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Archaic Greek Pottery of Aeolian Inspiration Made in Huelva, Spain

Cerámicas griegas arcaicas de inspiración eolia manufacturadas en Huelva, España

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Abstract

Greeks settled in the ancient emporium of Huelva manufactured archaic gray pottery inspired by Aeolian prototypes. Results of Neutron Activation Analysis showed that seven out of 11 specimens analyzed had a chemical composition similar to the loamy clay from local deposits traditionally used in pottery. This gray pottery must have found a good acceptance not only among the resident Greeks, but also among the non-Greek population long before familiarized with the so called "orientalizing gray pottery", whose coloration and production by reduction firing are similar to the Aeolian one. In the same settlement, two other groups of archaic Greek pottery manufactured in situ had already been identified: one of them characterized by a yellowish-green paste and the other one, conventionally named "Group H", decorated with red slips comparable to the Phoenician ceramics.

Keywords

Gray pottery, Local production, Clay, Neutron activation analysis, Tartessos.

Resumen

Los griegos establecidos en el antiguo emporio de Huelva manufacturaron cerámicas grises arcaicas inspiradas en prototipos eolios. Los análisis por activación neutrónica demostraron que siete de 11 especímenes analizados tenían una composición similar a las arcillas margosas de los depósitos locales tradicionalmente utilizadas en la industria alfarera. Estas cerámicas grises debieron encontrar una buena recepción no solo entre los griegos residentes, sino también entre la población no griega del emporio familiarizada desde mucho antes con la denominada "cerámica gris orientalizante", de similar coloración y producción por cocción reductora que las eolias. En el mismo asentamiento habían sido identificados otros dos grupos de cerámicas griegas arcaicas manufacturadas in situ: uno caracterizado por una pasta verdosa amarillenta y otro, convencionalmente denominado "Grupo H", decorado mediante engobes rojos como los fenicios.

Palabras Clave

Cerámicas grises, Producción local, Arcilla, Análisis por activación neutrónica, Tarteso.

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Introduction

The extensive protohistoric habitat in the underground of the Huelva city center (fig. 1) correlates, both geographically and archaeologically, with the city-emporium of Tartessos mentioned by Greek texts based on sources originated in the 6th century BC. The abundant archaic Greek pottery imported and/or produced by Greeks established in the emporium constitutes a relevant part of the commercial, artisanal and industrial activities which, together with the analysis of ancient written sources, substantiates this identification (González de Canales and Llompart, 2023).

Amongst the first Greek gray ceramics documented, a trefoil oinochoe (Fernández, 1990, vol. 1, 153; vol. 2, 122 No. 3 and 123 pl. LVII.3; Cabrera, 1990, 51, 84 No. 7 and 87 fig. 1.7) and a magnificent column krater (Fernández, 1984, 28, 30-32, fig. 10; 1990, vol. 1, 153; vol. 2, 120 and 121 pl. LVI; Cabrera and Olmos, 1985, 65-66 fig. 4; Cabrera, 1990, 51, 84 No 5 and 87 fig. 1.5) regarded as Aeolian stand out (fig. 2).

The frequent occurrence of gray pottery in Aeolia, most notably at Lesbos, set the stage for both the "Aeolian bucchero" and "Lesbian bucchero" denominations (Lamb, 1932). Within the difficulties to differentiate the productions of Lesbos from continental Aeolia, owing to ignorance of the workshops' locations (Fantalkin and Tal, 2010, 7), Neutron Activation Analysis (NAA) of ceramic pastes have allowed the identification of a production center near the city of Kyme, on the continental coastline of Aeolia (Mommsen and Kerschner, 2006; Kerschner, 2006) (fig. 3). As far as amphorae are concerned, according to NAA, it is suspected that not

