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# OLIVE OIL IMPORTS ON THE NORTH-WESTERN DACIAN LIMES: THE CASE OF POROLISSUM

**Abstract:** The study of the amphorae discovered at Porolissum reflects a variety of interregional trade networks. The presence of various types of amphorae carrying olive oil from the eastern and western production centres of the Empire at this site situated on the *limes* indicates that the diet of military troops and the civilian population of Porolissum included this important ingredient. Regarding the supply, it must be related to a state-organised system for the military troops, while for the civilians, it must be related to a free market system. The presence of mostly Aegean imports shows that Dacia was linked to the regions in the Eastern Roman Empire that produced and exported olive oil.

**Keywords:** *amphorae, olive oil, diet, trade networks, Dacian limes.*

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## INTRODUCTION

The importance of Porolissum both strategically and economically owing to its control over the “Meseş Gates” is already well known from multiple types of evidence.<sup>1</sup> At the same time, the presence of a Roman city that developed here is another aspect that makes the study of this site interesting. In the following, we will address the question of the supply of olive oil as revealed by the study of the amphorae discovered in the amphitheatre, the terrace of sanctuaries, two buildings (LM3 and OL) located east and west of the military fort, as well as some of the amphorae from the military fort.<sup>2</sup> The amphorae studied so far come from excavations carried out between 1958 and 2003,<sup>3</sup> during which a significant quantity of amphorae was discovered. The dating of the fragments studied is difficult to establish in most cases due to the lack of good stratigraphical data. This study of a part of the amphorae discovered on this site is being done since a more in-depth study of this material has not yet been carried out.

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<sup>1</sup> The economic importance is given by the trade of salt and amber along this route, as well as by the presence of the customs office and an archaeologically attested market on the frontier: GĂZDAC/GUDEA 2006, 11; OPREANU/LĂZĂRESCU 2015; while its strategic position aimed to protect the main entrance to the province: OPREANU/LĂZĂRESCU 2015, 25.

<sup>2</sup> Details of excavations in these sectors: MACREA/PROTASE/RUSU 1961; GUDEA 1997; TAMBA 2008; BAJUSZ 2011.

<sup>3</sup> These excavations were carried out by a team consisting of M. Macrea, D. Protase, M. Rusu, N. Gudea, E. Chirilă, Al. Matei, I. Bajusz, V. Lucăcel and D. Tamba.

## DRESSEL 24

Aegean imports are represented at Porolissum by two amphora types, Dressel 24 and Dressel 24 similis. As A. Opaïț underlines in multiple studies, although the two amphora types have similar morphological characteristics, a separation into two distinct types is necessary given other distinct morphological characteristics.<sup>4</sup>

Dressel 24 was produced in multiple centres in the Aegean as suggested by several types of evidence (*tituli picti*, analysis of the fabric and its variation).<sup>5</sup> One hypothetical production centre might be at Hisarönü (Rhodian Peraea), even if only one rim has been published so far from the workshop.<sup>6</sup> At Porolissum, this type is represented in small quantities, by only two specimens. The fabric (Fig.6/1) is very compact, contains a lot of silvery mica and the colour is light orange (7.5R 7/6). The presence of this amphora type at Porolissum is not surprising, as this area is part of its distribution range.<sup>7</sup> Specimens are, for instance, also known from Knossos, Alba Pompeia, Brescia, Brindisi, Augusta Taurinorum and Augst.<sup>8</sup>

### Catalogue:

Inv. no. 291/1986 Fort, S2, C 488. Fragment upper part. RD=13 cm; HD= 4.5x2.6 cm; H= 15.8 cm<sup>9</sup>. MJIAZ<sup>10</sup>. (Fig. 4/1).

