

Ancient Maya Standard-Bearers' Foodways: Chemical Residue Analyses of Ceramic Vessels at the Guzmán Group of El Palmar, Campeche, Mexico

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This article examines the foodways of Maya standard-bearers at the site of El Palmar during the Late-to-Terminal Classic period (600-850 CE). While epigraphic studies revealed the political importance of standard-bearers in dynastic interactions, their daily life has remained underexplored. Previous research identified a residential compound of standard-bearers at the Guzmán Group, a small plaza compound located 1.3 km north of El Palmar, Campeche. Extensive excavations of four structures surrounding the plaza uncovered the sequence of spatial configurations, yielding several material remains that included serving vessels. The serving vessels became greater in number and size when the plaza space was remodeled for public gathering. Chemical residue signatures of building floors signaled food-related activities. These lines of evidence suggested to us that the standard-bearers appear to have organized feastings repeatedly on the plaza.

We assessed feasting and the degree to which standard-bearers' foodways were articulated with their political life through ceramic analyses based on the type-variety-attribute system and chemical analyses of residues preserved inside the ceramic vessels. Thirty-one complete or semi-complete vessels were selected from primary contexts that included a termination ritual and burials found underneath the structures' room floors. The results attested that feasting became increasingly common from the second half of the Late Classic to the Terminal Classic period (726-850 CE) when burial offerings reflect a growing tendency of large plates, cylinder vases, and tripod bowls with chemical residues. This study highlights the importance of understanding foodways in Classic Maya society and its political significance.

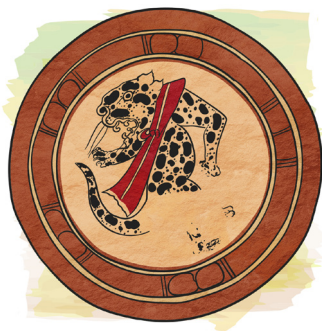
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The study of foodways has long been a central topic in household archaeology, providing scholars with information not only about people's daily lives but also the cultural, economic, political, and symbolic implications of food-related activities (Staller and Carrasco 2010). Nevertheless, ancient foodways are only now becoming a focus of Maya archaeology. This is primarily due to two issues. First, as the tropical climate typical of the Maya Lowlands accelerates the deterioration of organic substances, macrobotanical remains are seldom found unless they were carbonized. Secondly, the ancient Maya abandoned most sites gradually, leaving behind few food-related artifacts. Exceptional cases are the rapidly abandoned sites of Aguateca, Guatemala, and Joya de Cerén, El Salvador (Inomata et al. 2002; Lentz et al. 2014; Sheets 2000). Careful excavations and subsequent meticulous laboratory analyses of these rapidly abandoned sites have demonstrated that both elites and commoners performed a variety of food-related activities that consolidated and transformed social relations.



Scholars have developed diverse methods to tackle the environmental and contextual constraints of gradually abandoned sites in the Maya Lowlands. Stylistic and iconographic analyses of ceramic vessels have uncovered specific foods and drinks that rulers and high-ranking nobles consumed (e.g., Houston et al. 1989; LeCount 2001; Reents-Budet 1994; Saturno et al. 2005). Ethnohistoric and ethnographic studies documented the continuity of those food-related activities, including feasting (e.g., Blom 1928; Gabriel 2007: 158; Pugh 2009: 373; Redfield and Villa Rojas 1934; Tozzer 1941). The chemical residue analyses of excavated ceramic containers have provided empirical evidence for their functions (Barba et al. 2014; Pecci et al. 2017).

The present study provides an additional insight into ancient Maya foodways. We focus on a social group who held the title of *lakam* (the Yucatek Mayan word for “banner”; Barrera Vázquez 1980: 434). Tsukamoto and Esparza Olguín (2015) identified this social group as belonging to “standard-bearers” (a term adopted here) and their residential compound through epigraphic studies of inscriptions carved on a stairway attached to a temple of the Guzmán Group—a *plazuela* (i.e., a small plaza compound) located 1.3 km north of the El Palmar epicenter, Mexico. Subsequent decade-long horizontal and stratigraphic excavations at the Guzmán Group yielded substantial data that elucidated the standard-bearers’ cultural, economic, political, and social roles (Tsukamoto 2017; 2020; Tsukamoto et al. 2015; Tsukamoto et al. 2018). This article is focused on the foodways of these standard-bearers, especially their feasting practices, as evinced by ceramic analyses based on the type-variety-attribute system and chemical residues.

