



ABSTRACT SUBMISSION

Tracing the Origins of Iron in the Kingdom of Ammon with Os isotope analyses: A Case Study from Tell el Mazar, Jordan

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Abstract

Located at the northern frontier of the Kingdom of Ammon, the opulent burials at Tell el Mazar cemetery date to the 6th–5th centuries BCE, reflecting a resilience amidst shifting geopolitical landscapes. This study seeks to unravel the origin of several dozen iron arrowheads unearthed from the cemetery, aiming to identify the sources of raw materials used in their production. Although the artefacts are heavily corroded, they are nevertheless suitable for provenance investigation through osmium isotope analysis, due to the stability of the osmium isotope ratio ($^{187}\text{Os}/^{188}\text{Os}$) in the corrosion process. Preliminary findings reveal that the arrowheads were manufactured from ores sourced from multiple deposits. Although few analyses show similarities with the isotope signature of the adjacent ore mine of Wardah, most of the artefacts have isotope ratios incompatible with that source. Intriguingly, several iron arrowheads exhibit highly radiogenic isotope ratios, suggesting a provenance from the ore deposits of Faynan. It is, therefore, possible that the metallurgical expertise of contemporary metalworkers of Faynan extended beyond copper production to include iron smelting. The iron was then probably integrated into regional exchange networks, circulating as a luxury commodity among Ammon and neighbouring polities during a transformative period in the region's history.

Keywords

Kingdom of Ammon, Tell el Mazar, Achaemenid Period, iron provenance, Os isotopes

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