## DRESSEL 24 SIMILIS

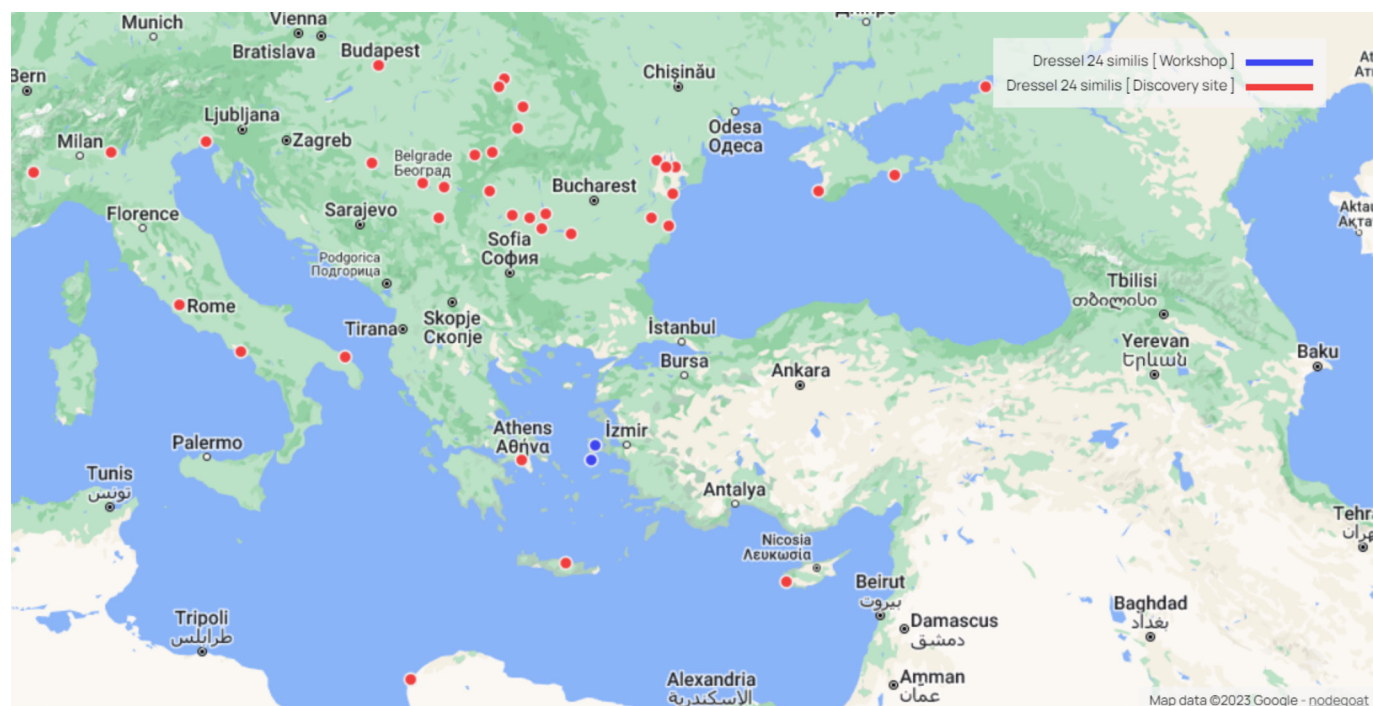
The Dressel 24 similis type produced in Chios and Erythrai, to which Kyme can probably be added<sup>11</sup>, is a very common type found at Porolissum. The transport of olive oil is confirmed by the *dipinti*<sup>12</sup> and can also be inferred from the globular shape of the body. Fifteen specimens have been discovered and studied from Porolissum so far. The analysis revealed two types of fabrics. One group (Fig.6/2) shows a very compact fabric with limestone inclusions and a reddish colour (10R 6/6), while another group (Fig.6/3) is distinguished by a very fine, compact and reddish orange fabric (5YR 7/6). This type (Fig.1) is attested on multiple sites in Moesia Superior, Moesia Inferior,<sup>13</sup> Dacia (Buciumi, Potaissa, Apulum, Ulpia Traiana Sarmizegetusa, Tibiscum, Cioroiu nou, Slăveni, Romula),<sup>14</sup> and Pannonia Inferior.<sup>15</sup> Dressel 24 similis is also present in smaller quantities in Augusta Taurinorum, Brescia, Rome, the Adriatic Sea area, Berenice and Knossos.<sup>16</sup>

### Catalogue:

Inv. no. P2003 LM3/3, C 32. Rim fragment. BD= 2.1 cm; H= 6.9 cm. MJIAZ. (Fig.4/2).

Inv. no. P2003 LM3/3, C 141. Base fragment. RD= 13.8cm; H= 10.3 cm. MJIAZ. (Fig. 4/3).

Inv. no. 1209/1987 Amphitheatre, C9-C12. Rim fragment. RD= 14.5 cm; H= 8.9 cm. MJIAZ. (Fig.4/4).



**Fig.1.** The distribution of Dressel 24 similis amphorae (map made in Nodegoat 2013)

<sup>4</sup> OPAIȚ 2007.

<sup>5</sup> OPAIȚ 2007, 628-629.

<sup>6</sup> TUMA/EMPEREUR 1989, 286, Fig. 14b; OPAIȚ 2007, 629.

<sup>7</sup> DOBREVA 2017, 369, Pl. 7; KLENINA 2018, 413, Fig. 28/2; OPAIȚ *et alii* 2022, 102.

<sup>8</sup> HAYES 1983, 148, Fig. 22/49; BRUNO 1997, 524, Fig. 5/35; BRUNO 2002, 297, no. 37; AURIEMMA/DEGRASSI/QUIRI 2015, 144, Fig. 4; QUIRI 2015, 166, Fig. 5/2; MARTIN-KILCHER 1994, Pl. 241/5506.

<sup>9</sup> RD=Rim diameter; HD= Handle diameter; H=Height.

<sup>10</sup> MJIAZ= Muzeul Județean de Istorie și Artă Zalău (County Museum of History and Art of Zalău).

<sup>11</sup> OPAIȚ/Tsaravopoulos 2010; OPAIȚ/Tsaravopoulos 2011.

<sup>12</sup> TUDOR 1966, 599-600; POPILIAN 1976, 40.

<sup>13</sup> BJELAJAC 1996, Fig. 17; OPAIȚ *et alii* 2022, 102-103.

<sup>14</sup> PETRUȚ 2018, 183, Pl. 25/5; NEDELEA 2022; EGRI/TIMOFAN/BOUNEGRU 2021; ARDEȚ 2006, 322-325, Pl. 15-17; BONDOC 2014, 111, Fig. 14; BONDOC 2016, 226-227, Pl. 5-6; POPILIAN 1976, Pl. 15/197-200.

<sup>15</sup> MAGYAR-HÁRSHEGYI 2016, 622, Fig. 2/2.

