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Archaeological Studies and Statistical Analysis of Sasanian Coins (Drachm) from Tis Village in Southeast of Iran

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Abstract: *In 2002 AD, a hoard comprising of 183 coins was discovered by workers during the construction of a road near a village within the environs of Tis near Chabahar in Southeastern Iran. From this cache of 183 coins, 157 are currently preserved in the Museum of Zahedan and are used in this study. To date, no research has been conducted on any of the coins, which are arranged in albums with only a small number displaying details of their various properties. Initial research involved identifying the coins, identifying and recording their exact location, and developing a typology. This study identifies the precise location as determined via analysis of the king, the mint, and the date and in consideration and comparison of the listing of the coins by Stephen Albums, in which the qualitative measurement of the quantity of coins and quantitative measurement of coin's mints have been studied. Studies show that the coins are attributed to the Sasanian period, Peroz I and are classified into four groups of typological type, and in 15 different mints, including Mazda Artaxerxes, Estakhri, and Darabgerd. Using the relative frequency graph, the highest quantity of coins, according to typology, is attributed to the second type at 35.02 % and the lowest attributed to the first and third types jointly at 11.46 % of the total. The highest quantity of coins is attributed to the mint of Estakhr at 13.37 % and the lowest to the mint of Gorgan at 0.64 % of the total. Due to an absence of determinable typological features, 10.88 % of the coins could not be attributed to any type. In addition, 26.74 % of the coins could not be attributed to any specific mints.*

Key words: Iran, Sasanian Coins, Coins Typology, Statistical Analysis, Peroz, Tis, Chabahar

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Introduction

Sistan and Baluchestan, of the most important eastern provinces of Iran in the Sasanian period, since the prehistoric age has had an effective role in the creation of human culture and civilization.¹

Sakastan acknowledged the authority of Ardashir I (224-242) c. 225, who deposed the Indo-Parthian King Farn-Sasan and installed a sub-king named Ardashir.² This province was formed around 240, during the reign of Shapur I (242-272). According to the trilingual inscription on the Ka'ba-ye Zardošt at Naqsh-e Rostam Shapur's son Narseh was the king of Hind(estān), Sakastān, and Turān.³ After Shapur's death Hormazd was appointed as the new governor. In 281-283 he rebelled against *shahanshah* Bahram II (272-293). Bahram II succeeded in suppressing the rebellion in and appointed his son Bahram as governor of the province.⁴ According to the inscription from Persepolis dated to 310/311, brother of Sasanian king Shapur II (309-379), Shapur was governor of Sakastan (Šābuhr Sagān-šāh Hind Sagastān ud Tūrestān).⁵

In 457, the Sasanian Empire was plunged into civil war at Yazdgerd II's death. When Hormazd III (457-459) ascended the throne, Peroz I (459-484) fled to Khorasan, and with the help of an army, probably from the Kidarians or Hayatle (Huns), he was able to take the throne.⁶ Peroz tried to secure eastern frontier by paying off the Hephthalites with tribute.⁷ He finally launched three campaigns against the Hephthalites and all had catastrophic results. In 484, this action has cost him his life and the lives of seven of his sons along with the complete destruction of his army.⁸

Location of the site

Tis village is located in northwestern of the Chabahar County, which is about 5 km away from Chabahar city. Chabahar city is located in the extreme southeast of Iran, next to the warm waters of Oman. It is limited to the cities of Iranshahr and Sarbaz⁹

¹ Alram & Gyselen, 2003; Mehrafarin & Haji, 2010; Miri *et al.*, 2020; Sarhaddi-Dadian, Mutin & Moradi, 2020; Shaikh Baikloo Islam, 2021; Desset, Shahsavari & Vidale 2021; Sefidkhani & Sarhaddi-Dadian, 2022; Sarhaddi-Dadian, Malekzadeh & Ramli, 2022; Jozi & Saadat Mehr, 2022.

² Schindel, 2015, 228; Olbrycht, 2016: 29; Maksymiuk, 2024a: 435, note 4; see also Mehrafarin, Hadji & Feyz, 2011.

³ ŠKZ 23-24/19/42; Kettenhofen, 1995: 11-12; Weber, 2012: 160-168.

⁴ Alram & Gyselen, 2012.

⁵ Frye, 1966.

