

INFLUENCE OF SULPHIDE, SELENIDE AND LEAD IONS ON THE ACTIVITY OF δ -AMINOLEAVULINIC ACID DEHYDRATASE IN BLOOD OF EXPERIMENTAL ANIMALS *IN VITRO*

Summary. In the present reasearch the influence of chemical analogues – sulphide (S^{2-}) and selenide (Se^{2-}) ions - on the activity of δ -aminoleavulinic acid dehydratase (δ -ALAD) in bovine blood *in vitro* upon impact of lead ions (Pb^{2+}) was investigated. It was shown that high concentrations of Se^{2-} inhibited the activity of enzyme δ -ALAD *in vitro* in higher extent compared to equimolar concentrations of S^{2-} . The leap of enzyme activity inhibition occurred under the lower concentrations of Se^{2-} in comparison to S^{2-} . The shift of the leap of the inhibition of δ -ALAD activity under the impact of Pb^{2+} ions depended on the S^{2-} concentration as follows: Pb^{2+} ions inhibited the enzyme activity faster in the absence of S^{2-} if compared to the presence of low substantial active concentration of S^{2-} ions. The S^{2-} ions had the protective properties on the enzyme activity *in vitro* since the δ -ALAD activity was not inhibited completely even at high concentration of the S^{2-} ions. The addition of Se^{2-} ions to the bovine blood acted similarly to S^{2-} ions and slowed down the lead hazardous impact on the enzyme's activity. It showed that Se^{2-} ions as well as S^{2-} ions had protective properties *in vitro*. The comparison of protective properties revealed that the activity of δ -ALAD activity upon impact of lead ions decreased in less extent in the presence of Se^{2-} ions if compared to the presence of S^{2-} ions. Although both anions are characterized by the protective activity *in vitro*, the protective activity of Se^{2-} anions was higher than of S^{2-} .

The investigations showed that the effects of the ions on blood δ -ALAD activity can be foreseen, compared and evaluated *in vitro* according to the impulse of the leap of enzyme inhibition (concentration value of the catalytic poison, which corresponds to half-leap of the enzyme inhibition).

Keywords: sulphide, selenide, lead, blood, δ -aminoleavulinic acid dehydratase, activity, *in vitro*.