<sup>16</sup> QUIRI 2015, 166, Fig. 5/1; BRUNO 2002, 297, no. 32-25; MARIMOM RIBAS/PUIG PALERM 2007, 335-356, Fig. 79-80; AURIEMMA/DEGRASSI/QUIRI 2015, 141, 143-144, Fig. 2-4; RILEY 1979, Fig. 87/288; HAYES 1983, 148, Fig. 22/46.

### SAN LORENZO 7

This type is represented by a single specimen.<sup>17</sup> Although the workshops where this amphora was manufactured have not yet been identified, the analysis of the fabric seems to point to the area of Cilicia as the area of origin.<sup>18</sup> The arguments put forward regarding the contents of these amphorae concern both the shape of the body and the existence of a complete amphora from the Athenian Agora which showed no traces of pitch inside and which was discovered together with its lid.<sup>19</sup> The fabric (Fig.6/4) is compact, fine orange-brown (7.5YR 6/8) with abundant small white inclusions (limestone?). In terms of distribution, this amphora is attested in Dacia at Ampelum,<sup>20</sup> in multiple sites in the province of Moesia Inferior, as well as at Chersonesos, Athens,<sup>21</sup> Knossos, Berenice and multiple sites in Italy<sup>22</sup>.

#### Catalogue:

Inv. no. V 3921. P1958 Terrace I. Upper part fragment. RD=12.5 cm; HD=5.3x3.5 cm; H=12.1 cm. MNIT<sup>23</sup>. (Fig. 4/5).

### DRESSEL 6B

Dressel 6B amphorae were produced in Istria and the Brijuni islands in workshops owned by the senatorial family Laecanius and later owned by the emperor, starting with Vespasian's reign.<sup>24</sup> The studied specimen's fabric (Fig.6/5) is fine and has a dark orange colour (7.5YR 7/8). The dating of this fragment must be in the first four decades of the province, considering the cessation of production during Hadrian's reign. Also, from Porolissum comes an interesting specimen bearing a stamp that can be read *IMP(ERATORIS) N(E)RVAE AVG(USTI)*.<sup>25</sup> An example with the same stamp is known from Sarmizegetusa *Regia* in Dacia,<sup>26</sup> as well as from multiple sites from the western and eastern parts of the Empire.<sup>27</sup> The distribution of Dressel 6B amphorae mainly encompasses the provinces of Raetia, Noricum, Pannonia Superior, Pannonia Inferior, Moesia Superior and Dacia.<sup>28</sup>

#### Catalogue:

Inv. no. 195/1985 Fort. C 396. Fragment upper part. DG=13.5 cm; DT=4x3 cm; H=21.7 cm. MJIAZ. (Fig. 5/6).

### SCHÖRGENDORFER 558

Schörgendorfer 558 amphorae are an interesting case, as they did not carry oil but two types of olives (black

and green), as suggested by the *tituli picti*.<sup>29</sup> Two body fragments from Porolissum have been studied so far. The fabric (Fig.6/6) is very fine and has a beige colour (10YR 8/3). The wide distribution of this type concerns multiple provinces such as Noricum, Pannonia Superior, Pannonia Inferior, Moesia Superior, and Dacia, to which can be added a few finds from Berenike in Egypt and from Ephesus and Pergamon in western Asia Minor.<sup>30</sup>

#### Catalogue:

Inv. no. 842/1983 Amphitheatre. C 77. Body fragment. D=31 cm; H= 11.2 cm. MJIAZ. (Fig.5/7).

In terms of the quantity in which these imports reach Porolissum, the presence of Aegean imports represented by considerable quantities of Dressel 24 similis amphorae is clearly noticeable (Fig. 2). The statistical analysis was based on two factors, namely the number of fragments found and the volume of the amphorae. Concerning the volume, it should be noted that the average capacity of these amphorae was taken into account, as it can be seen that there is sometimes a considerable difference in the volume of these types.<sup>31</sup> Fragments from Porolissum published in other studies up to date are also included in the statistical analysis.<sup>32</sup>

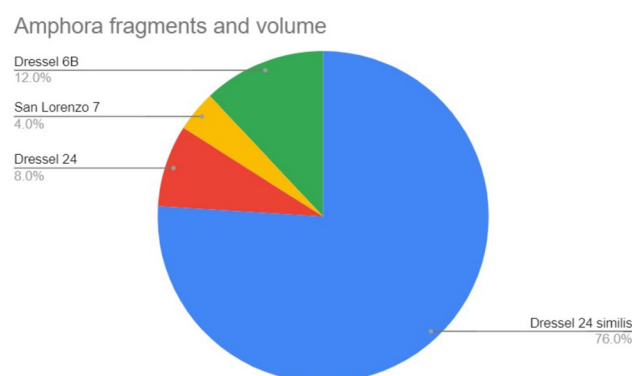


Fig. 2. Statistical analysis of the olive oil amphorae from Porolissum

### DISCUSSIONS

The varied presence of these amphorae brings into discussion the debate between the state-organised trade and the free trade sector concerning the supply of the Roman army. Proponents of the state-organised trade for the supply of the army in the age of the Principate have brought forward arguments concerning the significant distribution of olive oil amphorae (Dressel 20) in the western Empire, especially on the *limes* of Britannia and the *limes Germanicus*,

<sup>17</sup> Ardeț misidentified this fragment as an Almagro 50 amphora type, thus a Lusitanian import carrying fish products. Morphological and fabric analysis of this fragment contradicts this identification: ARDEȚ 2006, 317, Pl. IX/88.

