ANALYTICAL METHODS TO STUDY OXIDATIVE DAMAGE, ANTIOXIDANTS AND DRUGS

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OXIDATIVE STRESS IN SAUNA BATH

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Sauna bathing is a special form of heat exposure [Kukkonen-Harjula K. et al., 2006]. Information about effect of sauna heat stress on the prooxidant-antioxidant balance in literature are not enough, therefore purpose of our study was to evaluate the status of lipid peroxidation and antioxidant system of blood in sauna. The subjects were healthy youths (HY) group (n=16) and youths-athletes (YA) group (n=12) 18-25 years old. The course of sauna is carried out once a week for 5 months (20 procedures). On the first and final procedure before and after the sauna (temperature 85-90°C, humidity 10-15%) were taken from the cubital vein blood of 8 ml. The level of diene conjugates, Schiff bases, □-tocopherol and catalase activity was identified. The obtained data was checked using the Wilcoxons test and presented as median (25-75 percentiles). After first bath in HY-group was found increased levels of diene conjugates in plasma from 0.016% ($p<0.016$), in RBC – from 26.3% ($p<0.002$), Schiff bases in a plasma from 38.7% (0.039), in RBC – from 55.1% (0.001). Along with increased activity of free radical processes, observed a decrease in level of α-tocopherol in plasma from 7.8% ($p<0.004$) and catalase activity in erythrocytes from 14,9% ($p<0.002$). In YA-group also was found increased levels of diene conjugates in plasma from 37.5% ($p<0.003$), in RBC – from 13.8% ($p<0.003$), Schiff bases in a plasma from 7.1% ($p<0.033$), in RBC – from 2.6% ($p<0.021$), level of α-tocopherol in plasma decreased from 10,6% ($p<0.026$) and catalase activity in erythrocytes from 7.4% ($p<0.021$). At the end of the course, after sauna in HY-group increases the concentration of Schiff bases in plasma by 92.9% ($p<0.003$), as well as a decline in catalase activity in red cell mass at 9,2% ($p<0.016$). In YA-group was not found statistically significant changes in the parameters of prooxidant-antioxidant balance.

Growth in body temperature when overheated in sauna is accompanied by significant changes in oxygen supply of organism [Pilch W. et al., 2010].

Increasing of oxygen tension and concentration in blood can lead to increased formation of reactive oxygen species [Thom S.R., 2009]. Our results show that single sauna bathing causes increased lipid peroxidation and reduced antioxidant protection, testifying to the development of oxidative stress. As a result of the course of saunas are observed less substantial change in lipid peroxidation processes, which reflects the increase of adaptation reserves.Comparison of videodensitometric, classic and derivative UV spectrophotometric methods for quantification of meloxicam.