⁶ Christensen, 1993; Daryaei, 2013; Jackson Bonner, 2020, 123-126.

⁷ Maksymiuk, 2024b: 200.

⁸ Syvāne, 2021; Khonsarinejad & Khorashadi, 2021.

⁹ Mutin *et al.*, 2017; Sarhaddi-Dadian, Mutin & Moradi, 2020; Sarhaddi-Dadian, 2021; 2024.

and Nikshahr from the north, the Oman Sea from the south, Pakistan from the east, and the provinces of Kerman and Hormozgan from the west [Map. 1].



Map. 1. Location of the Tis's treasure (prepared by Sarhaddi-Dadian, 2022)

Research literature

There are various theories regarding the classification of Sasanian coins with the historical approach. The first person to classify the historical evolution of Sasanian coins using the historical approach was William Valentine. His classification was very brief and limited to three periods and is not commonly used today. However, his work remains a significant contribution in the development of the field.¹⁰ Advances in

¹⁰ Valentine, 1921.

the field followed with the work of Furdoonjee Paruck who viewed the historical evolution of Sasanian coins as linear. His work on the typology of Sasanian coins is seen as revolutionary.¹¹ German archaeologist Ernst Herzfeld published various research articles relating to the Sasanian coins that are linked to the throne crowns. His most significant step in these articles was the development of a table of the historical evolution of the Sasanian king's crowns.¹² Following Herzfeld, another German archaeologist Kurt Erdmann wrote two articles on the evolution of crowns that had been introduced by Herzfeld.¹³ Herzfeld and Erdmann thus paved the way in Sasanian coin typological studies. The work of Robert Göbl furthered the field by providing the most complete classification of Sasanian coins.¹⁴ Göbl's research provided the key basis of the classification of this section of the paper with very few changes that have been completed with comments of next numismatists. Vladimir Lukonin offers a different classification for the Sasanian coins.¹⁵ A brief review of his research follows. The works of Malek Iraj Mochiri¹⁶ and Ali Hasuri¹⁷ were used in this study.

In this section we consider Göbl's¹⁸ classification with slight variations:

1. Coins of the kings of Persis before 224
2. The reign of Ardashir I (224-242)
3. From the reign of Shapur I (242-272) until the end of Hormazd II (303-309)
4. The reign of Shapur II (309-379)¹⁹
5. From the reign of Ardashir III (379-383) until the end of Hormazd III (457-459)
6. The reign of Peroz I (459-484), new developments in standards of coinage
7. From the reign of Balash (484-488) until the end of the Balash (484-488)
8. From the second phase of the Kavad I's reign (498/9-531) until the end of Hormazd IV (579-590)
9. From the rule of Khosrow II (591-628) until the end of Khosrow IV (630-633)
10. The reign of Yazdgard III (632-651)
11. The reign of Farokhzad (the last efforts)²⁰

¹¹ Paruck, 1924.

¹² Herzfeld 1928; 1938.

¹³ Erdmann, 1950; 1951.

¹⁴ Göbl, 1971.

¹⁵ Lukonin, 1971.

¹⁶ Mochiri, 1972: 2-3; 1986.

¹⁷ Hasuri, 1992: 55-67.

¹⁸ Göbl, 1971.

¹⁹ Local coins, see: Lukonin, 1971.

²⁰ Hasuri, 1992.

The typology of Coins used in the Peroz I era

Generally, by studying the common Sasanian coins of Peroz I, they can be divided into four types based on a series of historical evolutions. In this section, we describe the typology of coins used in the Peroz era compared the typology of Pakzadian.²¹