Feasting in Ancient Maya Society

Anthropologists and archaeologists recognize that feasting is closely tied to the negotiation of power and identity (Dietler and Hayden 2001; LeCount 1996; Rice 2009). In Classic Maya society, these activities were not just a tool to preserve status but a critical means to exchange goods and information (Lamoureux-St-Hilaire 2020). In the Late Classic period, cacao drinking (*kakaw* in Classic Mayan) was integral to ritual activities and politics (LeCount 2001). Redfield and Villa Rojas (1934) documented other festival and ritual foods and beverages among the modern Yucatec

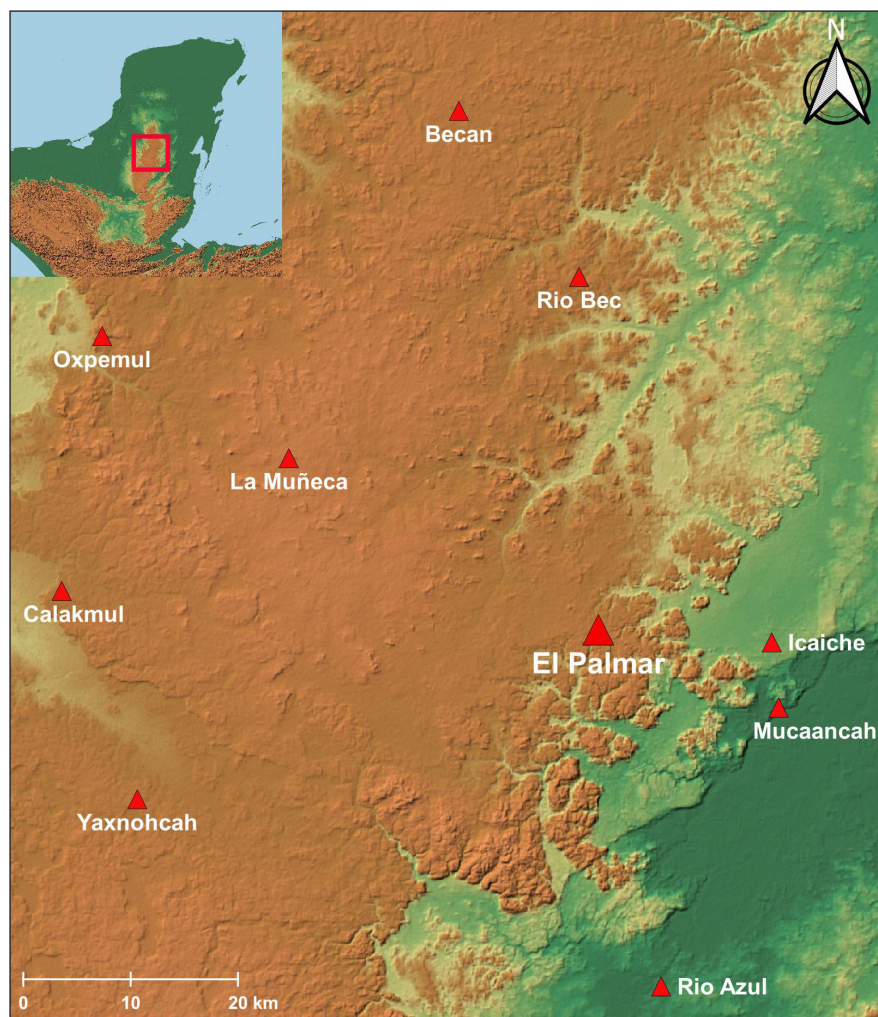


Figure 1. Map representing the location of El Palmar and its neighboring sites.

Maya including atole, *balché*, and tamales. Atole is a thick, semi-liquid maize gruel that was called *ul* during the Classic period (Houston et al. 1989). Spectacular murals found at the Chiik Nahb complex, a possible marketplace of Calakmul, illustrate two individuals drinking atole, one with a blue vase decorated with glyphs and another with an orange bowl (Martin 2012). *Balché* is an intoxicating fermented drink made from the bark of a leguminous tree which is soaked in honey and water. Yucatec colonial documents report that people consumed this drink during festivals (Blom 1928; Tozzer 1941). The modern Yucatec Maya consume *balché* during communal agrarian ceremonies when a ritual specialist places an offering on an altar and spills the drink to the four directions as part of a feast. The Lacandon also offer *balché* to supernatural entities during special ceremonies (Gabriel 2007: 158; Pugh 2009: 373). Tamales (*waaj* in Classic Mayan) consist of steamed maize dough with or without vegetables and meat. In ancient Maya society, tamales

