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# Bone element analysis of two late roman populations from Puerto de Mazarron, Murcia, Spain

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The Mazarron area is an important mining district where mineralizations are essentially of Ag, Pb, Zn, Mn, Fe and Cu. Mining goes back to the Carthaginian period and peaked between the second century BC and the first century AD. The nineteenth century saw a resurgence of mining in the area, which would last until the 1960s. Bone element analysis of two Late Roman populations from coastal southeastern Spain indicates significant diagenesis. We sampled 128 human samples (84 adult and 44 immature) from La Molineta, and 51 samples (34 adult and 17 immature) from La Era, as well as fauna and sediment samples from both sites. Most samples were of compact bone tissue from the diaphysis of long bones. The analyzed elements were Ca, P, Mg, K, Fe, Sr, Ba, Zn, Cu, Pb, Al and Mn. Quantitative elemental analysis was carried out using Inductively Coupled Plasma Atomic Emission Spectrometry (ICP/AES), and the mineralogical composition of the bone samples was determined with X-ray diffraction spectrometry. The *post-mortem* changes in the elemental composition of the bone prevent use of the data for dietary reconstructions or for the investigation of links between putative diet and indicators of growth stress or health conditions. Such diagenetic biases are more widespread than usually recognized, suggesting that many paleodietary and paleoenvironmental inferences derived from the chemistry of archaeological bones need to be critically reassessed.