- **Type 1** – On the first type of coins the profile picture (to the right) of Peroz is seen, his first crown can be seen in front of his face, the phrase “code Mazdean victory” means “worship of Zarathustra of Peroz King” and is written in Pahlavi script. These coins have the image of two hearths with two accompanying around it, mint attendants are on the right side and on the left side of the coin the mint date is inscribed with Pahlavi script. Pakzadian in his book was erroneous regarding these coins in that he considered them as the second type of Peroz coins and had written a quite brief and unscientific explanation in this regard. The second type of coin, crowns king design has changed, and the silver coins have been minted. Some of these coins are not minted with the date and instead the name of “Peroz” is written.²² It is noteworthy that most collections that have been studied so far²³ there has not been updated coins that Pakzadian consider as coins with Pahlavi inscription, “Piruji” means “Peroz” with a primary crown.
- **Type 2** – There is no difference between the coins of the second type and the coins of the first type, the only difference that can be seen in these coins is related to their back. On the back of these coins, on the left side of the fire pit, instead of the date, the letter “P” is written in Pahlavi, which is the first letter of the name “Peroz”. Pakzadian does not mention this type of coin, but it is likely that he placed it in the same second type as the first type of this research.
- **Type 3** – The obverse of the second type of coins has no difference with the third type however there is a difference on the reverse. On the obverse of the third type of coins the profile picture (to the right) of Peroz with his second crown adorned with a two-winged hawk, is present. On these coins facing the Peroz is the phrase “Mazdean code Piruji” which means “worship of Zarathustra King Piruz” and is written in Pahlavi script. Pakzadian explains, “On the second type of coins, the wings of the eagle are placed on the crown of the king and coins dating on the back have been stopped”.²⁴
- **Type 4** – The reverse of the fourth type of coins has no difference from the third, and the only difference that can be seen in these coins is related to their back. On the back of these coins, on the left side of the fire pit, instead of the letter “P”, the word “Piroji” meaning “Peroz” is written in Pahlavi script. Pakzadian does not mention this type of coin, but it is likely that he placed it in the third type.

²¹ Pakzadian, 2005.

²² Pakzadian, 2005: 148.

²³ See sources mentioned in the ‘Background of the Investigation’ section.

²⁴ Pakzadian, 2005: 148.

It should be noted that the coins that Pakzadian refers to as the first type of Peroz I coins are not seen in any sources and the Tis hoard is one of the most prestigious and rare examples of these coins ever seen. Indeed, Pakzadian does not provide a picture of these coins in his book. His narrative of this kind is as follows: “On the first type of coins, Peroz is seen with the crown almost like Yazdgard’s crown. The coins are minted in a rare mint and probably belong to the first year of the government of Peroz”.²⁵

The measurement of the quantity of coins by type of typology

In this section the measurement of the quantity of coins in the Tis hoard is discussed including the typological approach applied in the research. For this purpose, the relative frequency graph with seven branches shows four branches of typology and three quantitative branches. According to the number of coins and the relative frequency that is based on 100, 100 are divided by 157, and the amount of each frequency unit is displayed on the graph. As displayed graphically $100 \div 157 =$ approximately 0.64.

Graph of the quantity of the amount of typology of Peroz I (relative frequency chart on the percentage). Number of coins of the first type: 18 pieces; Number of coins of the second type: 55 pieces; Number of unknown coins between the first and second type: 5 pieces; Number of coins of the third type: 18 pieces; Number of coins of the fourth type: 49 pieces; Number of unknown coins between the third and fourth type: 9 pieces; Number of unknown coins among all types: 3 pieces; Total number of coins is 157 pieces [Fig. 1].

The Quantitative measurement of coins based on their minting location

In this section, the measurement of the quantity of coins in the Tis hoard is discussed and displayed by the type of their mint location. For this purpose, 17 relative frequency graphs with eight branches showing four branches of typology and three quantitative branches reflecting total quantity. According to the number of coins and the relative frequency that is based on 100, 100 are divided by 157, and the amount of each frequency unit is displayed on the graph. As reflected graphically $100 \div 157 =$ approximately 0.64.

Number of coins of the first type: 2 pieces; Number of coins of the second type: 2 pieces; Number of unknown coins between the first and second types: 0 pieces; Number of coins of the third type: 1 piece; Number of coins of the fourth type: 1 piece; Number of unknown coins between the third and fourth types: 0 pieces; Number of unknown coins among all types: 0 pieces; Total number of coins is 6 pieces [Fig. 2].

²⁵ Pakzadian, 2005: 148.

Number of coins of the first type: 3 pieces; Number of coins of the second type: 7 pieces; Number of unknown coins between the first and second types: 0 pieces; Number of coins of the third type: 4 pieces; Number of coins of the fourth type: 5 pieces; Number of unknown coins between the third and fourth type: 1 piece; Number of unknown coins among all types: 0 pieces; Total number of coins is 20 pieces [Fig. 3].

