



# Analytical study of Roman red slip ware from ancient Tripolis (Denizli, Turkey)



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## ABSTRACT

Roman red slip ware uncovered at Tripolis, an ancient city of Lydia region in modern Denizli province, Turkey, was analyzed for geochemical and mineralogical properties in order to clarify their manufacturing technology. Samples were examined by optical microscopy, X-ray powder diffraction, and X-ray fluorescence. Results thus obtained indicate that the analyzed red slip wares can be divided into three groups based on the inclusion types, and grain sizes. Mineralogical compositions also reflect differences in production technology. The firing temperatures are estimated from the phase assemblages as < 800 °C for the Group 1 and 2 samples and about 900 °C for Group 3 samples. Group 1 was probably produced from local clays (Lykos Valley) in Denizli region. Group 2 shows clear similarity with local clay but it is from different origin (probably from Meander Valley (Menderes Massif clays). Whereas Group 3 does not seem to be a local production of Tripolis, rather wares imported from possibly Sagalassos in ancient Pisidia of Turkey.

## 1. Introduction

In recent years, interdisciplinary works on the findings (ceramic, metal, bone, marble fragments, etc.) from archaeological sites have shown that the chemical, geological and physical analysis techniques yield beneficial results [1–8]. The chemical, mineralogical and structural characteristics of ancient artifacts can help to identify the source area of the raw material used in ceramic production and to identify the technological processes associated with pottery production. In addition, knowing the mineralogical composition can shed light on the firing temperature and time of the raw material. Why it is important to 'identify technological processes' and 'firing temperature'? Because, technological processes can be used to design any series of operations aimed transforming a raw material into a finished product. These include the geological properties of the local environment, the nature of the raw material, meteorological changes, the nature of the fuel and fluctuations in firing temperatures [9]. Firing temperature is also the most important step in the production of pottery. These can be used with caution to infer the details of ancient firing such as the regime, apparatus and fuel types used [10]. Pottery production technologies give us important information how changing social structures impacted the material culture in general and the production of pottery in particular.

There are many archaeological sites (Laodikeia, Hierapolis, and

Tripolis etc.) currently under excavation in Denizli province of southwestern Turkey (Fig. 1a). The ancient city of Tripolis is located in Yenicekent town of Buldan district in Denizli Province. In the Hellenistic period, the city of Tripolis was at the crossroads of Phrygia, Caria and Lydia regions [11]. Archaeological excavations at Tripolis has intensified since 2012. In the present study, Roman red slip ware samples from the late Roman period uncovered at Tripolis were investigated by archaeometric methods.

Imported red slipped ceramics were found at Ancient City of Tripolis where is located on the banks of Maiandros during the excavation works between 2012 and 2017. Among these findings, red slipped ceramics were defined which date Early Roman Imperial Period and Late Roman Period red slipped ware. Located in the Pisidia Region, Sagalassos was home to red slip pottery production that started in the 1st century BCE and 1st century CE, and continued in different forms until the 7th century CE [12,13]. Another group identified in excavations in Tripolis during the years is the Lycos valley red ceramics [14]. About 4–7th century CE findings on regional production group were identified in Laodikeia and also in two metropolises which are Tripolis and Hierapolis of the valley, the most distinctive feature of this group is that it has a reddish yellow liner. Except for the first two groups, a small group of late red ceramics with little darker red slip in the ancient cities of the Menderes Valley are generally found in 6–7th century CE layers for this reason they are named as “Sigillata from the Meander valley”

