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COPPER PRODUCTION AND USE DURING THE THIRD MILLENNIUM BC IN THE WESTERN END OF IBERIAN PENINSULA: THE TESTIMONY OF CASTRO DE CHIBANES (PORTUGAL)

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Abstract

Early archaeological works during the beginning of the last century suggested that the archaeological site of Castro de Chibanes (Setúbal Peninsula, Portugal) had been occupied from Neolithic to the Roman period. Recent archaeological excavations conducted by MAEDS clarified the different occupation periods through stratigraphy, ceramic typologies and radiocarbon analyses. In this settlement, the copper metallurgy arises during the middle and second half of the third millennium BC, with local production activities evidenced by the occurrence of ceramic crucibles with copper-bearing prills. A complete melting crucible with pouring lip and four feet deserves a special highlight. Archaeological works also recovered small metal tools such as awls and a chisel, although with uncertain chronology into the Early Bronze Age. The present work concerns a chemical (p-XRF and PIXE) and microstructural (optical microscopy and SEM-EDS) characterisation of metallurgical remains and metal artefacts from Castro de Chibanes. Additional items (metal prills and artefacts) from two nearby coeval and related sites, namely Rotura and Pedrão, were also studied to enhance the knowledge about the early metallurgy in this western region of Iberian Peninsula. The main results point to the production and use of copper with variable contents of arsenic. Moreover, the post-casting manufacture of artefacts comprised hammering and annealing operations, although with incipient working conditions that prevented the compositional homogenisation of those low-arsenic copper alloys. A few artefacts proved to be composed of bronze or leaded bronze alloys, thus belonging to the later occupation phases of Castro de Chibanes and Pedrão. Overall, the third millennium BC metallurgy in Setúbal Peninsula seems to present analogous features to what has been identified in the neighbouring and best-studied regions of the Portuguese Estremadura and Southern Portugal.

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