Number of coins of the first type: 0 pieces; Number of coins of the second type: 5 pieces; Number of unknown coins between the first and second types: 0 pieces; Number of coins of the third type: 1 piece; Number of coins of the fourth type: 2 pieces; Number of unknown coins between the third and fourth types: 0; Number of unknown coins among all types: 0 pieces; Total number of coins is 8 pieces [Fig. 4].

Number of coins of the first type: 1 piece; Number of coins of the second type: 1 piece; Number of unknown coins between the first and second types: 0 pieces; Number of coins of the third type: 1 piece; Number of coins of the fourth type: 0 pieces; Number of unknown coins between the third and fourth types: 0; Number of unknown coins among all types: 0 pieces; Total number of coins is 3 pieces [Fig. 5].

Number of coins of the first type: 1 piece; Number of coins of the second type: 4 pieces; Number of unknown coins between the first and second types: 0 pieces; Number of coins of the third type: 1 piece; Number of coins of the fourth type: 14 pieces; Number of unknown coins between the third and fourth types: 0; Number of unknown coins among all types: 0 pieces; Total number of coins is 20 pieces [Fig. 6].

Number of coins of the first type: 0 pieces; Number of coins of the second type: 2 pieces; Number of unknown coins between the first and second types: 0 pieces; Number of coins of the third type: 1 piece; Number of coins of the fourth type: 0 pieces; Number of unknown coins between the third and fourth types: 0; Number of unknown coins among all types: 0 pieces; Total number of coins is 3 pieces [Fig. 7].

Number of coins of the first type: 0 pieces; Number of coins of the second type: 2 pieces; Number of unknown coins between the first and second types: 0 pieces; Number of coins of the third type: 1 piece; Number of coins of the fourth type: 1 piece; Number of unknown coins between the third and fourth types: 0; Number of unknown coins among all types: 0 pieces; Total number of coins is 4 pieces [Fig. 8].

Number of coins of the first type: 0 pieces; Number of coins of the second type: 2 pieces; Number of unknown coins between the first and second types: 0 pieces; Number of coins of the third type: 0 pieces; Number of coins of the fourth type: 0 pieces; Number of unknown coins between the third and fourth types: 0; Number of unknown coins among all types: 0 pieces; Total number of coins is 1 piece [Fig. 9].

Number of coins of the first type: 0 pieces; Number of coins of the second type: 0 pieces; Number of unknown coins between the first and second types: 0 pieces; Number of coins of the third type: 1 piece; Number of coins of the fourth type: 1 piece;

Number of unknown coins between the third and fourth types: 0; Number of unknown coins among all types: 0 pieces; Total number of coins is 2 pieces [Fig. 10].

Number of coins of the first type: 1 piece; Number of coins of the second type: 0 pieces; Number of unknown coins between the first and second types: 0 pieces; Number of coins of the third type: 2 pieces; Number of coins of the fourth type: 3 pieces; Number of unknown coins between the third and fourth types: 0; Number of unknown coins among all types: 0 pieces; Total number of coins is 6 pieces [Fig. 11].

Number of coins of the first type: 1 piece; Number of coins of the second type: 1 piece; Number of unknown coins between the first and second types: 0 pieces; Number of coins of the third type: 0 pieces; Number of coins of the fourth type: 0 pieces; Number of unknown coins between the third and fourth types: 0; Number of unknown coins among all types: 0 pieces; Total number of coins is 2 pieces [Fig. 12].

Number of coins of the first type: 1 piece; Number of coins of the second type: 0 pieces; The number of unknown coins between the first and second types: 0 pieces; Number of coins of the third type: 0 pieces; Number of coins of the fourth type: 2 pieces; Number of unknown coins between the third and fourth types: 0; Number of unknown coins among all types: 0 pieces; Total number of coins is 3 pieces [Fig. 13].

Number of coins of the first type: 0 pieces; Number of coins of the second type: 3 pieces; Number of unknown coins between the first and second types: 0 pieces; Number of coins of the third type: 0 pieces; Number of coins of the fourth type: 0 pieces; Number of unknown coins between the third and fourth types: 0; Number of unknown coins among all types: 0 pieces; Total number of coins is 3 pieces [Fig. 14].