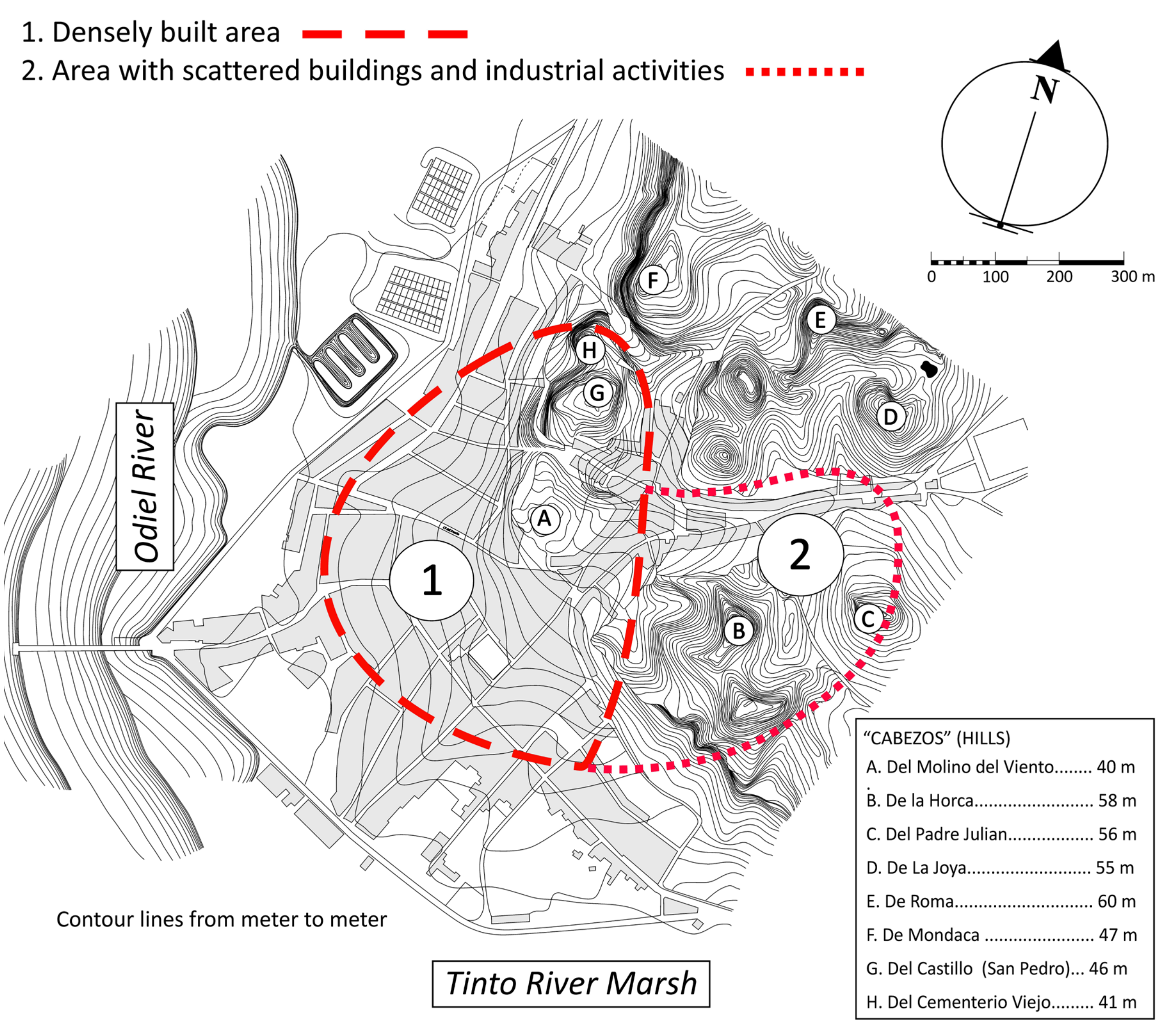

Figure 1. Huelva habitat towards the first half of the 6th century BC on a topographic map of 1870.

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all the ones with Lesbian features were actually manufactured in that island (Clinkenbeard, 1982, 264). Although preferably aimed at the transportation of the famous Lesbian wine, as witnessed by classical sources (Clinkenbeard, 1982, 254-256), the eventual shipment of oil is not discarded (Kotsonas *et al*., 2017, 14). Based on the stratigraphic position of a specimen found at Tell Qudadi, Israel, it has been proposed to delay the beginning of the production for these amphorae from the second half or end of the 7th century BC to *c*. 700 BC (Fantalkin and Tal, 2010), notwithstanding that a date in the 8th century BC had previously been suggested (Cook, 1953, 124).

Figure 2. Gray oinochoe and amphora attributed to Aeolian factory.

In a revision of 2,346 archaic Greek vessels deposited into the Huelva Museum, 56 (2.4%) corresponded to gray ware (González de Canales and Llompart, 2023). Some examples, such as the above mentioned oinochoe and krater, strongly impressed as Aeolian imports, nevertheless, the provenance of others gave rise to serious doubts. Under this situation, the precedent of local production of a group of Greek pottery characterized by a yellowish-green clay (González de Canales and Llompart, 2017) and another one decorated with red slips, conventionally named "Group H" (González de Canales *et al*., 2018), opened the possibility that at least part of the archaic Greek gray pottery might also have been made in situ.[1] This issue could perhaps be elucidated by comparing the chemical composition of their paste with the natural loamy clay of the deposits closer to the habitat, a traditional source of raw materials for local pottery.

Figure 3. Map of Aeolia.

Materials and methods

For the stated purpose, 11 samples of archaic Greek gray vessels were submitted to NAA (figs. 4-6). Methodology was to be the same as the one applied to the study of the two groups of locally manufactured pottery identified above. After detaching the outer layers of the samples, in order to eliminate decorative pigments and environmental adhesions, a thorough cleaning process was carried out with low pressure distilled water and later on with absolute ethanol. Next, all samples were ground with an agate mortar and pestle. The use of sterile gloves during the manipulation of the samples prevented the risk of cross contamination. Analyses were done by Activation Laboratories Ltd. (Ancaster, Ontario, Canada), which is accredited according to standard ISO/IEC 17025. Determinations comprised the 35 chemical elements of Code 1D Enhanced Au+34 (Report A20-02343, dated 12/03/2020). In order to assess the relationships among variables, Principal Component Analysis (PCA) was carried out with the Statistica 10.0 software.

1 An idea also suggested by Dr. Santos Retolaza during a visit to the Ampurias Museum.

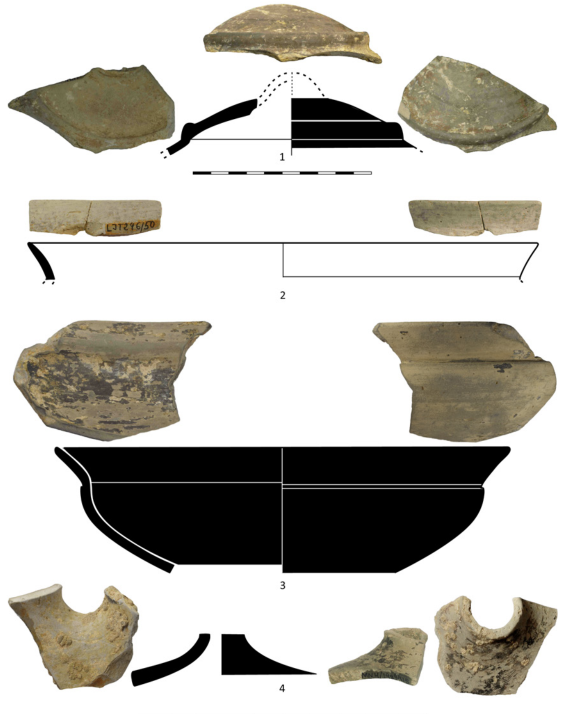

Figure 4. Greek gray pottery analyzed. Catalogue Nos. 1-4.

