Supplementary Information 2

New Perspectives on plant-use at Neolithic Abu Hureyra, Syria: an integrated phytolith and spherulite study

Vegetation History and Archaeobotany

Kate Dudgeon, University of Reading, k.dudgeon@pgr.reading.ac.uk

ESM 2 (Table 1). Key phytolith morphotypes identified in this study with vegetation attributions based on reference material and archaeological examples

Phytolith morphotype	**Attribution and reference**
Single cells (following ICPN 2.0 where possible)	
Phytoliths usually produced by monocots	
ACUTE BULBOSUS	Mostly grasses (Poaceae) (Kaplan et al., 1992)
PAPILLATE	Usually inflorescence bract of grasses (Poaceae) (Ball et al., 1996; 1999; Piperno, 2006)
BULLIFORM FLABELLATE	Commonly associated with reed leaves (Sangster and Parry, 1969; Chen et al., 2020), also produced in leaves of other grasses (Poaceae) and sedges (Cyperaceae)
BULLIFORM BLOCKY	Commonly produced in leaves of sedges (Cyperaceae) and grasses (Poaceae)
BLOCKY	Dicot wood (Albert et al., 2003)
ELONGATE ENTIRE - Cylindrical - Parallelepipedal (thick) - Tabular (thin)	Mostly monocots. Produced in wide variety of plant types, particularly grasses (Poaceae) leaves/culms (Twiss et al., 1969; Albert et al., 1999; 2003)
ELONGATE SINUATE	Mostly monocots, commonly in grass leaves (Albert et al., 2003; Gallego and Distel, 2004)
ELONGATE DENTATE	Monocots, often in grass inflorescences and leaves, also associated with reed culms (Ramsey et al., 2016)
ELONGATE DENDRITIC	Grass inflorescences, especially Pooid grass husks (Rosen 1992)
Sedge cones (c.f. hat-shaped)	Conical phytoliths from Cyperaceae (Ollendorf, 1992)
Grass silica short cell phytoliths	Diagnostic of grasses, produced in all parts of the plant (Twiss et al., 1969)
GSSCP SADDLE	Poaceae, most commonly Chloridoideae sub family. Occasional occurrence in C_3 and C_4 PACMAD grasses reeds (Twiss et al., 1969)
GSSCP BILOBATE	Poaceae, commonly associated with Panicoid grasses (Twiss et al., 1969). Also occur in Pooideae grasses, especially Stipeae tribe (Fredlund and Tieszen, 1994; Strömberg, 2004; Piperno, 2006)
GSSCP POLYLOBATE	Poaceae, usually from Panicoideae and other PACMAD grasses (Twiss et al., 1969)
GSSCP CROSS	Poaceae, mostly Panicoideae and other PACMAD grasses (Twiss et al., 1969) (also Bambusoideae and Oryzoideae, not expected in this study)
GSSCP CRENATE	Poaceae, abundant in Pooideae sub family (Brown, 1984)
GSSCP RONDEL	Poaceae, produced in most grass sub families (Mulholland, 1989) but especially abundant and often associated with Pooideae (Twiss et al., 1969)
GSSCP TRAPEZOID	Poaceae, mostly Pooideae (Brown, 1984; Mulholland, 1989
Stomata	Usually monocot leaves, also some dicot leaves
SPHEROID ECHINATE	Monocots, especially Arecaceae (e.g. Piperno, 2006; Morcote-Ríos et al., 2016)
Phytoliths usually produced by dicots	
ACUTE BULBOSUS – dicot type	Produced in dicot leaves but rarely able to distinguish from Acute bulbosus produced in grasses
BLOCKY	Dicot wood/bark (Albert et al., 2003; Tsartsidou et al., 2007)

ELLIPSOID (psilate/rugose)	Dicot wood/bark (Albert et al., 2003)
SPHEROID psilate/rugose	Dicot wood/bark (Albert et al., 2003)
PLATELET	Dicot leaves (Albert et al., 2003)
POLYHEDRAL	Dicot leaves (Bozarth, 1992)
TRACHEARY	Dicot leaves (Bozarth, 1992; Strömberg, 2004)
Irregular (psilate/rugose)	Dicot wood/bark (Albert et al., 2003)
Honeycomb	Dicot leaves (Bozarth, 1992)
MC POLYHEDRAL	Dicot leaves (Bozarth, 1992)
MC JIGSAW	Dicot leaves (Bozarth, 1992)
Multi-cell forms expected in this study	
Stacked BULLIFORMS	Grass leaves. Often associated with reeds or moister environments (Sangster and Parry 1969; Bremond et al., 2005)
Phragmites (reed) culm	Elongate dentate cells connects with narrow or “pinched” GSSCP rondel (sometimes saddle) (Ryan, 2011)
Phragmites (reed) leaf	Elongate dentate cells with small frequent stomata (and short cells) (Ryan 2011)
Cyperaceae (sedge)	Sedge cones
Poaceae (grass) husk	Often Pooid grasses. Elongate dendritics with GSSCP rondels and papillate – usually not possible to distinguish wild from domestic
Triticum sp. (wheat) husk	MC elongate dendritic with irregular erratic waves (Rosen, 1992)
Hordeum sp. (barley) husk	MC elongate dendritic thick squarish, regular wave pattern (Rosen, 1992)
Lolium sp. (rye)	Rounded, long cell waves with regular amplitude (Rosen, 1992)
Avena sp. (oat)	Lobed long cell waves and irregular papillate (Rosen 1992).

Key: PACMAD is a clade of grasses which include families; Aristidoideae, Panicoideae, Chloridoideae, Danthonioideae, Arundinoideae, Micrairoideae, MC = multicell phytolith (here defined as three or more single cell phytoliths in anatomical connection), GSSCP (Grass silica short cell phytoliths) = phytoliths which form in short cells in the epidermis of Poaceae

ESM 2 References

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