Number of coins of the first type: 1 piece; Number of coins of the second type: 7 pieces; Number of unknown coins between the first and second types: 0 pieces; Number of coins of the third type: 3 pieces; Number of coins of the fourth type: 9 pieces; Number of unknown coins between the third and fourth type: 1 piece; Number of unknown coins among all types: 0 pieces; Total number of coins is 21 pieces [Fig. 15].

Number of coins of the first type: 2 pieces; Number of coins of the second type: 5 pieces; Number of unknown coins between the first and second types: 0 pieces; Number of coins of the third type: 1 piece; Number of coins of the fourth type: 4 pieces; Number of unknown coins between the third and fourth type: 1 piece; Number of unknown coins among all types: 1 piece; Total number of coins is 14 pieces [Fig. 16].

Number of coins of the first type: 4 pieces; Number of coins of the second type: 15 pieces; Number of unknown coins between the first and second type: 5 pieces; Number of coins of the third type: 2 pieces; Number of coins of the fourth type: 7 pieces; Number of unknown coins between the third and fourth types: 6; Number of unknown coins among all types: 2 pieces; Total number of coins is 41 pieces [Fig. 17].

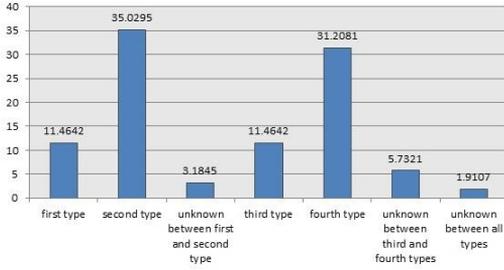


Fig. 1. Graph showing the quantity of coins based on the location minted

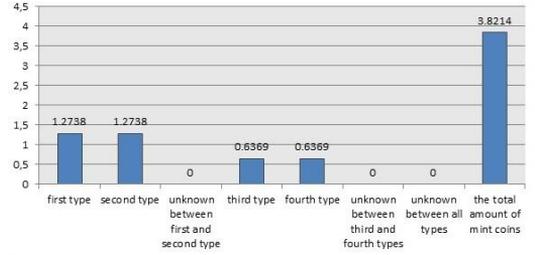


Fig. 2. Graph showing the quantity of coins of the Shapur Iranshahr Mint (relative frequency chart on the percentage)

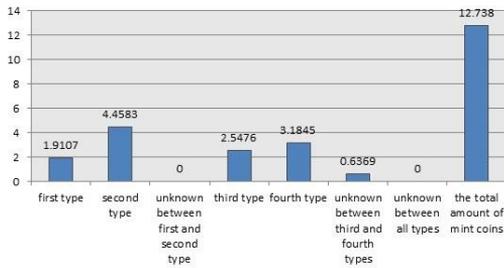


Fig. 3. Graph showing the quantity of coins of the AHURAMAZD ARDESHIR Mint (relative frequency chart on the percentage)

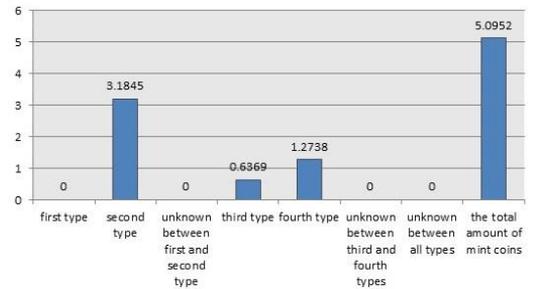


Fig. 4. Graph showing the quantity of coins of SPANUR Mint (relative frequency chart on the percentage)

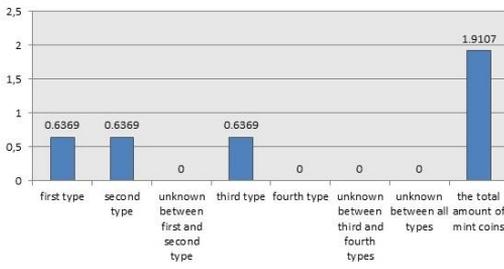


Fig. 5. Graph showing the quantity of coins of BALKH Mint (relative frequency chart on the percentage)