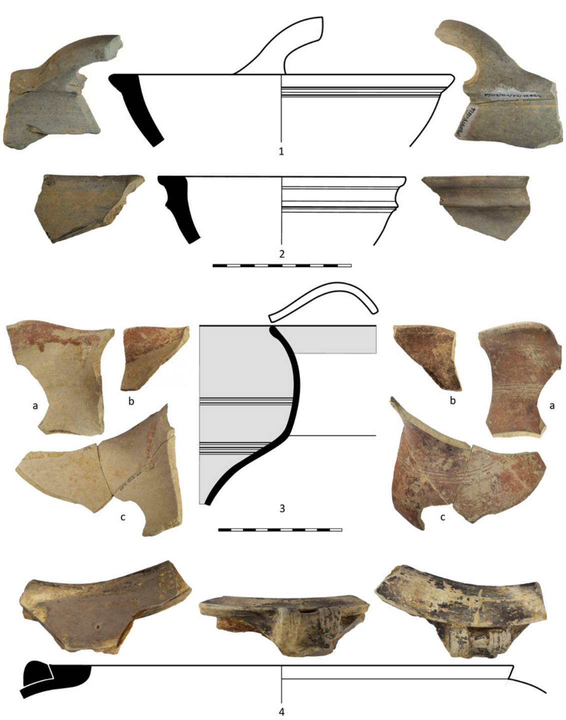

Figure 5. Greek gray pottery analyzed. Catalogue Nos. 5-8.

Figure 6. Greek gray pottery analyzed. Catalogue Nos. 9-11.

Results

The following table (fig. 7) shows the chemical analysis results of the pottery samples (numbers 1-11) and two samples of the Mio-Pliocene deposits of loamy clay outcropping next to the habitat, one from the Gibraleón quarries (number 12) and another from the Conquero hills (number 13), which had already been analyzed in a prior study (González de Canales and Llompart 2017, 136, 137 fig. 13 and 140 fig. 18).

Discussion

By projecting the data onto the PCA diagram (fig. 8), a distinct cluster can be visually identified comprising seven pottery samples with a significant affinity in terms of chemical composition. In fact, the first factor or principal component (explaining 52% of the total variance) allowed the discrimination of samples 1, 5, 6, 7, 8, 9, and 10 from the rest, indicating that this suite of samples has similar compositional features. The chemical composition of such samples is also consistent with those of the two loamy clay samples from local deposits (samples 12-13), suggesting that local clay was used as raw material for pottery production.

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Element	DL	1	2	3	4	5	6	7	8	9	10	11	12	13
Ag ppm	5	31	<5	187	<5	<5	<5	118	98	52	48	<5	<5	<5
As ppm	0.5	53.6	16	25.5	40.6	69.9	30.4	46.5	51	47.6	31.1	48.5	6,8	12
Au ppb	2	<2	8	82	28	17	19	<2	<2	<2	<2	3	<2	<2
Ba ppm	50	240	<50	250	700	700	240	510	970	880	480	800	150	360
Br ppm	0.5	<0.5	<0.5	20.7	<0.5	6.1	1.7	2.5	1.8	<0.5	<0.5	<0.5	<0.5	3.5
Ca %	1	18	<1	11	<1	9	5	13	8	14	10	5	5	12
Ce ppm	3	72	90	75	111	69	63	74	61	57	82	112	61	52
Co ppm	1	11	14	8	23	9	6	12	11	12	10	22	9	9
Cr ppm	5	87	158	103	219	99	81	67	99	108	124	244	58	72
Cs ppm	1	4	<1	7	24	3	3	5	2	2	11	38	4	4
Eu ppm	0.2	0.4	1	0.6	1.1	0.9	1.1	1.1	0.9	0.7	1	1.8	1	0.7
Fe %	0.01	3.7	4.98	3.82	5.68	3.71	3.26	3.66	3.46	3.81	4.42	6.36	3.27	2.93
Hf ppm	1	7	4	5	5	7	6	4	4	4	6	5	8	6
Hg ppm	1	<1	1	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1
Ir ppm	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
La ppm	0.5	28.1	42	32.6	50.7	34.5	29.7	36.9	30.3	30.5	37.3	56.1	30	27.1
Lu ppm	0.05	0.16	0.35	0.26	0.43	0.33	0.26	0.32	0.32	0.27	0.35	0.6	0.21	0.26
Mo ppm	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Na %	0.01	0.7	0.45	0.91	1.37	0.76	0.72	0.53	0.54	0.48	0.8	0.89	1.02	0.47
Nd ppm	5	11	14	46	53	23	24	40	18	28	37	54	24	25
Ni ppm	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Rb ppm	15	<15	211	108	<15	66	106	166	88	120	123	248	88	120
Sb ppm	0.1	1.1	1.2	4.9	4	1.7	1.9	2.5	4.4	3.2	1.6	4.2	1.2	0.9
Sc ppm	0.1	12.6	16.7	12.1	19.1	12	11	12.6	12.1	12.1	15	19.5	11.8	9.4
Se ppm	3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Sm ppm	0.1	4.7	6.7	5.4	8.9	5.7	5.2	5.6	4.8	4.8	6.1	9.3	4.9	4.4
Sn %	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Sr %	0.05	<0.05	<0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Ta ppm	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1	<0.5	<0.5	<0.5	<0.5	<0.5
Tb ppm	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0,9	<0.5	<0.5
Th ppm	0.2	10.7	13.7	10.1	18	11.1	9.1	13.4	9.3	8.7	11.9	20.6	10.1	8.4
U ppm	0.5	6.2	4.5	1.4	<0.5	2.9	2.6	3.4	4.1	2.4	2.9	8.1	2.5	2.5
W ppm	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Yb ppm	0.2	2.7	3.2	2.5	3.6	2.5	2.5	2.3	1.9	2.3	2.2	4.4	2.9	2.3
Zn ppm	50	<50	<50	<50	<50	<50	<50	<50	100	<50	<50	<50	<50	<50
Masa g		0.293	0.302	0.999	0.410	0.836	1.320	0.703	1.030	1.070	0.819	0.770	1.340	1.390

