

## **NEW LIGHT ON SOFT-STONE ARTIFACTS FROM MEDIEVAL SICILY: A MULTI-DISCIPLINARY INVESTIGATION**

**M.P. Colombini<sup>1</sup>, A. Corretti<sup>3</sup>, J. Lucejko<sup>1</sup>, C.F. Mangiaracina<sup>3</sup>, G. Montana<sup>2</sup>,  
E. Ribechini<sup>1</sup>**

<sup>1</sup>Dipartimento di Chimica e Chimica Industriale – Università di Pisa, j.lucejko@dcc.unipi.it

<sup>2</sup>Dipartimento di Chimica e Fisica della Terra – Università di Palermo

<sup>3</sup>Laboratorio di Scienze dell'Antichità – Scuola Normale Superiore

### **Abstract**

Soft-stone vessels, low-rim round artifacts, used in Sicily at least from the Proto-Islamic to the Suabian periods (late IXth-first half of the XIIIth century) were usually interpreted as 'testi' for cooking bread. Research carried out recently at Entella and its territory improved our knowledge about the chronology of this production. Moreover, the output of this manufacturing appears more articulated than usually believed, as it includes – besides the already known 'testi' - several inédited forms, as the incense-burner. Notwithstanding new archaeological evidence, several questions remain unsolved concerning e.g. the production place of these items (Sicily? Imports from abroad?) and their specific use. To understand all this, chemical investigations using gas chromatography coupled with mass spectrometry (GC-MS) were carried out on 16 samples collected from soft-stone Medieval vessels found in the archaeological site of Entella (Rocca d'Entella - Contessa Entellina, PA) and in its territory during excavations and surveys carried out since 1985 by Scuola Normale Superiore di Pisa. In addition, minero-petrographical analyses were carried out in order to characterize the stone.

The adopted analytical methodology based on GC-MS enabled us to achieve simultaneous identification of different natural substances such as plant resins and oils, tar and pitch [1]. The presence of monocarboxylic acids,  $\alpha,\omega$ -dicarboxylic acids, long-chain dihydroxylated acids, and terpenic species, highlights that although the organic residues showed a high heterogeneity in composition, they mainly consisted of materials of vegetal-origin. Moreover, the presence of characteristic diterpenic biomarkers in three pieces of pottery indicate the use of both pine resin and pine pitch.

Minero-petrographical analyses allowed to classify and identify the stone used as raw material for this production. It is a glauconitic biocalcarenite belonging to the Formation of the "Calcareni di Corleone" [2], dated back to the Lower Miocene, which crop out in the Sicani area and also in the neighborhood of Entella.

These data therefore enlighten a manufacturing activity and a trade between the capital Palermo and the interior of the island, at least since the proto-Islamic period.

GC-MS investigations spread new light on alimentary practices and other aspects of everyday life in medieval Sicily. Traces of pine-pitch on some stone vessels of the more common types suggest that they were probably used as incense burner from resin stuff as well.

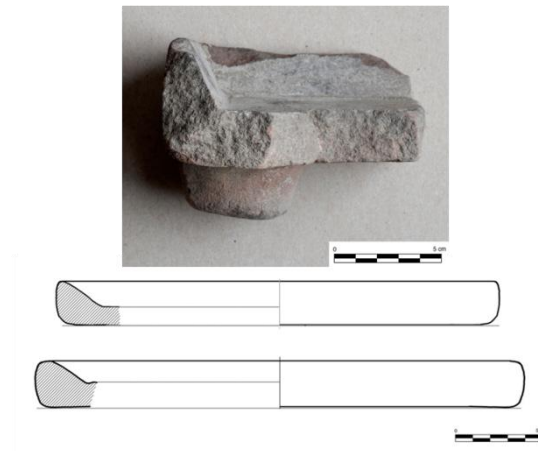


Figure 1 Example of soft-stone vessel

Keywords: Entella, Medieval Sicily, stone industry, incense burner, GC-MS

#### Bibliography

[1] Andreotti, A., Bonaduce, I., Colombini, M. P., Gautier, G., Modugno, F., Ribechini, E., 2006. Combined GC/MS Analytical Procedure for the Characterization of Glycerolipid, Waxy, Resinous, and Proteinaceous Materials in a Unique Paint Microsample. *Analytical Chemistry*, 78 (13): 4490-4500.

[2] Basilone L., 2012. *Litostratigrafia della Sicilia*. Arti Grafiche Siciliane, Palermo, pp. 52-54.