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**Title:** The possibility of using the level of concentration Fe<sup>2+</sup> in the exhaled breath condensate as a diagnostic indicator in pulmonary pathology

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**Body:** The aim was to study the level of concentration of Fe<sup>2+</sup> in exhaled breath condensate of smokers compared with non-smokers during exercise, as well as in patients with bronchial asthma (BA). Methods. The control group consisted of healthy (those with no diagnosed respiratory disease), non-smokers aged 25 - 45 years. The second group included smokers aged 25 - 45 years old, diagnosed as those with no respiratory disease. Smoking history of 10 or more years. The third group consisted of non-smokers aged 25 - 45 years of age with asthma. Level of Fe<sup>2+</sup> was determined by the ferrozin method at rest and after exercise (at a heart rate of 100-120 beats per minute) in both healthy and smokers than patients with asthma. Results. The study found that smokers there is an increase in the basal concentration of Fe<sup>2+</sup> 2-fold in the lung tissue compared to healthy nonsmokers (p <0.05). Fe<sup>2+</sup> content of smokers during exercise is 1.4 times higher than in non-smokers (p <0.05). BA patients also noted a change in the level of Fe<sup>2+</sup> EBC. During exacerbation of asthma occurred increase in Fe<sup>2+</sup> 1.6-fold compared with healthy subjects (p <0.05). Conclusion. Thus, the increase in Fe<sup>2+</sup> in EBC may signal a change of free radical processes in the lungs, accompanied by the development of pathological processes in them.