Figure 7. Concentrations of elements analyzed by NAA. DL: detection limit. 1-11: pottery samples; 12: Gibraleón quarries sample; 13: Conquero hills sample.

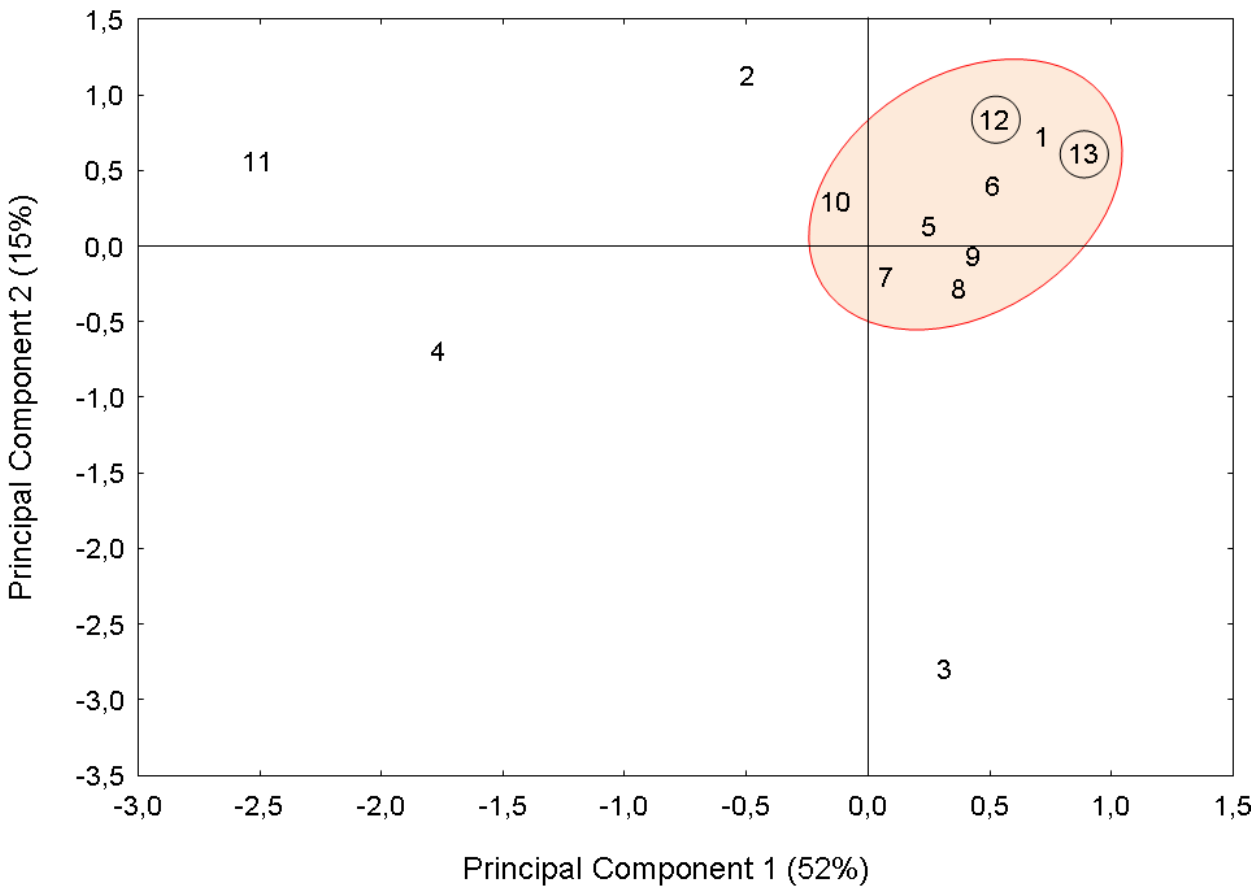

Figure 8. Diagram of the main chemical components of the 11 ceramics samples (1-11) and the two samples of loamy clay from local deposits (12-13).