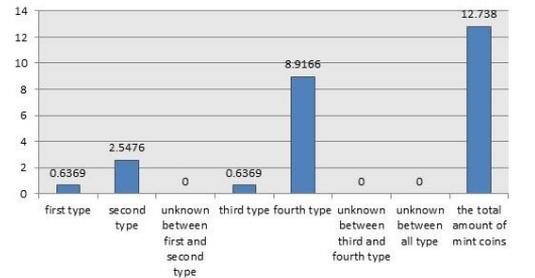


Fig. 6. Graph showing the quantity of coins of DARABGARD Mint (relative frequency chart on the percentage)

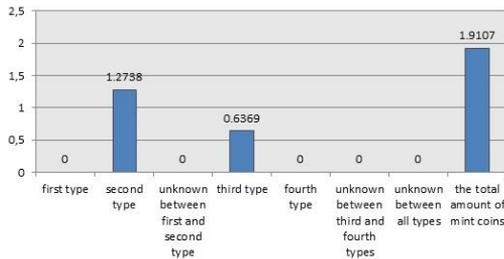


Fig. 7. Graph showing the quantity of coins of JEI Mint (relative frequency chart on the percentage)

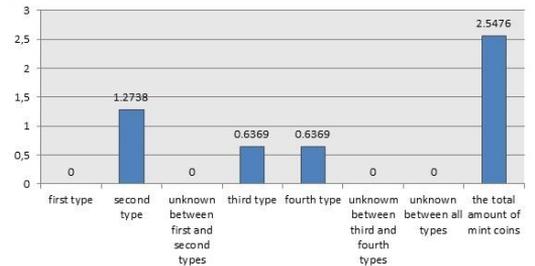


Fig. 8. Graph showing the quantity of coins of GANDI SHAPUR Mint (relative frequency chart on the percentage)

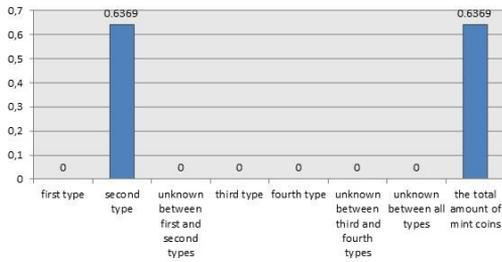


Fig. 9. Graph showing the quantity of coins of GORGAN Mint (relative frequency chart on the percentage)

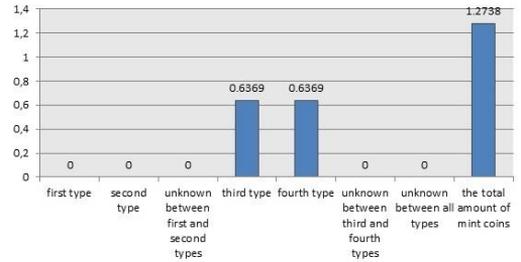


Fig. 10. Graph showing the quantity of coins of QOM Mint (relative frequency chart on the percentage)

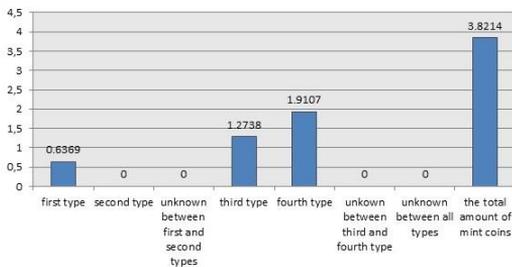


Fig. 11. Graph showing the quantity of coins of KERMAN Mint (relative frequency chart on the percentage)

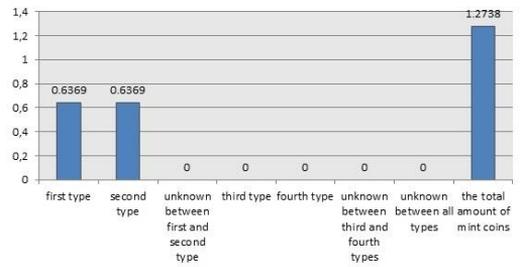


Fig. 12. Graph showing the quantity of coins of MISHAN Mint (relative frequency chart on the percentage)