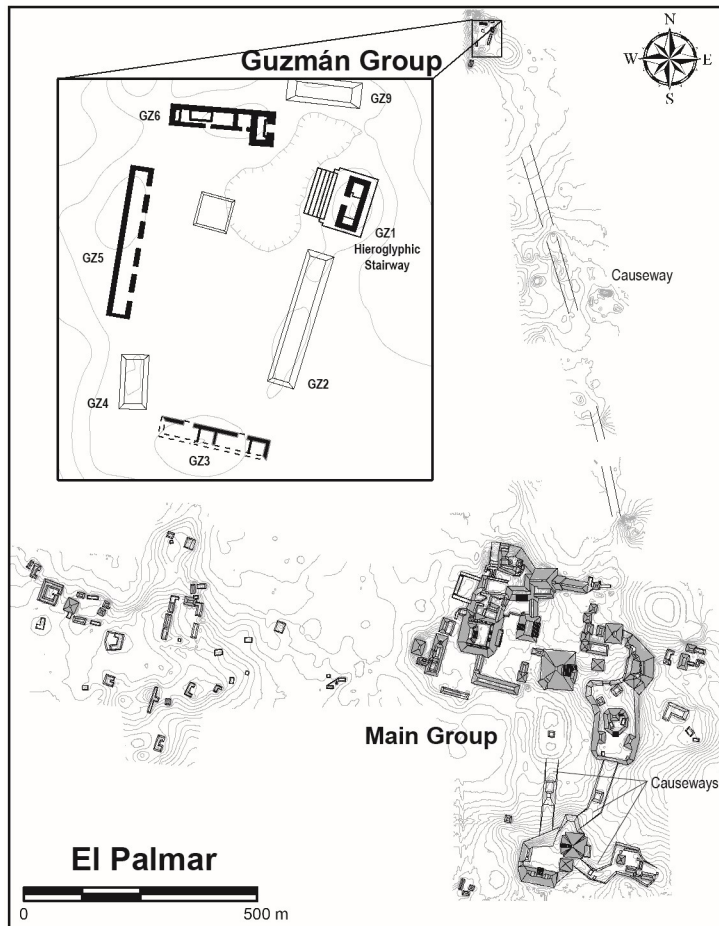


Figure 2. Map of the El Palmar Main Group and Guzmán Group.

appear in mythological, religious, and political scenes that can be traced back to the Late Preclassic period (Saturno et al. 2005). These studies provide the foundation for the study of Classic Maya foodways. Below, we articulate the study of foodways within the historical context of El Palmar’s standard-bearers.

El Palmar and Standard-Bearers

El Palmar is located in southeastern Campeche, Mexico; a region where several polities such as Calakmul, Becan, Oxpeul, and Rio Bec flourished during the Classic Period (250-900 CE; Figure 1). Epigraphic studies of several carved monuments found in the plazas of El Palmar indicate it was the seat of the dynasty known as *sakh’ook wak piit ajaw*, or “White Valley, the Lord of Six Palanquins,” which dates back to at least 554 CE (Esparza Olguín et al. 2019; Tsukamoto and Esparza Olguín 2021). Our recent LiDAR survey, covering an area of 94 km², detected a total of 559

plazas and plazuelas in and around El Palmar's central Main Group.

The Guzmán Group plazuela is surrounded by a small temple with a hieroglyphic stairway (Structure GZ1) and six other structures (Structures GZ2-GZ6, and GZ9; Figure 2). The stairway's inscriptions include a genealogical list of standard-bearers and a description of the journey of their descendant and protagonist, Ajpach' Waal. According to this text, Ajpach' Waal played the role of ambassador in negotiating political alliances between Copan, Calakmul, and El Palmar in 726 CE (Tsukamoto et al. 2015; Tsukamoto and Esparza Olguín 2015). While his political status was high, the osteobiographical study of Burial 1 (believed to contain Ajpach' Waal's remains) revealed health problems at the time of his death, which occurred between 726-770 CE (Cerezo-Román and Tsukamoto 2021). The analysis of his grave offerings signal a gap between this standard-bearer's high political position and low economic status (Tsukamoto et al. 2020).

