Investigation of funerary rites in the Qaṭna Royal Tomb using non-destructive profiling of organic residues by GC×GC-HRTOFMS

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Abstract

The study of mortuary rites and the reconstruction of burial processes has been of high interest in Ancient Near Eastern Studies because it comprises the complex of believes and practices used by a culture to remember and respect their dead. This study focuses on the analysis of different archeological specimens found in the Royal Tomb of Qaṭna which was one of the major Syrian kingdoms during the Middle and Late Bronze Ages. The Royal Tomb was a significant archaeological discovery because it has lain undisturbed since 1340 BC and contained, beside the human remains, a diversity of precious grave goods. One main goal has been to shed more light on the burial customs practiced in Qaṭna by examining specific parts of organic deposits (e.g. bone, textile, wood and organic residue from vessels) in the tomb. Head space-solid phase micro extraction (HSPME) with comprehensive two-dimensional gas chromatography – high resolution time-of-flight mass spectrometry (GC×GC-HRTOFMS) analysis was a non-destructive approach which yielded a volatile profile for each sample type. In the headspace of bone aromatic hydrocarbons, alkanes and aldehydes have be detected which is in accordance with studies investigating the volatile profile of “fresh” bones. The presence of terpenes in textile samples could indicate the use of resins e.g. as part of the funeral rites. Esters detected in residue from a vessel could derive from a fatty substance as part of the food offerings for the dead. The obtained data have the potential to provide further details to the burial processes in this Ancient Near Eastern tomb.

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