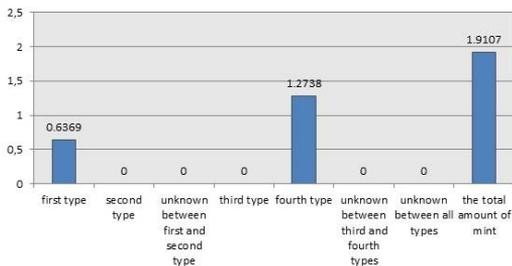


Fig. 13. Graph showing the quantity of coins of NEIRIZ Mint (relative frequency chart on the percentage)

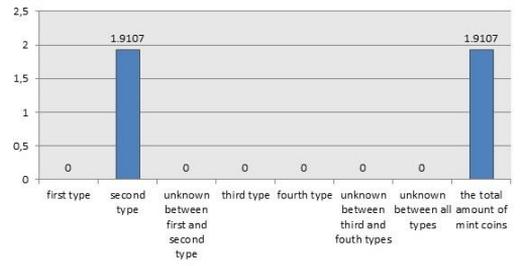


Fig. 14. Graph showing the quantity of coins of REY Mint (relative frequency chart on the percentage)

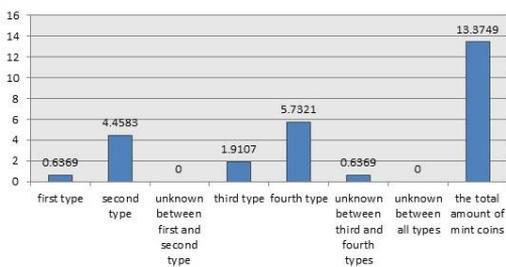


Fig. 15. Graph showing the quantity of coins of ESTAKHR Mint (relative frequency chart on the percentage)

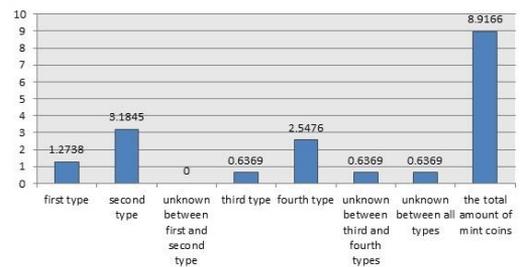


Fig. 16. Graph showing the quantity of coins of ARDESHIR Mint (relative frequency chart on the percentage)

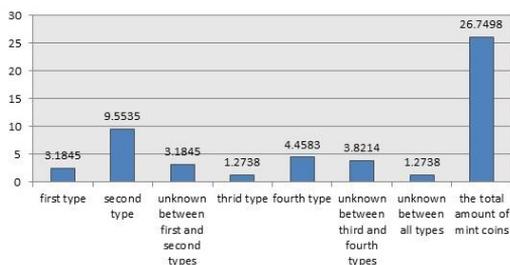


Fig. 17. Graph showing the quantity of coins of UNKNOWN Mint (relative frequency chart on the percentage)

Conclusion

The research indicates that the coins are attributed to the Sasanian era. Analysis of various typographical features present on the reverse and obverse sides of the coins indicate that the coins are from the Peroz I. These coins are classified into 4 groups, the first and second type shows Peroz I image with his first crown and the third and fourth shows Peroz image with his second crown. On the first coin's obverse side the mint date is seen and the second and third coins obverse is common and has the abbreviation of Peroz name. On the obverse of the last type, Peroz name is in place instead of a date and abbreviation. The study of the Tis hoard and the analysis of the mints reveal that the minted coins were not of local origin and were imported to Tis from other regions of cultural Iran indicating regional economic and trade relations between major cities.

Research reveals that the Tis coins in this study were minted on fifteen different mints. Among the 157 coins in the study, 18 coins (11.46%) are attributed to the first type, 55 (35.02%) are attributed to the second type, and 5 (3.18%) cannot be determined. Out of the total, 18 coins (11.46%) are attributed to the third type, 49 coins (31.20%) are attributed to the fourth type, and 9 coins (5.73%) cannot be determined from the third and fourth types. From the total of the coins in the study, 21 coins (13.37%) could not be categorized due to significant damage or wear. Of the 157 coins studied, 4% were produced at Shapur Iranshahr mint, 13% at Ahuramazad Ardeshir mint, and 5% at Spanur mint. The mints of Balkh, Jei, Neiriz, and Rey produced 2%, Darabgard produced 13%, Gondi Shapur produced 3%, Qom and Mishan separately produced 1%, Gorgan produced 1%, Estakhr produced 13%, and Ardeshir mint produced 9% of the coins. Due to extensive damage or wear, 26% of the coins could not be categorized [Fig. 18].