<sup>18</sup> OPAIȚ 2023, 160.

<sup>19</sup> OPAIȚ 2023, 160. Studies up to date show that lids are specific to olive oil amphorae, as can be seen in the case of Dressel 24 and LRA2 types, for example, whereas wine amphorae are waterproofed with pitch and sealed: OPAIȚ 2022 *et alii*, 104; THOMAS 2011, 14.

<sup>20</sup> LIPOVAN 1994, 234, Pl. 1/1.

<sup>21</sup> OPAIȚ 2021, 159-160; DOBREVA 2017, 389, Pl. 27/140.

<sup>22</sup> HAYES 1983, 143, Fig. 20a/37; RILEY 1979, Fig. 88/299; BRUNO 2002, 297; no. 40; PANELLA/RIZZO 2014, Pl. 61/492; BELOTTI 2004, 82.

<sup>23</sup> MNIT= Muzeul Național de Istorie a Transilvaniei (National Museum of Transylvanian History).

<sup>24</sup> BEZECZKY 2019, 6.

<sup>25</sup> ARDEȚ 2006, 310, pl. II/26.

<sup>26</sup> ANDREICA 2020, Fig.1/1.

<sup>27</sup> BEZECZKY 2005, 50.

<sup>28</sup> BJELAJAC 1996, 13-19; BEZECZKY 2005, 49-50; ARDEȚ 2006, 310-311, Pl. 2-3.

<sup>29</sup> BEZECZKY 2005, 55-56; ARDEȚ 2006, 70.

<sup>30</sup> BEZECZKY 2013, 134.

<sup>31</sup> The average capacity of Dressel 24 amphorae is about 59 l: OPAIȚ *et alii* 2022, 102; of Dressel 24 similis amphorae about 62.5 l: OPAIȚ *et alii* 2022, 103; of San Lorenzo 7 amphorae about 50 l: OPAIȚ 2023, 160; of Dressel 6B amphorae about 36 l: CARRE 1985, 219, note 54.

<sup>32</sup> Dressel 24 similis amphorae: ARDEȚ 2006, 324-325, Pl. XVI/139, Pl. XVII/145,146, 147; Dressel 6B amphorae: ARDEȚ 2006, 310-311, Pl. II/26, 27.

as well as epigraphic information.<sup>33</sup> This system of army supply is seen and argued to have been organised by the state on several levels<sup>34</sup> while distinguishing between army supply during wartime and supply during peacetime.<sup>35</sup> It is worth mentioning in this respect an inscription discovered in Corinth, mentioning Gaius Caelius Martialis, who accordingly was responsible for supplying the army with food during the Second Dacian War of Trajan.<sup>36</sup> Another interesting inscription tells us that Marcus Valerius Maximianus was responsible for supplying the army during the Marcomanic wars, these supplies being brought to Pannonia on the Danube. Later, he was also procurator of Dacia Porolissensis.<sup>37</sup>

For the Eastern part of the Roman Empire, the distribution of Dressel 24 similis amphorae in forts begins to be associated with the same state-organised system of army supply.<sup>38</sup> Arguments have been made in this regard concerning not only the quantity of amphorae discovered in forts but also some epigraphic data, namely *tituli picti* mentioning the legion's name. Several examples are known in which the name of the legion is mentioned on the body of Dressel 24 similis amphorae discovered in Dacia, at Apulum (Legio XIII Gemina),<sup>39</sup> possibly on an amphora of the same type at Buridava (Legio V Macedonica),<sup>40</sup> in Moesia Inferior at Novae (Legio I Italica)<sup>41</sup> and in Moesia Superior at Boljetin.<sup>42</sup> The amphorae discovered in the Principia of Potaissa (headquarters of Legio V Macedonica) must also be linked to the supply of olive oil to the army.<sup>43</sup> The Dressel 24 similis amphorae discovered in considerable numbers at Potaissa can be dated quite certainly to the mid-3rd century because of their shape (thickened rim, much shorter handles and base, different from the typical 2nd-century examples)<sup>44</sup> which makes the transition to LRA2 type amphorae. The debate on the supply of olive oil to the army becomes interesting if we consider the *tituli picti* mentioning the legion's names discovered at Carnuntum in Pannonia Superior, on two amphorae of type Beltrán 2A (Legio XV Apollinaris) carrying fish products,<sup>45</sup> at Aquincum in Pannonia Inferior<sup>46</sup> and in Britannia at Caerleon on a Cretan amphora of type AC4 (Legio II Augusta) carrying wine.<sup>47</sup> This raises the question of whether these *tituli picti* can be linked to the transport of products for the army as part of supplies or whether they represent private orders, especially in the case of the amphorae mentioned above carrying products other

than olive oil. For the amphorae discovered at Carnuntum, as there are mentioned the names of two officers of the XV Apollinaris legion, Bezeczky suggests two possibilities, namely that either the officers mentioned ordered these products for their own consumption or that centurions in certain units were responsible for the supplies.<sup>48</sup>