Archaeological studies have revealed the standard-bearer's activities in the plaza. Horizontal excavations exposed Structures GZ1, GZ3, GZ5, and GZ6 (Figure 2; Tsukamoto et al. 2018), where

| Sample ID | Form | Ceramic Type | P | C | PH | PR | FA | CH |
|------------|---------------|--|---|---|------|-----|----|-----|
| GZ1 – OF1 | Vase | Palmar Polychrome: Palmar | 5 | 3 | 9.02 | 9 | 1 | 2.5 |
| GZ5 – OF6 | Vase | Zacatel Cream Polychrome: Unspecified | 5 | 2 | 8.79 | 8 | 2 | 2 |
| GZ5 – OF7 | Vase | Infierno Black: Fluted | 4 | 0 | 8.06 | 9 | 3 | 2 |
| GZ3 – OF11 | Vase | Infierno Black: Bolocantal | 2 | 4 | 9.16 | 9 | 0 | 2 |
| GZ6 – OF4 | Cuenco | Tinaja Red: Tinaja | 5 | 3 | 9.45 | 8 | 0 | 2.5 |
| GZ3 – S17 | Cuenco | Infierno Black: Bolocantal | 5 | 3 | 9.14 | 9 | 0 | 2 |
| GZ3 – S31 | Cuenco | Egoista Resist: Egoista | 4 | 3 | 9.57 | 9.5 | 0 | 2 |
| GZ3 – S32 | Cuenco | Tinaja Red: Tinaja | 5 | 3 | 8.94 | 9 | 0 | 2.5 |
| GZ5 – S45 | Cuenco | Tinaja Red: Tinaja | 4 | 1 | 8.33 | 8 | 2 | 4 |
| GZ3 – S48 | Cuenco | Corona Red: Corona | 3 | 2 | 9.06 | 8.5 | 2 | 2.5 |
| GZ3 – S50 | Cuenco | Saxche Orange Polychrome: Saxche | 4 | 3 | 8.91 | 8.5 | 0 | 2 |
| GZ3 – S59 | Cuenco | Infierno Black: Bolocantal | 4 | 2 | 9.12 | 8.5 | 0 | 2.5 |
| GZ3 – S60 | Cuenco | Infierno Black: Bolocantal | 5 | 3 | 9.13 | 9 | 0 | 2.5 |
| GZ1 – S66 | Cuenco | Chantuori Black-on-orange: Unspecified | 4 | 3 | 8.86 | 8.5 | 0 | 4 |
| GZ1 – S67 | Cuenco | Chantuori Black-on-orange: Unspecified | 5 | 3 | 9.21 | 9 | 0 | 2.5 |
| GZ1 – S68 | Cuenco | Tinaja Red: Tinaja | 5 | 2 | 9.3 | 9 | 0 | 2.5 |
| GZ1 – OF2 | Cajete | Zacatel Cream Polychrome: Unspecified | 5 | 3 | 9.33 | 9 | 1 | 2.5 |
| GZ6 – OF3 | Cajete | Egoista Resist: Egoista | 5 | 3 | 9.66 | 8 | 0 | 2 |
| GZ5 – OF5 | Cajete | Tinaja Red: Tinaja | 5 | 3 | 9.42 | 9 | 1 | 1.5 |
| GZ1 – S02 | Cajete | Desquite Red-on-orange: Unspecified | 1 | 2 | 8.71 | 8 | 0 | 2 |
| GZ6 – S10 | Cajete | San Clemente Gouge-Incised: San Clemente | 1 | 0 | 8.28 | 8 | 0 | 2 |
| GZ3 – S33 | Cajete | Tixcacal Orange Polychrome: Tixcacal | 4 | 3 | 9.13 | 8.5 | 0 | 1.5 |
| GZ6 – S43 | Cajete | Desquite Red-on-orange: Unspecified | 5 | 2 | 8.98 | 8.5 | 0 | 2 |
| GZ3 – S51 | Tripod Cajete | Saxche Orange Polychrome: Dzaptun | 2 | 2 | 9.05 | 9 | 0 | 1.5 |
| GZ1 – S69 | Cajete | Corona Red: Corona | 2 | 2 | 8.97 | 9 | 0 | 2.5 |
| GZ3 – OF10 | Plate | Saxche Orange Polychrome: Saxche | 5 | 2 | 8.68 | 8 | 0 | 2 |
| GZ5 – OF8 | Plate | Saxche Orange Polychrome: Saxche | 4 | 4 | 9.77 | 8.5 | 2 | 2.5 |
| GZ5 – S72 | Jar | Tinaja Red: Tinaja | 4 | 2 | 8.93 | 9 | 0 | 2.5 |
| GZ5 – S73 | Jar | Encanto Striated: Unspecified | 4 | 4 | 9.1 | 9.5 | 2 | 3 |
| GZ3 – S74 | Jar | Encanto Striated: Unspecified | 3 | 4 | 9.12 | 8.5 | 3 | 3 |
| GZ5 – OF9 | Flask | Not Identified | 3 | 6 | 9.42 | 8 | 0 | 2.5 |

Table 1. Chemical residues of vessels from the Guzmán Group. P: phosphate, C: carbonate; PR: protein; FA: fatty acid, CH: carbohydrate.



