



2019

Current Research: Analysis of Ceramic Vessel Residues from the Washington Square Mound Site (41NA49) for Evidence of Peyote use by the Caddo in the 13th-15th centuries A.D.

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Perttula, Timothy K. and Terry, Martin (2019) "Current Research: Analysis of Ceramic Vessel Residues from the Washington Square Mound Site (41NA49) for Evidence of Peyote use by the Caddo in the 13th-15th centuries A.D.," *Index of Texas Archaeology: Open Access Gray Literature from the Lone Star State*: Vol. 2019 , Article 10. <https://doi.org/10.21112/ita.2019.1.10>

ISSN: 2475-9333

Available at: <https://scholarworks.sfasu.edu/ita/vol2019/iss1/10>

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Current Research:

Analysis of ceramic vessel residues from the Washington Square Mound Site (41NA49) for evidence of peyote use by the Caddo in the 13th-15th centuries A.D.

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In 2012, Perttula requested permission from the Caddo Nation of Oklahoma's Repatriation Committee to analyze small samples (ca. 1-2 grams of ceramic paste, or sherds ca. 1-2 square centimeters in size) from the paste of five vessels from Features 31 and 95 at the Washington Square Mound site (41NA49) (Perttula et al. 2010) in East Texas to identify residue traces of the Caddo's use of peyote in the 13th-15th centuries A.D. The Caddo Nation of Oklahoma gave their permission to conduct these ceramic vessel residue studies.

Peyote was and is a ritually important plant to the Caddo peoples, but to date no archaeological evidence is available that demonstrates when peyote was first used in ancestral times for Caddo ritual activities. In West Texas, there is direct archaeological evidence of the use of peyote from as early as 6000 years ago (El-Seedi et al. 2005; Terry et al. 2006). The analysis of residue samples from Washington Square Mound site ceramic vessels represented the beginning efforts of what is hoped to be a long-term study of Caddo ceramic vessels across the Caddo area for traces of peyote use and ritual ceremonialism.

This pilot study of peyote use among Caddo peoples serves as a companion effort to two recent

successful chemical analyses of organic residues in Caddo artifacts. The first is the study of A.D. 1050-1250 ceramic vessels from the major site of Cahokia that has identified species of holly (*Ilex*) used to prepare the ritually important Black Drink (Crown et al. 2012). The nearest source to Cahokia of holly leaves used in the Black Drink is among Caddo peoples living in Southwest Arkansas (Crown et al. 2012:Figure 2), and it is likely that the Cahokians obtained holly leaves from Caddo peoples (who also used the Black Drink), and transplanted and cultivated holly trees locally. The second effort is the successful identification of *Datura* residues in several post-A.D. 1400 Caddo ceramic vessels in Southwest Arkansas and decorated marine shell artifacts from ca. A.D. 1200-1450 contexts at the Spiro site (34LF40) in eastern Oklahoma (King et al. 2018).

The five ceramic vessels from the Washington Square Mound site that received organic residue study in 2012 to identify peyote use are listed in Table 1. All are finely engraved vessels, either bottles (n=1), carinated bowls (n=2), or compound bowls (n=2).

The organic residue samples (either ca. 1-2 grams of paste from interior wall scrapings near the vessel base, or a small sherd from an unreconstructed

Vessel No.	Type Identification	Vessel Form	Reference
Fea. 31-1	Nacogdoches Engraved	Compound Bowl	Perttula et al. 2010:Fig. 18
Fea. 95-1	Nacogdoches Engraved	Carinated Bowl	Perttula et al. 2010:Fig. 33
Fea. 95-8	Nacogdoches Engraved	Compound Bowl	Perttula et al. 2010:Fig. 39
Fea. 95-19	Unidentified engraved	Carinated Bowl	Perttula et al. 2010:Fig. 50
Fea. 95-23	Nacogdoches Engraved	Bottle	Perttula et al. 2010:Fig. 54

Table 1. Vessels from the Washington Square Mound site that received organic residue analysis.

vessel; all the vessels are currently curated at Stephen F. Austin State University) were analyzed by Dr. Martin Terry (Associate Professor and Curator of the Herbarium, Sul Ross State University, Alpine, Texas) in his university laboratory. His laboratory ran analyses for peyote alkaloids in the residues from these vessels; other plant compounds, such as holly residues, were hopefully also likely to be identified. Mescaline, the distinctive biomarker for peyote, is evidently quite stable and is straightforward to separate with High-performance liquid chromatography (HPLC) and (assuming adequate concentration) to confirm with Gas chromatography-mass spectrometry (GCMS).

None of the HPLC and GCMS analyses of the residue samples from the Washington Square Mound site ceramic vessels contained mescaline residues, however, and thus no preserved evidence of peyote use in these vessels. Other residues were identified in the analyzed samples, but they could not be identified in Terry's laboratory.

While the results of this initial pilot study to identify peyote residues in five ancestral Caddo ceramic vessels were not successful, other studies of organic residues preserved in Caddo ceramic vessels from southern and northern Caddo sites are being contemplated. Hopefully this future work will be able to establish with precision the use of peyote, *Datura*, and *Ilex*, and other plant residues, by ancestral Caddo peoples.

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