



Early Neolithic household behavior at Tell Seker al-Aheimar (Upper Khabur, Syria): a comparison to ethnoarchaeological study of phytoliths and dung spherulites



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ABSTRACT

Tell Seker al-Aheimar, located in the Upper Khabur, northeastern Syria, is an early Neolithic settlement that chrono-culturally spans from the Pre-Pottery Neolithic B (PPNB) to the Proto-Hassuna period (Pottery Neolithic). The site is one of the largest and best documented Neolithic sites in this relatively poorly investigated region in Upper Mesopotamia. Among the occupation sequence of the site with well-defined architectural phases, the Late PPNB settlement (late 8th to early 7th millennium cal. BC) is characterized by an extensive mud-brick architecture, which comprises large multi-roomed rectangular buildings and gypsum-plastered floors. Our research questions center on the identification of domestic activities and their spatial distributions in the site through integrated studies of phytoliths and dung spherulites using an ethnoarchaeological approach.

The ethnoarchaeological research included the study of agricultural and dung remains obtained from modern domestic structures from the top of the tell and the modern village of Seker al-Aheimar. The examined activity areas and materials comprised indoor storage and processing spaces, open areas, fireplaces, building materials and livestock enclosures. We use the ethnoarchaeological results to interpret the distributions of both phytolith and spherulite concentrations in archaeological contexts in terms of domestic activities that took place both within and outside buildings. Building spaces and their adjacent areas showed material accumulation resulting from household debris, including food remains, construction materials, matting, hearth cleaning and fuel residues. Indoor activities included the use of certain areas for storage, cereal-processing and cooking. The identification of livestock dung remains in fireplaces suggests the use of dung as a fuel source. We compare these new results with our previous studies of different phases and areas of the site to discuss diachronic and spatial trends in Neolithic household behaviors at Tell Seker al-Aheimar.

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1. Introduction

The archaeological mound of Tell Seker al-Aheimar is located on the flood plain of the Khabur River, a major tributary of the Euphrates; about 45 km northwest of Hassake in northern Syria, near the Turkish border (Fig. 1). The landscape adjacent to the site is relatively flat, and can be regarded as a broad alluvial plain formed by the Khabur. The climate is semi-arid with a low annual mean precipitation of about 300 mm (Oguchi et al., 2008). Excavations at

the site carried out by a team directed from the University of Tokyo, have evidenced a continuous sequence of occupation spanning from the Pre-Pottery Neolithic B (PPNB) to the Proto-Hassuna period (Pottery Neolithic) (Nishiaki and Le Mière, 2005; Nishiaki, 2007, 2008, 2010, 2011, 2012; Nishiaki et al., 2013), which makes of this site one of the few suitable for investigating cultural developments of early Neolithic farming communities in the Upper Khabur region.

Our research aims to identifying domestic activities and their spatial distributions in the Late PPNB settlement through integrated phytolith and dung spherulite studies. Livestock dung is commonly found in many settlements, especially after the domestication of herd animals. We know from ethnographic and

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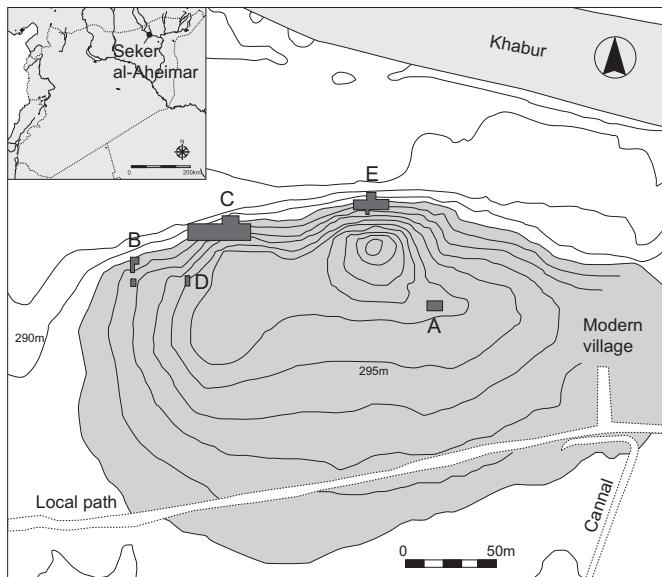


Fig. 1. General plan of the site showing the location of the excavation areas. The inset shows the location of the site in northeastern Syria.