Figure 3. Vessel from Burial 7, used on feastings (Photo: Kenichiro Tsukamoto).

a complete chemical residue analysis took place on the room floors of GZ3 and GZ5, along with partial analysis on GZ1 and GZ6 (Ceballos Pesina et al. 2021). Structure GZ1, located on the plazuela's east side, is a temple featuring a terrace atop its hieroglyphic stairway which was designed to host theatrical performances on large treads, leading to a single-chambered shrine with two benches placed at the north and south ends (Tsukamoto 2014). Our chemical analyses on the floors revealed concentrations of proteins and fatty acids in the doorway where a semi-complete bichrome tripod dish was found (Table 1, GZ1-S02). This evidence suggests that Ajpach' Waal and his descendants repeatedly conducted food-related rituals in this doorway. Structure GZ6 is a three-room building enclosing the plazuela's north end. Chemical residue analyses suggest that the smaller, middle room was used for food storage (Ceballos Pesina et al. 2021:82). A large throne-like bench was placed in the west room, which probably served for meetings and receptions. This room also contained a lateral bench along its west wall, on which Tsukamoto and his crew (2015) found a round mano and a

portable censer, suggesting the occurrence of private activities.

The two other buildings appear to have had different functions. Structure GZ3 encloses the south end of the plazuela. The building's north side contains two rooms, each of which contained an eastern lateral bench—a common characteristic of residential buildings in the Maya area. The high values of phosphates and fatty acids detected on these rooms' floor suggest that the standard-bearers prepared, consumed, and/or stored food there (Ceballos Pesina et al. 2021:81). Structure GZ5 – which flanks the plaza to the west – is a single-gallery building with five doorways. In contrast to GZ3, phosphate and fatty acid values were low on GZ5's floor; suggesting that its principal function was not food-related. Scholars widely postulate that this type of gallery-like buildings served as administrative or commercial facilities (e.g., Andrews 1975:43). We should note that both Structures GZ3 and GZ5 have more rooms facing outward from the plaza, implying additional functions. The Guzmán Group was abandoned around 850 CE.

Feasting in the Guzmán Group

Evidence of feasting in the Guzmán Group comes from two types of contexts – a termination ritual and four burials -- from which we recovered a total of 31 vessels discussed here. These 31 vessels are comprised of four vases, 21 bowls, two plates, three jars, and a tobacco flask. The standard-bearers performed a termination ritual when abandoning the plazuela (Tsukamoto et al. 2015; Tsukamoto et al. 2018), where horizontal excavations uncovered numerous termination deposits, including sherds in and around Structures GZ1, GZ3, and GZ6. Sherd refitting analyses indicate that most ceramics from the termination deposit were large serving vessels. Since an increase in serving vessel size correlated with the construction of this public plazuela, Tsukamoto (2017) suggested the standard-bearers had used these large vessels for feasting inside this plazuela. Stratigraphic excavations beneath the floors of GZ1, GZ3, GZ5, and GZ6 uncovered four burials (Burials 1, 5, 7, and 8) dated between the Late and the Terminal Classic. The burials featured offerings that included ceramic vessels, some of which showed evidence of use-wear (Figure 3). Four cylinder vases were most likely used for beverages, while tripod bowls and plates were for solid foods. Burial 1, found below the floor of Structure GZ1, contained two polychrome vessels as offerings (Tsukamoto et al. 2015:207): a cylinder vase that could have been used for chocolate, *atole*, or *balché* and a polychrome tripod bowl in which two clay balls were placed, probably tamale “imitations”. Microscopic analyses with a scanning electron microscope (SEM) identified either cacao (*Theobroma cacao*) or tablate (*Guazuma ulmifolia*) under the latest floor of Structure GZ1’s southwest corner (Tsukamoto et al. 2020:1255). Below, we turn to the chemical residue analyses which revealed additional evidence for feasting.