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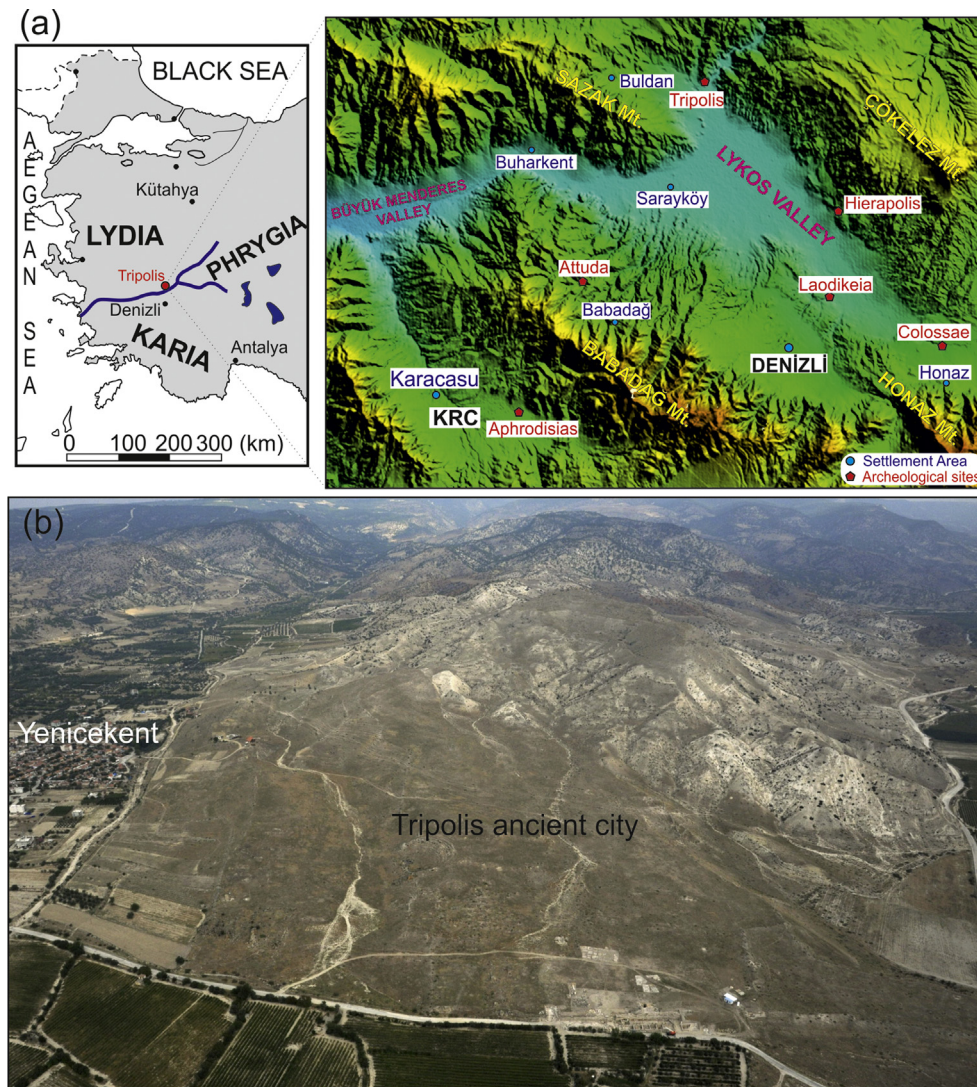


Fig. 1. a. Simplified map of Western Anatolia and Digital Elevation Model (DEM) of Tripolis archeological site and Lykos Valley; b. Overview photograph of the landscape of the valley with Tripolis.

[15].

The main aim of this analytical study is to distinguish the ceramics of local production from wares imported from nearby regions or islands and to elucidate the manufacturing process and the firing techniques. Therefore, red slip wares were correlated to well-documented characteristics of red slip ware around Turkey [5,16,17].

## 2. Archeological and geological background

### 2.1. Historical-Archeological background

The ancient city of Tripolis is located within the territory of Yenicekent neighborhood of Buldan district in Denizli province in inner western Anatolia (Fig. 1). Remains of public and civilian architecture of the city located in the northwestern tip of the Lykos (Çürüksu) Valley spread across an area of about 3 sq.km. on the southern slope of a hill dominating the valley.

Earliest information on the location of the city is given by ancient historians and geographers (Strabo XIII.4.4, 169; Pliny, NH, V, XXIX; Hierokles, Synekdemosis, 669, 4; Ptolemy V.2.18; Oracles Sibylline V, 321). The area where the city is located was considered part of Lydia as noted by Herodotus (VII.30). Pliny the Elder (NH V.29) also places the city within Lydia. Another ancient author placing the city within Lydia

was Hierokles (Synek. 669.4). As a different opinion there are also some other ancient authors that placed the city within Karia, e.g. Ptol.Geogr. V.2.18. Sibylline Oracles mention the city as “Tripolis by Maiandros” (Orac. Sibyl. V.321). Tripolis has been placed within Lydia, Karia or Phrygia by different sources and this confusion is due to its location at the junction of all three regions. The most important reason for the differences in localization should be the changes in the borders through time. Nevertheless, Tripolis was part of the conventus of Sardeis for a while but then in another document it is cited within the conventus of Apameia. Considering the fact that various geographic formations such as rivers, mountains, and lakes were determinative in settling of borders will lead us to think that Tripolis on the northern bank of River Maiandros was actually part of Lydia. The phrase of “Μαιονίη Τρίπολις” in a Roman period inscription is the most important written evidence for placing Tripolis in Lydia.

The first identification and scientific remarks on the ancient city came from travelers as early as the mid-seventeenth century [18–22], however, these works contain only limited information on visible remains of antiquity. Denizli Museum Directorate conducted short-term excavations and surveys in 1993, 2007–2009 [23–26] and in 2012 the authors of this article initiated excavations, which still continue [11,27,28]. The most important evidence indicating the strategical and geopolitical location of Tripolis rises from its location on trade routes.

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