Fig. 2. General plan of the excavation area, Sector C, Square E13, with indication of the samples location.

ethnoarchaeological studies that livestock dung is worldwide used for various purposes, primarily manure, fuel source, temper and building material (Miller, 1984, 1996; Reddy, 1998; Anderson and Ertug-Yaras, 1998; Sillar, 2000; Simpson et al., 2003; Zapata et al., 2003; Tsartsidou et al., 2008). The combined use of phytoliths, microscopic bodies composed of pure amorphous silica present in the tissues of many vegetal species (Pearsall, 1989; Piperno, 1988, 2006); dung spherulites, calcitic particles that form in animal guts (Brochier et al., 1992; Canti, 1997, 1998, 1999); and/or other micro-remains (Shahack-Gross, 2011 and references therein) in several studies has demonstrated the advantages of using an integrated ethnoarchaeological approach for recognizing the organization of the space in archeological sites (Shahack-Gross et al., 2003, 2004; Harvey and Fuller, 2005; Tsartsidou et al., 2008, 2009). Dung assemblages have been delineated through such microfossils in varied contexts, including animal enclosures (Albert and Henry, 2004; Matthews, 2005, 2010; Shahack-Gross et al., 2005; Albert et al., 2008; Portillo et al., 2009) and midden deposits (Matthews, 2005, 2010; Shillito, 2011a; Shillito et al., 2011), but also in combustion structures such as hearths and ovens in many Near Eastern sites (Albert and Henry, 2004; Matthews, 2005, 2010).

The presence of the modern village of Seker al-Aheimar and its irrigated cotton and wheat fields, gardens, cemetery and other associated domestic structures on the mound, has limited the excavation area to the northern slope facing the river. Among the five different excavation areas defined at this 4 ha archaeological mound (designated as Sectors A to E), Sector C represents one of the largest investigated. This excavation area comprises seven 10 m by 10 m squares (Squares E10 to E13 and portions of Squares D11 to D13). Level 14 in Square E13 (Late PPNB, late 8th to early 7th millennium cal. BC) has revealed two massive mud-brick building complexes placed along an east–west long axis (Fig. 2). The Late PPNB architecture is defined by the presence of rectangular mud-brick buildings with large rooms of about 9 by 6 m with gypsum-plastered floors. These building complexes also present well-defined architectural features, such as gypsum-lined bins and channels running from indoor floors to open spaces. These architectural features are common in many Neolithic Near Eastern settlements.

Previous phytolith and spherulite studies at the site (Portillo et al., 2010) centered on Level 10 in Square E13, a residential area

characterized by two fragmentary rectangular buildings running also in the east–west direction, and Levels 17 and 18 in Squares D11, D12 and E12, an open-air area defined by clusters of fireplaces (Nishiaki, 2010, 2011, 2012; Nishiaki et al., 2013). The aim of this previous research was to evaluate the potential use of plant and dung microfossils for delineating room use and domestic activities in living floors, open-air activity areas and grazing and foddering of herds. Phytolith distributions in Level 10 floors were indicative of the activities that took place on them, including cereal storage and food-processing activities. Spherulite concentrations in certain outdoor spaces and fills of oven-pit in Levels 17 and 18 suggested the remains of dung fuels.

The research reported upon here enlarges these earlier studies to include other building indoor and outdoor contexts. The Level 14 buildings in Square E13 examined here are much better preserved than those of Level 10, therefore enabling a more accurate and reliable functional reconstruction of room-use. The comparison of these new domestic contexts (Level 14 of E13) to our previous studies of similar building complexes (Level 10 of E13) and open-air contexts (D11, D12 and E12) will provide the opportunity of characterizing room-use patterns and household behaviors, and therefore examining the continuity or change of the tradition in the use of space and location of activities within rooms in this part of the site.

In addition, we carried out ethnoarchaeological research in order to better understand the manner in which both vegetal and dung microfossils were embedded in the examined archeological contexts and their implications to site formation processes. For this purpose, the research included the study of selected materials obtained from the top of the tell and the modern village of Seker al-Aheimar. At present, Seker al-Aheimar comprises around thirty households with an average family size of about eight members. The economic production of the area is based on crops of cereals and cotton, and on livestock farming. Despite a modern irrigation system, which dominates the agricultural production of the region in the present-day, the village still maintains a certain traditional way of life in many aspects. Most of the neighborhoods are

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