Method

We sorted ceramic vessels based on the type-variety-attribute system and then selected samples for chemical residue analyses. In the type-variety-attribute analysis, the identification of forms and decorations hints at contents since the iconography and epigraphy of some painted vessels has associated specific foods and drinks with certain vessel forms. For example, Classic period nobles used cylinder vases, especially those depicting courtly scenes and glyphic texts, to drink chocolate and other



Figure 4. Monochrome vase (GZ3-OF11) from Burial 8 (Drawing and photo: Xanti Ceballos).

ceremonial beverages (Reents-Budet 1994). Tripod plates and *cajetes* (i.e., bowls with flared and outcurved sides) were often used for tamales, while *cuencos* (i.e., bowls with incurved and round sides) were used for maize-based beverages such as atole (Boot 2009; Houston et al. 1989).

We selected ceramic vessels recovered from the two context types (i.e., the termination ritual and four burials). When a vessel was sufficiently preserved to identify its form, we classified it as a vase, plate, dish, bowl, or jar (following Sabloff 1975:22-25). We applied the terms cuenco and cajete to sort our samples by the specific food-related activities mentioned above. A sample ID (S) was assigned to each vessel and, in the case of the burial offerings, an extra ID (OF) was added. Here we'd like to highlight that vessels used as grave offerings in the Maya area were not solely funerary in function but were extensively used prior to their deposition (Hall et al. 1990; Houston et al. 1989; Stuart 1988, 1989; also see Coe 1973).

Luis Barba and Linda Manzanilla pioneered chemical residue analyses of archaeological features and artifacts (Barba 1986; Barba and Denise 1984; Manzanilla and Barba 1990). Their studies identified repetitive activities that chemically permeated room floors and open spaces such as courtyards, patios, and plazas. For example, they noticed that areas where food was consumed were rich in phosphates, while sleeping areas were poor in organic residues. Scholars have continued to apply chemical residue analyses to different activity areas that include ritual spaces, causeways, and marketplaces, refining the methods to be quantitative (e.g., Terry et al. 2004; Terry et al. 2000; Terry et al. 1998; Parnell et al. 2001). The methods developed to detect residues in activity areas have been shown to be equally powerful for identifying residues on pottery. Ethnoarchaeological and laboratory studies carried out on ceramic vessels allow scholars to infer the kinds of food and beverage they contained (Barba et al. 2014).

Because of their efficacy, we employed semi-quantitative analyses to examine food-related chemical signatures in ceramic vessels to study ancient Maya foodways. The results are shown in Table 1 as ordinal values. The analyses we ran do not detect specific plant and animal species associated with foodstuffs. Nevertheless, scholars have demonstrated the correlation between chemical components detected by semi-quantitative analyses and those detected by more sophisticated instruments (Pecci et al. 2017). For example, the concurrence of carbohydrates and fatty acids in cylinder vases signals the presence of cacao. Kaplan and colleagues (2017) applied liquid chromatography coupled with mass spectrometry to archaeological samples and revealed theobromine, the principal component of cacao. We also examined whether vessels with the same form but different surface decorations (e.g., polychromes vs. monochromes) are associated with distinct functions. Other beverages such as atole and balché leave high values of carbohydrates on vases without fatty acids. The existence of proteins on plates could indicate meat, beans, and insects. High carbohydrate values in bowls may denote tamale, although the chemical residues of tamale depend on its fillings—meats, beans, and vegetables that can represent different values of proteins and fatty acids. The Chiik Nahb murals vividly illustrate a female serving tamales to another person on a flat plate (Martin 2012: 65). Solid foods do not always leave chemical residues on ceramic vessels. Importantly, we recognize that the ancient Maya most likely used ceramic vessels for multiple purposes.

Our chemical residue analyses followed procedures developed by Barba and colleagues (Barba et al. 2014; Barba et al. 1991). Because liquid and soft food residues tend to be absorbed into vessel walls and bases, we took small samples from these sections and ground them in a clean mortar. When vessels were complete or semi-complete, a Dremel drill with a 1/8" tungsten tip was used to take a sherd sample of ca. 2 g. We applied five "spot tests" in the samples to detect the presence of phosphate (P), carbonate (C), protein (PR), fatty acid (FA), carbohydrate (CH), and a pH meter to determine acidity (for detailed procedures see Barba et al. 1991). The analyses took place at the Laboratory of Archaeological Prospection of the Universidad Nacional Autónoma de México (UNAM).