When comparing the average chemical composition of the seven pottery samples grouped in the circled cluster with that of the two loamy clay samples from the local deposits, a remarkable agreement is found (fig. 9); so that a fair correspondence is observed among them regarding the concentration values of some major elements, like Ca, Fe and Na, and certain trace elements like Co, Cs, Hf, Sc, Th, U, Yb and rare earths (La, Ce, Eu, Sm and Lu). However, the average concentrations of these elements are generally higher in the ceramics than in the natural loamy clay, most likely due to mass loss resulting from the dehydration and devolatilization of chemical components of the clay during the firing process. Interestingly enough, the enrichment factors of certain trace elements like Ag (21.4), Au (6.7), As (4.9), and Sb (2.4) far exceed the average value of 1.2 so that they can be regarded as soil contaminants, in all likelihood related to ancient metallurgical activities. The intensive smelting of auro-argentiferous ores and/or derived products in the emporium is evidenced by the appearance of silver slags in most of the excavations at the historical downtown. The slags are so numerous that, occasionally, they were recycled as construction elements (Fernández *et al.*, 1997, 41). This metallurgical activity aimed at silver processing by cupellation is documented from the middle of the 6th century BC down to the deepest levels, three centuries before the arrival of the Greeks (González de Canales *et al.*, 2004, 145-152).

Similarities and differences between the composition of the seven ceramic samples (numbers 1 and 5-10) and the natural loamy clay are also brought to light in the isocon diagram (fig. 10). Most of the analyzed elements had a high degree of fitting with the line of equal concentration (isocon), except for those elements regarded as contaminants (As, Sb, Ag and Au),

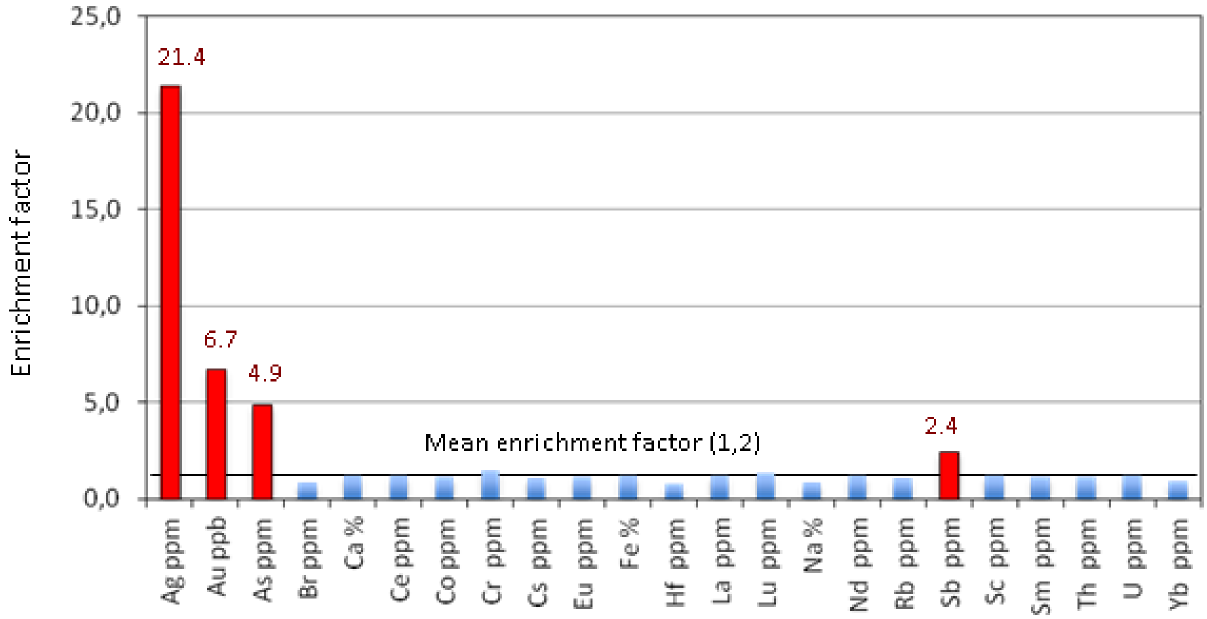

Figure 9. Values of the enrichment factor, or ratio between the average concentration of chemical elements in the pottery samples and their concentration in the clay deposits, suggesting that the pottery samples were found significantly contaminated with Au, Ag, As, and Sb compared to the mean enrichment level (1.2).

