**[For SUPPLEMENTARY MATERIAL]**

**Reconstructing Late Neolithic animal management practices at Kangjia, North China, using microfossil analysis of dental calculus**

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**Table S1. Counts and descriptions of starch granules recovered from the dental calculus from Kangjia animals.**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Starch type** | **Pig1** | **Pig2** | **Pig3** | **Pig4** | **Pig5** | **Pig6** | **Dog1** | **Dog2** | **Dog3** | **Dog4** | **Deer 1** | **Deer 2** | **Sheep/****goat 1** | **Sheep/****goat 2** | **Buffalo** | **TOTAL** | **Controls 1-4** |
| Millet | 7 | 3 |  |  | 13 | 11 | 1 |  | 2 | 1 | 3 |  |  |  |  | 41 | 0 |
| Triticeae  | 11 | 4 |  | 2 | 12 | 22 | 3 |  |  | 1 | 1 | 2 | 1 |  | 1 | 59 | 0 |
| Rice |  |  |  |  |  |  |  |  | 5 |  |  |  |  |  |  | 5 | 0 |
| Unidentified underground storage organs (USOs) | 2 |  | 2 |  | 1 | 1 |  |  | 1 |  |  |  |  |  |  | 7 | 0 |
| Unidentified | 7 | 5 |  |  |  | 7 |  |  |  | 2 | 5 |  |  | 1 | 1 | 29 | 0 |
| Total starch | 27 | 12 | 2 | 2 | 26 | 41 | 4 | 0 | 8 | 4 | 9 | 2 | 1 | 1 | 2 | 141 | 0 |
| Gelatinisation damage | 2 | 4 |  |  | 1 | 5 |  |  |  | 1 |  |  |  |  |  | 13 | 0 |
| Other damage  | 6 | 2 |  |  | 10 | 5 |  |  |  | 1 | 1 |  |  |  |  | 25 | 0 |

**Table S2. Morphological characteristics of identified starch granules from Kangjia animals.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Starch ID** | **Granule shape** | **Size range in μm** | **Hilum** | **Fissure** | **Lamella** | **Extinction cross** |
| Millet | Polygonal and round | 7.17–20.11 | Centric | Star or y-shaped | Absent | Mostly “+” shaped |
| Triticeae | Round  | 8.19–37.08 | Centric | Absent | Visible | “x” or “+” shape |
| Rice | Polyhedral or round polyhedral; often appear as compound granules | 6.44–9.08 | Centric | Absent | Absent | “x” shape |
| Unidentified underground storage organs (USOs) | Round or elongate oval | 12.05–45.84 | Eccentric | Absent | Absent | Bent arms |