At the same time, Dressel 6B amphorae have sometimes been associated in literature with a supply of olive oil to the army during military campaigns.<sup>49</sup> With the cessation of the production of these amphorae during Hadrian's reign, it has been argued that they were replaced by olive oil from Baetica transported in Dressel 20 amphorae, due to their presence on the *limes* of Pannonia.<sup>50</sup> However, the presence of Dressel 6B amphorae at Porolissum observed in the material studied so far is very small, and no fragments of Dressel 20 amphorae have been recorded so far. The only studies on Dressel 20 amphorae found in Dacia are not concerned with the quantity of finds compared to the whole assemblage of amphora finds but instead focus on the study of stamped material that can provide an accurate dating. It has thus been observed solely based on this stamped material that Baetican oil is imported into Dacia, especially in the first six decades of this province.<sup>51</sup>

In addition to this state-organised trade, there was also a free trade sector, and at Porolissum we can certainly speak of the existence of both kinds of exchange due to the presence of both the army and a civilian population living in the town that developed here. In the case of Porolissum, the existence of a Palmyrene trading community has been hypothesised.<sup>52</sup> Although no such community is epigraphically attested, the arguments put forward consist of the known presence of the numerus Palmyrenorum Porolissensium, as well as the presence of Palmyrene civilians who were part of the Porolissum aristocracy.<sup>53</sup> C. Opreanu regards the existence of a temple dedicated to Bel, the main deity of Palmyra, near the customs office at Porolissum as another important argument due to the presence of such temples along trade routes.<sup>54</sup> Such communities are attested in other parts of the Empire at Puteoli and Ostia,<sup>55</sup> and an attempt has also been made to prove it through the study of the amphora material discovered.<sup>56</sup> At Porolissum, the small quantity of oil imports from Cilicia in the San Lorenzo 7 amphorae cannot clearly support such a correlation, also knowing that the Palmyreans usually specialised in the trade with silk and spices<sup>57</sup>. However, given the quantity of finds, it can be stated with certainty that this import of Cilician oil was part of the free market given the quantity of finds. The epigraphic observations concerning the Greco-Oriental origin of the merchants attested in Dacia should also be

<sup>33</sup> REMESAL RODRÍGUEZ 2002a, 300-301; CARRERAS MONFORT 2018.

<sup>34</sup> CARRERAS MONFORT 2002, 80-83.

<sup>35</sup> REMESAL RODRÍGUEZ 2002b; EGRI 2008; ROTH 1999, 265, 267-270.

<sup>36</sup> KENT 1966, no. 135.

<sup>37</sup> AÉ 1956, 124.

<sup>38</sup> OPAIȚ/T SARAVOPOULOS 2011, 318; OPAIȚ 2021, 158.

<sup>39</sup> EGRI/TIMOFAN/BOUNEGRU 2021.

<sup>40</sup> BICHER 1985, 100, Fig. 11.

<sup>41</sup> DYCZEK 2001, 198, fig. 110; DOBREVA 2017, 372, Pl. X/49.

<sup>42</sup> BJELAJAC 1996, 55-56, fig. 17/86.

<sup>43</sup> NEDELEA 2022, 5, Pl. 3-5.

<sup>44</sup> Good analogies for this dating are known from Athena, Concordia and Dinogetia. Analogies from Monte Testaccio are dated between 247-252 AD: OPAIȚ 2007, 632, Fig. 9/49-52; OPAIȚ *et alii* 2022, 104, Pl. 73/1007; MARIMON RIBAS/PUIG PALERM 2007, 355-356, Fig 79-80.

<sup>45</sup> BEZECZKY 1996, 330-333.

<sup>46</sup> BEZECZKY 1996, 332.

<sup>47</sup> WILLIAMS 2003, 30-31, Fig.1/5.

<sup>48</sup> BEZECZKY 1996, 336.

<sup>49</sup> CARRERAS MONFORT 2002, 80; EGRI 2008, 46, 48, Fig. 1.

<sup>50</sup> BEZECZKY 2005, 52; MAGYAR-HÁRSHEGYI 2016.

<sup>51</sup> GRUMEZA 2018.

<sup>52</sup> OPREANU 2020.

<sup>53</sup> OPREANU 2020, 82.

<sup>54</sup> OPREANU 2020, 84.

<sup>55</sup> TERPSTRA 2013, 70-73; 100-126.

<sup>56</sup> OPAIȚ 2021.

<sup>57</sup> CHAKRAVARTI 2017, 318.

underlined,<sup>58</sup> which can also be confirmed by the study of the amphora material discovered.

