

Feed additives as modifiers of redox metabolism and immunity in animals

Summary

This paper describes research conducted at the Department of Animal Nutrition and Biotechnology. The aim of the study was to evaluate the effect of feed additives on metabolic activity and immunity in model animals and livestock. The results of a study on rats indicate that high doses of vitamin C as a dietary supplement (more than 0.3% of the diet) had prooxidative effects. A megadose (0.6%) of dietary ascorbic acid reduced phagocytic activity, but led to an increase in immune cells producing reactive oxidant species (ROS). Other research demonstrated that substances derived from snail muscles increased weight gain and decreased concentration of 8-oxo-dG (mutagenic oxidized nucleotides formed by ROS) in the blood plasma of quails. Other results suggest that substances derived from crayfish may have a beneficial effect on liver function and lipid metabolism in quails. Interesting results were obtained for riding horses regarding the effect of taurine as a dietary supplement on the oxidation status of animals exposed to physical activity. The taurine lowered the lipid peroxidation intensity and oxidative DNA degradation occurring in horses due to oxidative stress caused by physical effort. Another study concluded that α -ketoglutarate (an intermediate of the Krebs cycle) used as a dietary supplement stabilizes redox homeostasis and improves arterial elasticity in aged mice.

KEY WORDS: feed additives, vitamin C, invertebrate extracts, taurine, α -ketoglutarate, redox state, immunity