Results

During the 2010-2016 field seasons, we sorted complete and semi-complete vessels and sherds recovered from different Guzmán Group contexts based on the type-variety-attribute system (Ball 1977; Inomata and Triadan 2010; Smith 1955). After attempting to refit all sherds in the laboratory, we identified 86 types and 93 varieties from a total of 34,077 ceramic materials. Among this sorted material, we sampled 31 complete or semi-complete vessels recovered from the primary contexts for chemical residue analyses. The sample includes four cylinder vases, 12 cuencos, nine cajetes, two plates, three jars, and a flask. The residue analyses yielded varying concentrations of chemical signatures, although carbonates and pH values tended to be high due to the karstic geology of the El Palmar region. We report our results below, organized by vessel form.

Cylinder Vases. Analyzed vases consist of two polychrome and two monochrome cylinder vases recovered from Late Classic burials (726-770 CE; Tsukamoto et al. 2020). Of the four cylinder vases sampled, only the vase from Burial 1 of Structure GZ1 had imagery, depicting a mythical fire ritual (Tsukamoto et al. 2015:206, Figure 8). This one and two other vases from Structures GZ1 and GZ5 (OF1, OF6, and OF7) exhibit high-to-middle values of carbohydrates, proteins, and phosphates, and middle-to-low values of fatty acids, while the black monochrome vase from Structure GZ3 (OF11; Figure 4) lacks fatty acids. While the first three vases could have contained cacao, the lack of fatty acids on the Infierno Black: Bolocantal vase (GZ3-OF11) indicates it was used for other beverages (Table 1). There was no significant difference in chemical residues between the polychrome and monochrome vases.

Bowls (Cuencos and Cajetes). Twelve samples were classified as cuencos and nine as cajetes (Table 1). As for the vases, there was no significant difference in chemical signatures between polychrome and monochrome bowls. Unlike the vases, which yielded high concentrations of fatty acids, only four (S45, S48, OF2 and OF5) of the 21 bowls presented this chemical component. Furthermore, protein enrichment patterns were consistent in these forms, including the tripod polychrome cajete containing tamal-like clay balls (GZ1-OF2) mentioned above (Cerezo-Román and Tsukamoto 2021:281, Figure 5a). The middle carbohydrate value found at the bottom of this cajete could be residues of tamale. If this was the case, rich proteins and the low value of fatty acids may represent tamale fillings such as meats or beans. As mentioned above, cuencos were often used for atole, or *ul*, drinking. Although none of the vessels recovered from the Guzmán Group depicted

the *ul* glyph, all cuencos in the samples were rich in carbohydrates and proteins, suggesting the presence of atole (Figure 5). It is equally possible that they were used to serve balché.

Plates. We analyzed two large plates measuring over 30 cm in diameter. This vessel type – a plate with a wide mouth, shallow walls, and flat base – was called *ulak* in Classic Mayan (Boot 2009). One of the plates (GZ5-OF8), depicting a jaguar image, or *wahy* (i.e., an animal spirit companion), came from Burial 5, which was placed below Structure GZ5's latest floor. Our chemical analyses of this plate identified rich carbohydrates, proteins, and fatty acids. Another plate of the Saxche Orange Polychrome type (GZ3-OF10; Figure 6) was found in Burial 8, placed under the latest floor of Structure GZ3's west room. Chemical analyses of this plate detected proteins and carbohydrates, but not fatty acids. Because of their low walls, these serving plates were used for solid foods. The excavations yielded carbonized avocado and nance seeds on Structure GZ5's room floor (Tsukamoto et al 2020: 1256). The standard-bearers possibly served foods such as meat, avocado, and tamale on the *wahy* plate while the latter plate was used for other foods.

Jars. Our sample included three jars that were divided into two groups according to their mouth diameter: (1) a restricted-mouth jar (< 30 cm diameter) of the Tinaja Red type and (2) two wide-mouth jars (> 30 cm diameter; Table 1) of the Encanto Striated type. Restricted-mouth jars are usually associated with the serving, storage, and transportation of liquids, while wide-mouth jars were used to prepare and store foodstuff (Triadan 2000). Our analyses show the Tinaja Red jar (S72) contained food or liquid with a concentration of proteins and carbohydrates that might indicate the storage or preparation of atole and fermented maize drinks. It is unlikely that it was



Figure 5. Cuenco (GZ6-OF4) from a burial offering.



Figure 6. Polychrome plate (GZ3-OF10) from Burial 8 (Drawing and photo: Xanti Ceballos).

used for water because water containers typically only yield high values of carbonate and pH (Barba et al. 2014). The two Encanto Striated jars (S73 and S74) contained fatty acids and proteins and were likely used for cooking foods such as stews.