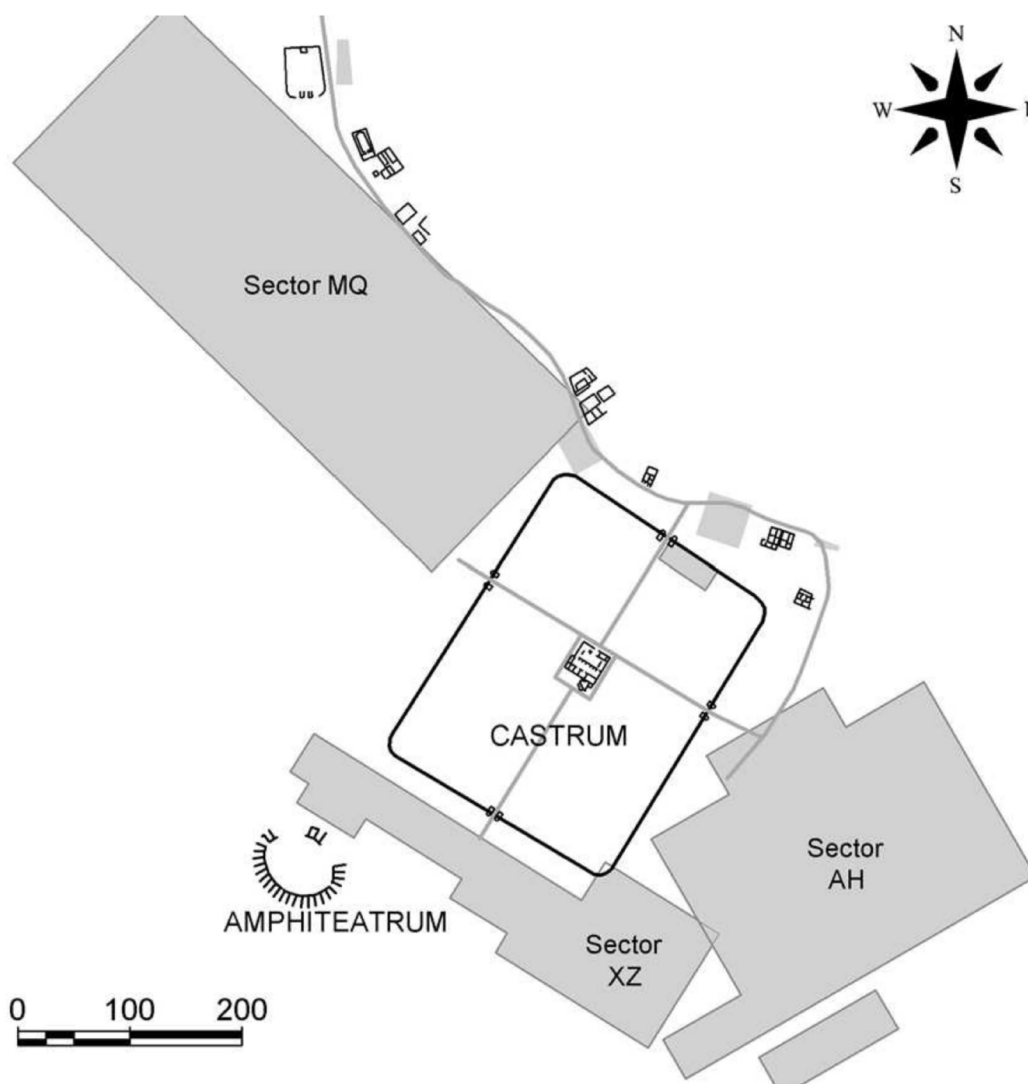
**CONCLUSIONS**

The olive oil amphorae from Porolissum reveal a complex picture in which we can observe a variety of origins, both eastern and western. The predominance of olive oil from Aegean centres can be associated with a product intended for consumption by both the military and the civilian population. It should be emphasised that, although it is not possible to date Dressel 24 similis amphorae accurately based on the archaeological contexts in which they were found in Porolissum, it is possible to date them after the middle of the second century based on their shape. At the same time, the question arises whether the cessation of production and export of Istrian oil during Hadrian’s reign was replaced by Aegean

the amphorae from Porolissum cannot help in this respect regarding the dating, the study of amphorae from other sites from Dacia shows that these Aegean imports are present on the market of this province from the beginning.<sup>59</sup> The quality and types of olive oil arriving in Dacia must have been varied, and it must also be taken into account that olive oil was not only an important element of the Mediterranean diet but also a product that had multiple uses, such as for lighting, perfume manufacture, medicinal and religious purposes.<sup>60</sup>

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**Fig. 3.** Plan of the site (after OPREANU/LĂZĂRESCU 2015, 904, Fig.3)

imports later on or whether these imports were present on the market of the province from the beginning. Although

<sup>59</sup> Personal observations on unpublished material. I am grateful to Dr. A. Opaț for the information concerning his observations on the amphorae studied and unpublished at the moment from Mălăiești (this fort was briefly occupied during the reign of Traian, in the first decade of the Roman province of Dacia) that sustains the same theory.

<sup>60</sup> BRUN 2003, 180-181.

<sup>58</sup> MATEI-POPESCU 2012, 91.