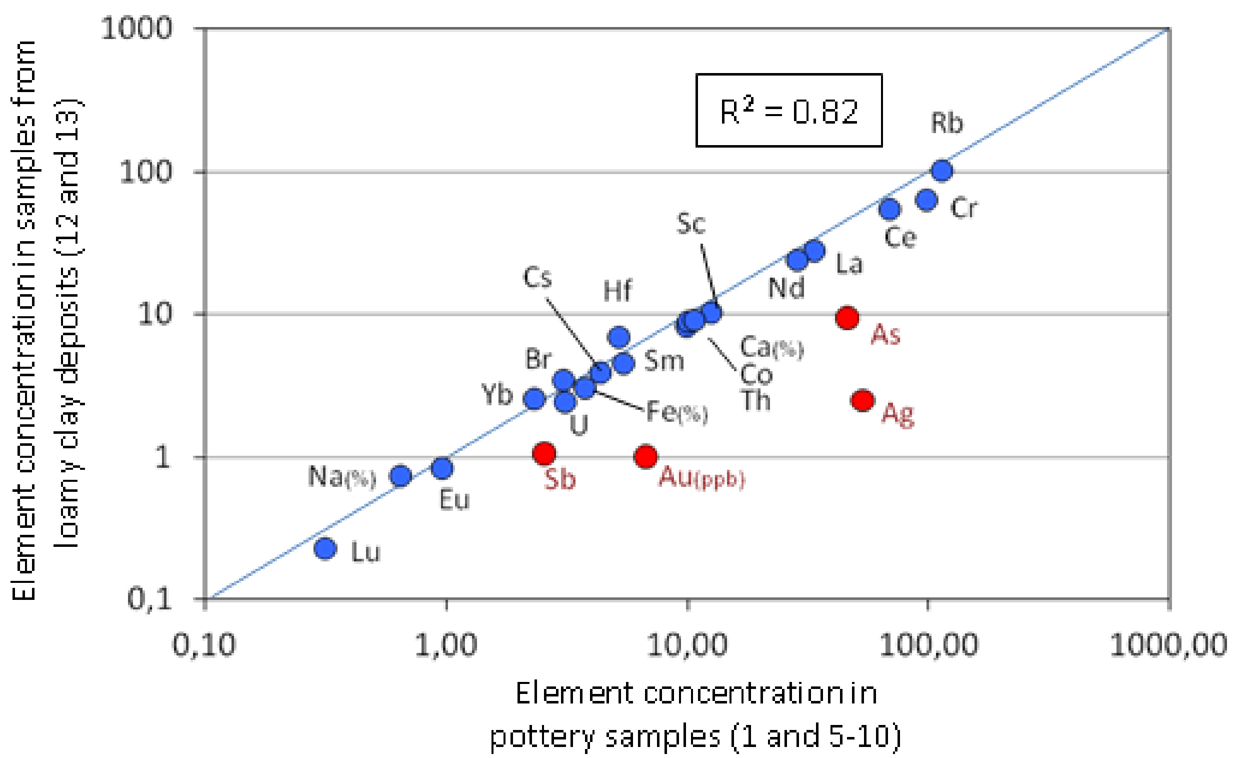

Figure 10. Isocon diagram showing average element concentrations in the pottery samples vs. their contents in the natural clay samples. All units are expressed in ppm except those in parentheses.

which fall below the isocon line, a clear indication of enrichment. A strong correlation R2 = 0.82 is recorded between the seven ceramics of similar composition and the natural clay. This coefficient of determination (R2) increases up to 0.95 when contaminant elements are excluded, indicating a good fit for a liner model.

Conclusions

Obviating the effects of firing and post-depositional edaphic contamination on the ceramics, seven (1 and 5-10) of the 11 samples of Greek gray pottery under study show a chemical composition compatible with the one of the local loamy clay deposits traditionally used in pottery (samples 12-13). These findings suggest a local production which was plausibly inspired, both formally and technically, by Aeolian pottery. It is most likely that such production might have been accepted not just among the Greeks settled at the emporium but also by the non Greek population, familial with the "gray orientalizing pottery", of the same color, found at the habitat since the end of the 8th century BC. A similar acceptance has been adduced for the red slipped Greek ceramics also produced at the emporium ("Group H"), whose slips are indistinguishable from those of the Phoenician pottery well known at the site long before (González de Canales *et al.*, 2018).

Catalog of the ceramics analyzed

Abbreviations: Bibliog. = Bibliograhy; Chronol. = chronology; D. = Diameter; Ext. = Exterior; H. = Height; Int. = Interior; LN. = Label Number; Th. = Thickness; W. = Width. All measures in centimetres.

1. Lid. Figure 4.1

LN. 98/I/110. 7-13 Méndez Núñez St / 12 Plaza de las Monjas Sq. Fragment of incomplete rim and body up to the start of the clamping knob. A molding on the upper surface differentiates rim from body. A tiny rest of the knob at the upper fracture edge of the body corresponds to the start of a concavity at the lower surface. H. 5.3. W. 9.3. Th. rim 0.4; body 0.45 at periphery and 0.8 at inner fracture edge. D. no data due to incomplete rim. D. at base of clamping knob approx. 4.0. Ext. 10YR6/2 light brownish gray with 2.5Y4/2 dark grayish brown slip remains. Int. reserved same color as clay. Clay 5YR7/1 light gray without remarkable inclusions. Chronol. within the period of Greek activity in Huelva between the end of the 7th century BC and 545/540 BC. Bibliog. unpublished.

2. Cup. Figure 4.2

LN. LJT296/50. Pit of burial mound number 2 at sector C of La Joya Necropolis, Parque Moret, Huelva. Two joining fragments of pointed lip. H. 1.4. W. 4.6. Th. 0.3 maximum at lower end of fracture. D. approx. 18. H. lip 1.3. Ext. same color as clay, although there seem to be tiny remains of possibly detached black slip. Int. reserved same color as clay. Clay 5YR7/1 light gray with some isolated calcite inclusions. Chronol. preferably end of the 7th century given its context. Bibliog. brief reference in Gonzalez de Canales 2004, 327.

3. Cup. Figure 4.3

LN. MN4/1989/120. 4 Méndez Núñez St (current address). Fragment of body and lip. H. 5.9. W. 5.8. Th. lip and preserved body 0.3. D. 16. H. lip 1.6. Ext. isolated remains of 5Y4/1 dark gray slip over surface of same color as clay. Int. like exterior. Clay 2.5Y5/2 grayish brown with silvery mica and isolated calcite inclusions. Chronol. within the period of Greek activity in Huelva between the end of the 7th century BC and 545/540 BC. Bibliog. unpublished.

4. Aryballos. Figure 4.4

LN. MN4/1989/115. 4 Méndez Núñez St (current address). Fragment of neck and body. H. 3.3. W. 4.3. Th. neck 0.34; body 0.52 at lower end of fracture. Ext. 5Y3/1 very dark gray slip. Int. reserved same color as clay. Clay 2.5Y5/2 grayish brown with silvery mica inclusions. Chronol. within the period of Greek activity in Huelva between the end of the 7th century BC and 545/540 BC. Bibliog. unpublished.

