

# Some Heavy Metals' Concentrations in the Metacarpal Bones of Paleontological Cattle from Azmashka Settlement Hill

*Dimitar KOSTOV<sup>1</sup>, Rosen DIMITROV<sup>1\*</sup>, Kamelia STAMATOVA-YOVCHEVA<sup>1</sup>, Alexandar ATANASOV<sup>2</sup>, Penka YONKOVA<sup>1</sup>, Diana VLADOVA<sup>3</sup>, Radoslav MIHAYLOV<sup>3</sup>, David YOVCHEV<sup>1</sup>*  
*<sup>1</sup>Department of Veterinary Anatomy, Histology and Embryology, Faculty of Veterinary Medicine, Trakia University, 6000 Stara Zagora, Bulgaria*

*<sup>2</sup>Department of Animal Husbandry, Faculty of Veterinary Medicine, Trakia University, 6000 Stara Zagora, Bulgaria*

*<sup>3</sup>Department of Morphology, Physiology and Animal Nutrition, Faculty of Agriculture, Trakia University, 6000 Stara Zagora, Bulgaria*

*\*Corresponding Author: Rosen DIMITROV Department of Veterinary Anatomy, Histology and Embryology, Faculty of Veterinary Medicine, Trakia University, 6000 Stara Zagora, Bulgaria  
e-mail: rstefdimitrov46@abv.bg*

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## ABSTRACT

The aim of the present study was to investigate and determine concentrations of some heavy metals in the cattle metacarpal bones, found from Azmashka settlement hill. They belonged to four periods: Early Neolith (EN), Early Halkolith (EH), Late Halkolith (LH) and Early Bronze (EB). The natural bone material was obtained from the archaeological site Azmashka village mound, found 6 km east of Stara Zagora (Bulgaria) and also from the territory of Hrishteni village, following radiocarbonic analysis. In the sampling an atomic absorption spectrophotometry was used. The samples have been burned dry and dissolved in acid until solution with optimal element concentration. Higher concentrations of iron (Fe), copper (Cu), zinc (Zn), manganese (Mn), lead (Pb), chrome (Cr) and magnesium (Mg) were observed. The quantity of Fe, Cu, Zn, Mn and Pb were with higher values at Early Halkolith, compared to the same in the other periods. The highest heavy metals' concentrations were found, as following: iron, cooper, manganese, lead – at Early Halkolith and zink, chrome and magnesium – at Late Halkolith. The lowest heavy metals' concentrations were found, as following: iron, manganese, chrome, magnesium – at Early Neolith and cooper, zink and lead– at Early Bronze. Differences in the other elements' concentrations from the studied periods weren't significant. Qualitative differences influenced by the heavy metals in the bone structure weren't found. The content of heavy metals in the studied metacarpal bone material is considerably high compare to the normal values, mentioned by some researchers studied other species. The trend of concentration increasing is from Early Neolith to Early Bronze. This is due to the metacarpal bone contamination with soil, as which has been polluted from many years by the industrial