**Table S3. Phytoliths recovered from the dental calculus from Kangjia animals.**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Phytolith morphotype** | **Pig 1** | **Pig 2** | **Pig 3** | **Pig 4** | **Pig 5** | **Pig 6** | **Dog 1** | **Dog 2** | **Dog 3** | **Dog 4** | **Sheep/****goat 1** | **Sheep/****goat 2** | **Deer 1** | **Deer 2** | **Water buffalo** | **Control 1** | **Control 2** | **Control 3** | **Control 4** |
| ***Silica skeletons*** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *η*-type | 14 | 7 |  |  | 2 | 1 |  | 10 |  | 2 |  | 3 |  | 2 |  |  |  |  |  |
| Ω-type | 1 | 3 |  |  | 1 | 2 |  | 1 | 1 |  |  |  |  |  |  |  |  |  |  |
| *β*-type | 5 |  |  |  | 1 |  |  | 9 |  | 4 |  |  | 1 | 4 |  |  |  |  |  |
| Interdigitate (Paniceae inflorescence) | 22 | 20 |  | 8 | 21 | 2 | 3 | 13 | 5 | 9 | 1 | 3 | 6 | 10 | 2 |  |  |  | 3 |
| El. dendriform | 4 | 3 |  | 1 |  | 2 |  | 5 |  | 1 | 3 | 4 | 2 | 18 | 1 |  |  |  |  |
| El. Echinate | 19 |  |  |  |  | 9 |  | 16 |  | 22 | 42 | 5 |  | 19 | 22 |  |  |  |  |
| El. Crenate | 34 | 8 |  | 7 | 4 | 16 |  | 5 | 4 | 22 | 9 | 3 | 1 | 17 | 10 |  |  |  |  |
| El. Columellate | 30 | 15 | 2 | 7 | 10 |  | 8 | 18 |  | 32 | 31 | 28 | 12 | 44 | 12 |  |  |  |  |
| El. Psilate/sinuate | 42 | 11 |  | 5 | 5 |  | 13 | 14 | 1 | 54 | 3 | 8 | 4 | 45 | 5 |  |  |  | 4 |
| El. Irregular and others  | 6 |  |  |  |  |  |  |  |  | 3 |  |  |  | 4 | 1 |  |  |  |  |
| Opaque perforated platelet | 3 |  |  |  |  |  |  |  |  | 2 |  | 2 | 1 | 4 |  |  |  |  |  |
| Stoma sheet | 7 | 3 | 1 | 5 | 6 | 2 | 2 | 1 |  | 7 | 21 | 2 | 2 | 16 | 3 |  |  |  |  |
| Jigsaw | 17 |  |  |  |  | 1 |  |  |  | 2 |  | 2 |  | 3 |  |  |  |  |  |
| Undetermined multi-cell | 4 |  |  | 1 | 2 | 1 | 1 |  | 2 | 4 |  | 3 | 1 | 9 | 2 |  |  |  |  |
| ***Single-cell phytolith***  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Double-peak | 25 | 2 |  | 11 | 2 | 1 | 1 | 1 | 1 | 6 |  | 2 |  | 3 |  |  |  |  |  |
| *Oryza* type bulliform | 11 |  |  | 3 | 1 |  |  |  |  |  |  |  |  |  | 1 |  |  |  |  |
| Scooped bilobate parallel | 2 | 8 |  | 8 | 5 |  | 1 |  |  |  |  |  |  | 4 | 1 |  |  |  |  |
| *Phragmites* bulliform | 2 |  | 2 |  | 3 |  | 4 |  |  | 3 |  | 3 |  |  |  |  |  |  |  |
| Bilobate | 13 | 9 |  | 22 | 8 | 7 | 11 | 8 |  | 38 | 8 | 4 | 36 | 16 | 8 |  | 3 |  |  |
| Polylobate |  |  |  | 1 |  | 1 | 2 |  |  | 2 |  |  | 5 |  | 3 |  |  |  |  |
| Cross/quadra-lobate | 33 | 30 |  | 47 | 42 | 24 | 63 | 13 | 5 | 63 | 3 | 15 | 29 | 45 | 11 |  |  |  |  |
| Saddle | 1 |  | 1 | 14 | 2 | 4 | 1 |  |  | 1 |  |  | 3 | 1 | 2 |  |  |  |  |
| Trapeziform sinuate/polylobate/ovate/elongate |  |  |  |  |  |  |  |  |  |  |  |  | 2 | 1 |  |  |  |  |  |
| Rondel | 4 |  | 4 |  | 2 | 2 | 2 | 10 | 1 | 26 | 4 | 7 | 9 | 3 | 61 |  |  |  |  |
| Common bulliform | 4 |  | 2 | 3 | 2 | 7 |  | 8 |  | 5 | 1 | 9 | 2 | 3 | 4 |  |  |  | 1 |
| El. dendriform/echinate/ crenate/columellate | 2 |  |  |  |  | 1 |  | 1 |  | 2 |  | 35 |  |  | 1 |  |  |  |  |
| El. psilate/sinuate | 41 | 1 | 3 | 7 | 14 | 18 |  | 8 | 1 | 50 | 4 |  | 7 | 22 | 43 | 1 |  |  | 2 |
| El. irregular and others |  |  |  |  |  |  |  | 1 |  |  |  |  | 2 |  |  |  |  |  |  |
| Papillae cell | 10 |  |  |  |  |  |  | 2 |  |  |  |  | 1 | 1 |  |  |  |  |  |
| Trichome | 5 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Hair cell | 3 |  |  |  |  | 1 |  |  |  |  |  | 2 | 3 | 2 | 2 |  |  |  |  |
| Stoma | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 1 |  |  |
| Tracheid |  | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Globular psilate/irregular | 1 |  |  |  |  |  |  |  |  |  |  |  |  | 1 |  |  |  |  |  |
| **Total phytolith**  | **368** | **121** | **15** | **150** | **133** | **102** | **112** | **144** | **21** | **360** | **130** | **140** | **129** | **297** | **195** | **1** | **4** | **0** | **10** |