Tobacco Flask. We found a decorated tobacco flask in Burial 7 of Structure GZ5 (Figure 7). The attire of the figure depicted on the flask indicate it was likely Chahk, the rain or storm god. The flask, which type has not been identified, was originally painted black (Tsukamoto and López Camacho 2018:158). When we uncovered the burial, the flask was found tipped over, spilling congealed



Figure 7. Tobacco flask (GZ5-OF9) from Burial 7 (Drawing: Daniel Salazar).

white liquids out of its mouth—possibly its original contents. Scholars who conducted chemical residue analyses of similar flasks from other sites have identified nicotine, the active ingredient of tobacco, and more recently marigold (Zagorevski and Loughmiller-Newman 2012; Zimmermann et al. 2021). These ingredients can induce mild psychedelic effects, which would have been sought during feasts or other ceremonies. Our analyses revealed phosphates, carbohydrates, and proteins (Table 1). Future analyses with gas chromatography, liquid chromatography-mass spectrometry, and metabolomics will hopefully identify a more specific content for the flask.

Discussion

Through the study of a sizable sample of reconstructible vessels, our study revealed aspects of the foodways of standard-bearers who lived in the Guzmán Group. Chemical residues on jars and some cajetes and cuencos reflect their daily food-related activities, including food preparation, consumption, and storage. While our analyses attested that some vessel forms were associated with certain food-related activities, we found no clear functional difference between polychrome and monochrome vessels. This finding suggests that the Guzmán standard-bearers did not have stylistic vessel preferences for consuming foods and beverages.

Since feasting was an important theatrical performance in Classic Maya society, foods and

beverages were not just consumed; they enhanced religious and political events. Since the “chemical footprint” of vessels results from repeated activities, the combination of the right chemical residues on certain types of vessels can indicate their regular use during feasts. Our results show that cylinder vases, some cuencos and cajetes, and large polychrome plates probably were used for ceremonial beverages and foods such as cacao, atole, and tamales. When the standard-bearers created an open gathering space adorned with a hieroglyphic stairway around 726 CE, feasting and other ritual events must have been politicized. This is perhaps clearest for Structure GZ1, where a ritually killed, large tripod cajete of the Desquite red-on-orange type (GZ1-S02) was placed as a termination deposit on the terrace in front of the doorway where we identified a concentration of organic residues (Ceballos Pesina et al. 2021). This doorway, highly visible from the plazuela, was ideal for hosting people who would have witnessed and participated in the feasts which regularly occurred there. A ritual specialist may have stood on the terrace, exhibiting this vessel filled with food in front of the participants. The consumption of cacao, atole, tamale, and possibly tobacco, suggests that the standard-bearers had access to prestige foods and beverages. Mild psychotropic effects induced by cacao, atole, balché, and tobacco created emotionally charged environments among feast participants. The Guzmán plaza was large enough to accommodate more people than all the members of the standard-bearer household, suggesting that other elite and non-elite people were present during these commensal events.

In other words, the creation of a new public place led the standard-bearers to regularly organize politically charged feasts, which provided opportunities for the participants to negotiate power and identity (Tsukamoto 2014; Tsukamoto et al. 2015). Our analyses show that ceramic vessels as offerings were frequently used before being deposited in burials. The clay imitation of tamales found in a tripod cajete of the Zacatel Cream Polychrome type (GZ1-OF2), along with its chemical signature, signal that Ajpach’ Waal regularly ate tamales as ceremonial foods—a practice that can still be observed in modern Maya communities.

The quantity and quality of food offered at feasts was probably just as important as the feasts themselves and determined the success of the sponsors (Lamoureux-St-Hilaire 2020). Feasting appears to have continued until the Guzmán Group was abandoned around 850 CE. Charred avocado and nance found on Structure GZ5’s room floor (Tsukamoto et al 2020: 1256) attested that the standard-bearers ritually terminated this building with feasting (Tsukamoto 2017). Over a century of repetitive feasting would have enhanced the standard-bearers’ political position in the El Palmar kingdom.



Conclusion

Our chemical residue analyses of 31 ceramic vessels shed new light on Maya standard-bearers’ foodways. The different lines of evidence indicate that the commensal events organized by the standard-bearers became increasingly politicized with feasting around 726 CE and continued until they abandoned their plazuela—at which time they performed a reverential termination ritual. We hope that future analyses will offer more detailed information about their foodways.

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