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Effect of ubiquinone and vitamin E and C supplemented to high energy diet on redox state of growing pigs

S u m m a r y

In the experiment with three groups of fatteners, fed individually (30-100 kg of BW) with high energy diet (14.25 MJ EM/kg), the effect of the addition of ubiquinone and antioxidative vitamins (E + C) on redox status of organism, was determined. After completion of the experiment, blood and liver samples were collected for analysis from all animals. Oxidative state as a concentration of 8-oxo-2'deoxyguanosine (8-oxodG) in hepatocyte's DNA and thiobarbituric acid reacting substances (TBA-RS) in blood were evaluated. Oxidative state was determined by measurement of activities of superoxide dismutase (SOD) and glutathione peroxidase (GPx) in the red blood cells. The level of anabolic hormones were assayed in whole blood. Antioxidants, as supplied in feed, i.e. vitamin E + C as well as E + C + ubiquinone caused increase ($P < 0.05$) of concentration of the DNA oxidation product - 8-oxodG in liver of pigs. Diet supplemented with vitamins alone as well as vitamins with ubiquinone had no effect on differentiation of TBA-RS (index of lipids' peroxidation). Addition of vitamins alone (without ubiquinone) resulted in significant increase of superoxide dismutase (SOD) content in blood erythrocytes. On the other hand, in pigs, receiving addition of vitamins, especially in combination with ubiquinone higher level of insulin in blood serum was recorded. The results of conducted experiment indicate that addition of ubiquinone to diet should be preceded by a thorough examination, especially of anti-oxidative-oxidative status. Ubiquinone, as administered together with vitamin C and/or E may exert a negative, prooxidative, influence on organism (increase of blood insulin level and products of DNA degradation).