted of non-smokers from 20 to 35 years old, without diagnosed diseases of the respiratory system.

It was found that in young people, smoking leads to a decrease in the concentration of NO2-/NO3- in EBC by 4.2 times compared with the control (P <0.05). Patients with COPD II showed an increase in the NO2-/NO3- by 2.16 times (P <0.05). The consequence of the activation of free radical oxidation is increased lipid peroxidation, detected by the formation of MDA. In patients with COPD II, the level of MDA increases and exceeds the level of non-smokers by 3.16 times (P <0.05). However, in young smokers, there were no significant differences in the level of MDA compared with non-smokers, although an upward trend was observed. The activation of free radical processes is also evidenced by the observed increase in the level of Fe2 + in the EBC in both young smokers and smokers with COPD II.

In young smokers, a violation of free radical metabolism is observed. In smokers with COPD, an escalation of the activation of free radical processes was observed, accompanied by an increase in lipid peroxidation, an increase

in the level of Fe2 + and NO2-/NO3- in EBC.

Nitric oxide Smoking COPD - mechanism

Footnotes

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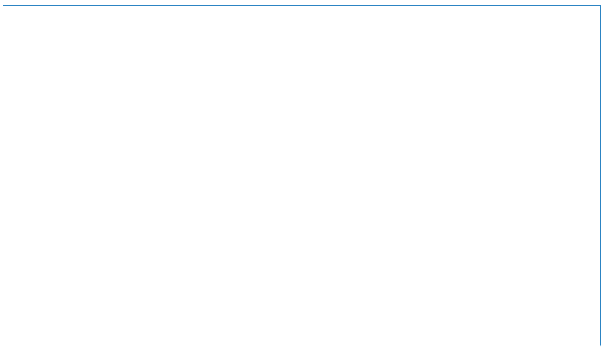

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