The subject of this dissertation was to determine the effect of using copper and zinc nanoparticles in young turkey feeding. To verify the research hypotheses, two feeding experiments were carried out on young female turkeys. In these experiments the influence of copper and zinc addition to feed mixtures on rearing results and carcass analysis, nutrients digestibility, meat quality and health status of growing turkeys was observed.

The experimental material in both experiments was composed of 648 one-day-old Hybrid Converter female turkeys. The turkeys were divided into 6 groups (6 replicates per group), with 3 levels of Cu (20, 10, and 2 mg/kg) in the feed in experiment I and with 3 levels of Zn (100, 50, and 10 mg/kg) in the feed in experiment II, using two sources of these elements in the feed mixtures - conventional ($CuSO_4$ and ZnO) and nanoparticles (Cu-NP and Zn-NP).

In experiment I, it was proved that the use of copper nanoparticles and the reduction of the dose from 20 to 2 mg/kg of feed had no negative effect on growth performance or carcass quality of turkeys. Few effects induced by replacing $CuSO_4$ with copper nanoparticles included increased hemoglobin levels and improved antioxidant status of fresh breast meat. However, optimal redox indices of fresh meat were obtained when the level of copper addition was reduced to 10 mg/kg feed. In experiment II, it was reported, that the application of the highest zinc addition to the feed improved intestinal digestibility of Zn and Ca, increased redox saturation of breast meat, but the other indices were similar in turkeys fed mixtures with different amounts of zinc added to the feed. The zinc sources and levels used had no effect on turkey growth performance (except for feed intake). Reducing the recommended level of zinc supplementation to as low as 10 mg/kg of feed mix did not impair turkey rearing performance or the quality of fresh and frozen breast meat.

In conclusion, the results of the present study partially confirmed the research hypotheses. Moreover, for the first time in scientific literature, the influence of copper and zinc nanoparticles on the growth performance and carcass analysis as well as metabolic indices of turkeys was documented. Due to the lack of significant differences in most of the indicators analyzed in both experiments, the replacement of traditional forms of copper and zinc with their nanoparticles is not advisable. The obtained results induce also to use in feed for turkeys lower amounts of copper and zinc in traditional forms, as compared to the recommendations.