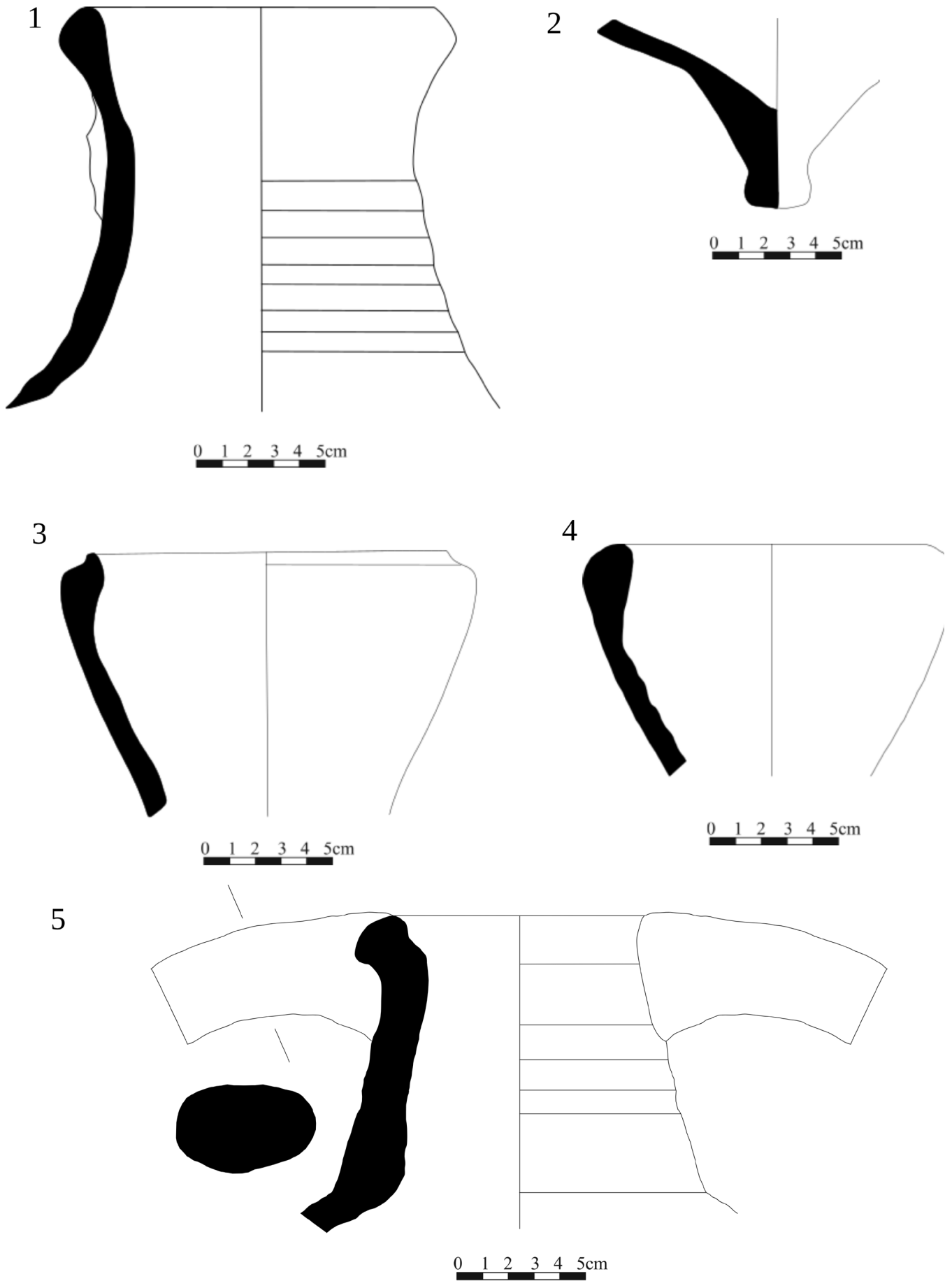
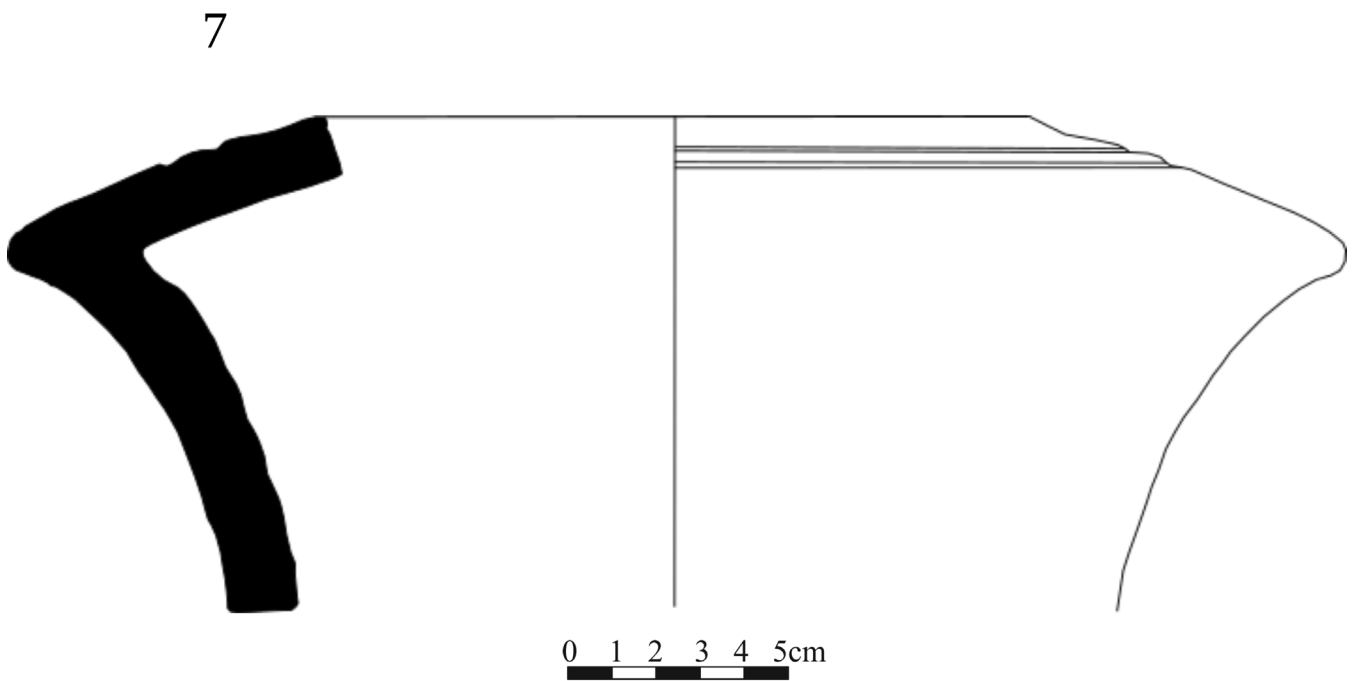
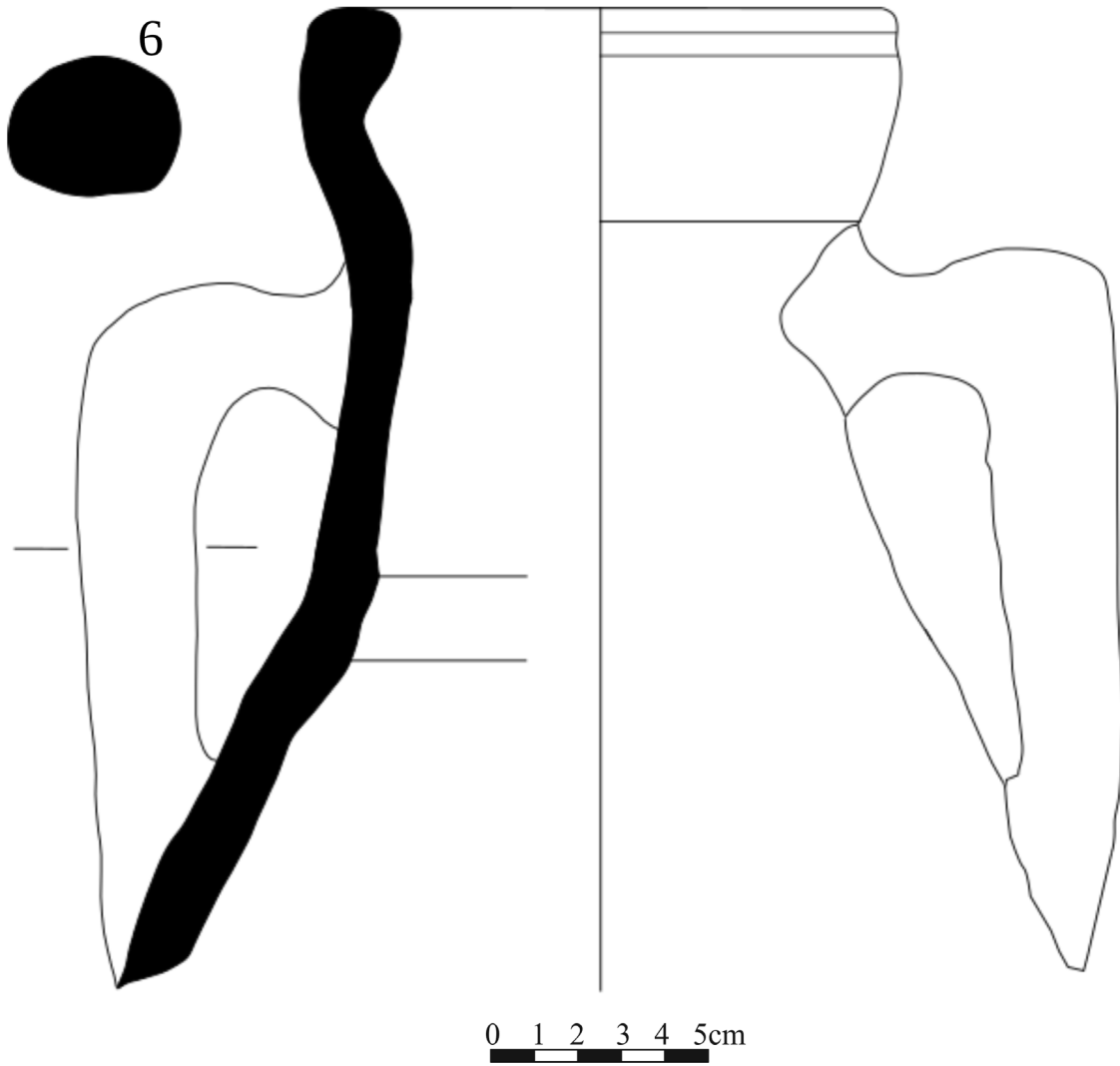
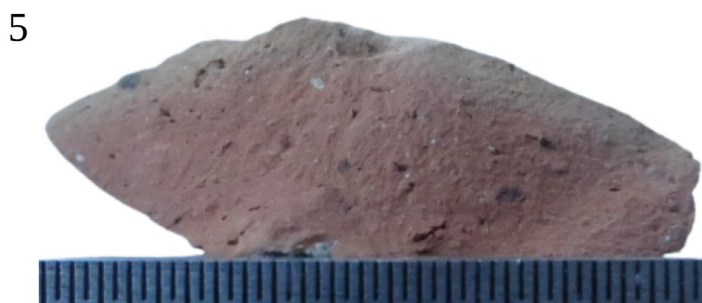


Fig. 4. 1. Dressel 24; 2-4. Dressel 24 similis; 5. San Lorenzo 7 (sc. 1:2)



**Fig. 5.** 6. Dressel 6B; 7. Schörgendorfer 558 (sc. 1:2)



**Fig. 4.** 1. Dressel 24; 2-3. Dressel 24 similis; 4. San Lorenzo 7 (sc. 1:2); 5. Dressel 6B; 6. Schörgendorfer 558

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