5. Large bowl / tray with basket handle. Figure 5.1

LN. P/04/IIA/74/1252a = rim fragment with handle; P/04/IIA/74/1252b = body fragment. 7 Palacio St. Two joining fragments, one of rim and another of rim, body and handle. Rim thickened outside, with a flattened upper surface on which an ascending basket handle is attached. Groove on lower part of rim and another one at start of body. H. 5.8. W. 7.2. Th. body 1.3 at start and 1 at lower end of fracture. D. rim approx. 25. H. rim 1.2. W. upper flattened rim surface 2. Oval section of handle at end of fracture 1.9 x 1.4. Ext. reserved 5YR6/1 between gray and light

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gray. Int. same color as clay. Clay 5YR7/1 light gray with thick calcite inclusion (foraminifera). Chronol. within the period of Greek activity in Huelva between the end of the 7th century BC and 545/540 BC. Bibliog. unpublished.

6. Mortar. Figure 5.2
LN. MN4/1989/119. 4 Méndez Núñez St (current address). Fragment of rim and body. Rim thickened outside with flat upper surface. An incision differentiates rim from body. Grooved molding below the incision. H. 5.4. W. 7.6. Th. body 1.4 at the start and 0.95 at lower end of fracture. D. outer rim 18. H. rim 0.8. W. flat upper surface of rim 1.9. Ext. reserved same color as clay. Int. like exterior. Clay 10YR6/2 light brownish gray with silvery mica inclusions. Chronol. within the period of Greek activity in Huelva between the end of the 7th century BC and 545/540 BC. Bibliog. unpublished.

7. Oinochoe. Figure 5.3
LN. "a" and "c" = C5/00/II/107/4124; "b" = C5/00/II/102/4042. 5 Concepción St. "a": fragment of rim, neck and shoulder; "b": fragment of rim and neck; "c": three joining fragments of neck and shoulder. Rim slightly thickened outside. Trefoil mouth. Two horizontal grooves decorate the neck and three the shoulder. "a": H. 9.2; W. 8.3. "b": H. 5.3; W. 5.4; "c": H. 10.8; W. 14.4. Th. maximum rim 0.65; Th. neck, approx. 0,5; shoulder 0,6 at start and 0.5 at lower end of fracture of "c". H. maximum rim and neck 9.4. Ext. 7.5YR5/4 brown slip. Int. wide stripe of same color as exterior slip at rim and start of neck; rest of neck and shoulder reserved same color as clay. Clay 2.5Y6/2 light brownish gray with silvery mica inclusions. Chronol. within the period of Greek activity in Huelva between the end of the 7th century BC and 545/540 BC. Bibliog. Medina Rosales 2004, 85, 129 and 208, fig. 31.107/4124; 2008, 298 and 304 fig. 8.4124 ("a" and "c"), 297 and 304 fig. 6.4042 ("b").

8. Dinos. Figure 5.4
LN. MN4/1989/117. 4 Méndez Núñez St (current address). Fragments of rim and beginning of body. Thickened rim with flat upper surface. Supporting element with double spool, inspired on metallic models, coupling outer rim and start of body. H. 2.8. W. 10.9. Th. body 0.65 at lower end of fracture. D. outer rim 29. W. upper surface of the flat rim 2.8. Ext. 5Y4/1 dark gray slip. Int. reserved same color as clay. Clay 2.5Y5/2 grayish brown with fine silver mica and isolated ferruginous and calcite inclusions. Chronol. within the period of Greek activity in Huelva between the end of the 7th century BC and 545/540 BC. Bibliog. unpublished.

9. Krater. Figure 6.1
LN. MN4/1989/118. 4 Méndez Núñez St (current address). Fragment of rim, neck and shoulder. Widely everted rim with flat upper surface. H. 5.1. W. 10.3. Th. rim 0.65 at periphery; neck 0.8; shoulder 6.5. D. outer rim 25. W. upper flattened rim surface 1.9. Alt. neck 2.5. Ext. 5Y4/1 dark gray slip. Int. rim and neck slipped like exterior; shoulder reserved same color as clay. Clay 2.5Y5/2 grayish brown with a few calcite and silvery mica inclusions. Chronol. within the period of Greek activity in Huelva between the end of the 7th century BC and 545/540 BC. Bibliog. unpublished.

10. Large container. Figure 6.2
LN. MN7/1998/32. 7-13 Méndez Núñez St / 12 Plaza de las Monjas Sq. Hand modeled rim and neck fragment. Rim thickened outside. Attached to neck, rest of circular molding imitating a metallic handle. H. 11.2. W. 9.9. Th. maximum rim 1.6; Th. neck, between 1 at start and 1.3 at lower end of fracture. D. rim 26. H. rim 2.6. Ext. 10YR5/1 gray vertical stripes over reserve of clay color. Int. reserved like exterior. Clay 10YR7/1 light gray with silvery mica and some isolated calcite inclusions. Chronol. within the period of Greek activity in Huelva between the end of the 7th century BC and 545/540 BC. Bibliog. unpublished.

11. Amphora. Figure 6.3
LN. S/N 174. 7-13. Méndez Núñez St / 12 Plaza de las Monjas Sq. Fragment of rim, neck, start of shoulder and handle. Outward projected triangular rim with slightly convex upper surface. Cylindrical neck with a sharp recess to which the upper end of a ribbon handle is attached. A fine molding differentiates neck from shoulder. H. 16. W. 12. Th. rim 0.7; neck 0.75 at start and 1.2 at lower end; shoulder between 0.4 and 0.5. D. outer rim 17; neck 13. H. rim 1.1. W. outer rim surface 1.5. H. neck 8.9. Handle length 12.2. Handle section 2.9 x 1.6. Handle projection 6. Ext. 10YR5/1 gray slip. Int. reserved same color as clay.

Clay 10YR6/2 light brownish gray with silvery mica and isolated calcite inclusions. Chronol. within the period of Greek activity in Huelva between the end of the 7th century BC and 545/540 BC. Bibliog. Osuna *et al.*, 2001, 184, fig. 11.

Bibliography

Cabrera Bonet, P. (1990), “El comercio foceo en Huelva: cronología y fisionomía”, *Huelva Arqueológica, X-XI/3,* 41-100.

Cabrera, P. and Olmos, R. (1985), “Die Griechen in Huelva: zum stand der diskussion”, *Madrider Mitteilungen, 26,* 61-74.

Clinkenbeard, B.G. (1982), “Lesbian Wine and Storage Amphoras. A Progress Report on Identification”, *Hesperia, 51/3,* 248-268 and pls. 69-72.

Cook, J.M. (1953), “Archaeology in Greece, 1952”, *Journal of Hellenic Studies, 73,* 108-130 and pls. I-II.

Fantalkin, A. and Tal, O. (2010), “Reassessing the Date of the Beginning of the Grey Series Transport Amphorae from Lesbos”, *Bulletin Antieke Beschaving (Annual Papers on Mediterranean Archaeology), 85,* 1-12.

Fernández Jurado, J. (1984), *La presencia griega arcaica en Huelva,* Monografías Arqueológicas, Colección Excavaciones en Huelva, 1, Huelva.

Fernández Jurado, J. (1990), *Tartessos y Huelva,* Huelva Arqueológica, X-XI/1-3, Huelva.

Fernández Jurado, J., García Sanz, C. and Rufete Tomico, P. (1997), *De Tartessos a Onoba: 15 años de arqueología en Huelva,* Huelva.

González de Canales, F. (2004), *Del Occidente mítico griego a Tarsis-Tarteso. Fuentes escritas y documentación arqueológica,* Madrid.

González de Canales Cerisola, F., Domínguez Monedero, A.J., Llompart Gómez, J. and Montaño Justo, A. (2018), “A new group of Archaic Greek Pottery (“Group H”) manufactured in Tartessos (Huelva, SW of Spain)”, *Cuadernos de Prehistoria y Arqueología de la Universidad Autónoma de Madrid, 44,* 133-143.

González de Canales Cerisola, F. and Llompart Gómez, J. (2017), “Producción de cerámicas griegas arcaicas en Huelva”, *Archivo Español de Arqueología, 90,* 125-145.

González de Canales Cerisola, F. and Llompart Gómez, J. (2023), *El antiguo emporio de Huelva (siglos X-VI a. C.). Síntesis histórica y estudio de sus cerámicas griegas*, Onoba Monografías, 14, Universidad de Hueva, Huelva.

González de Canales, F., Serrano, L. and Llompart, J. (2004), *El emporio fenicio precolonial de Huelva, ca. 900-770 a.C.*, Madrid.

Kerschner, M. (2006), “On the Provenance of Aiolian Pottery”, *Naukratis: Greek Diversity in Egypt, Studies on East Greek Pottery and Exchange in the Eastern Mediterranean,* The British Museum Research Publication, 162 (Villing, A. and Schlotzhauer, U., Eds.), London, 109-126.

Kotsonas, A., Kiriatzi, E., Charalambidou, X, Roumpou, M., Müller, N.S. and Bessios, M. (2017), “Transport amphorae from Methone: An interdisciplinary study of production and trade ca. 700 BC”, *Panhellenes at Methone: Graphê in Late Geometric and Protoarchaic Methone, Macedonia (ca. 700 BCE)*, Trends in Classics, Supplementary Volumes, 44 (Strauss Clay, J., Malkin, I. and Tzifopoulos, Z., Eds.), Berlin and Boston, 9-19.

Lamb, W. (1932), “Gray Wares from Lesbos”, *The Journal of Hellenic Studies, 52/1,* 1-12.

Medina Rosales, N. (2004), *Excavación arqueológica en la calle Concepción nº 5 de Huelva*, Trabajo de Investigación del tercer Ciclo, Universidad de Huelva, Inédita.

Medina Rosales, N. (2008), “Nuevos Materiales Griegos de La Huelva Protohistórica. Excavación en Calle Concepción nº 5 de Huelva”, *Vipasca 2 (2ª serie),* 296-306.

Mommsen, H. and Kershner, M. (2006), “Chemical Provenance Determination of Pottery. The Example of the Aiolian Pottery Group G”, *Naukratis: Greek Diversity in Egypt, Studies on East Greek Pottery and Exchange in the Eastern Mediterranean* (Villing, A. and Schlotzhauer, U., Eds.), The British Museum Research Publication, 162, London, 105-108.

Osuna Ruiz, M., Bedia García, J. and Domínguez Rico, A.M. (2001), “El santuario protohistórico hallado en la calle Méndez Núñez (Huelva)”, *Ceràmiques jònies d´època arcaica: centres de producció i comercialització al Mediterrani Occidental* (Cabrera, P. and Santos, M., Eds.), Monografies Emporitanes, 11, Barcelona, 177-188.