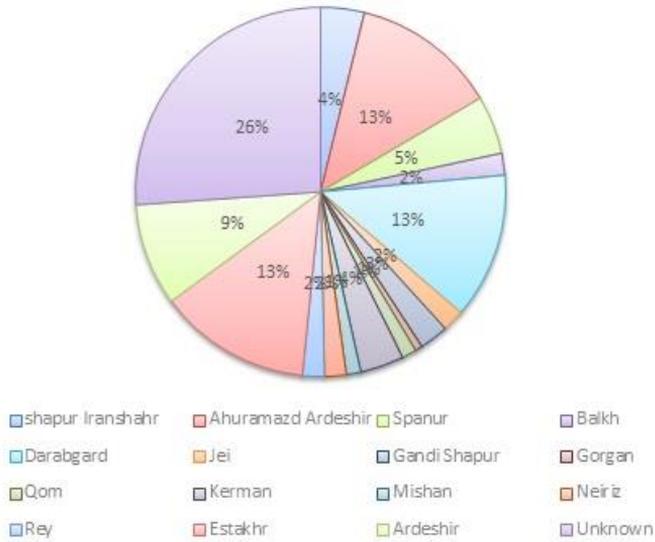


Fig. 18. Graph showing the quantity of coins of Mint in different areas (relative frequency chart on the percentage)

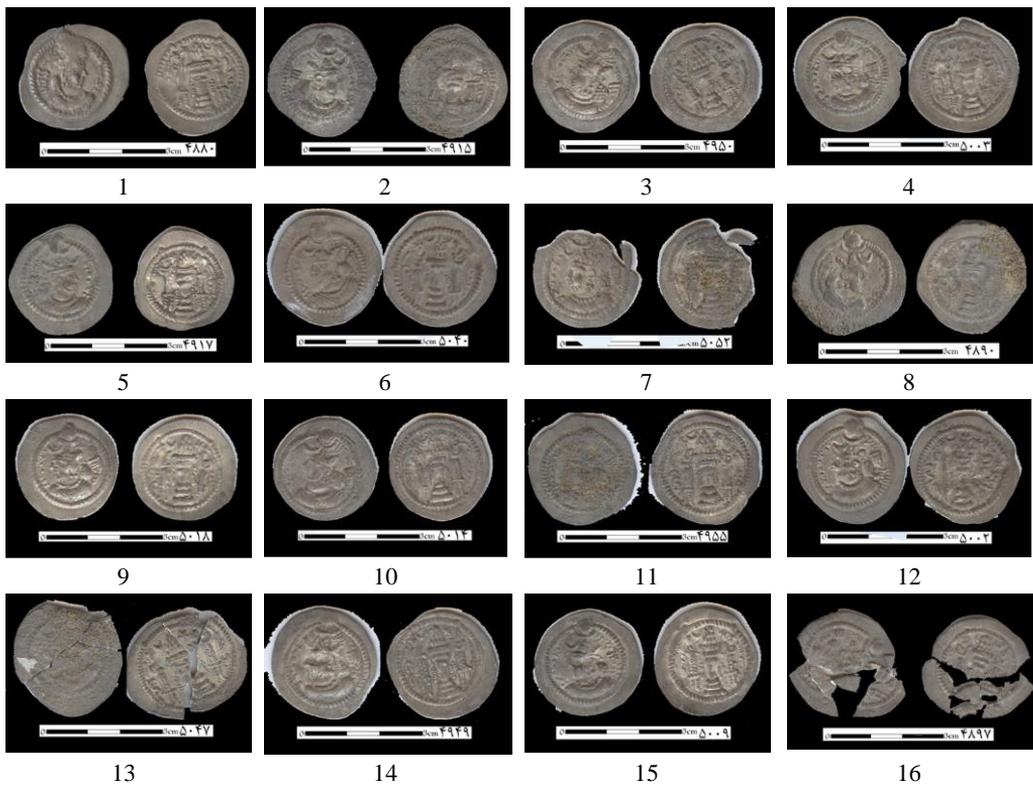


Fig. 19. Some of the Silver (Drachm) coins of Peroz I from Tis Treasure

Tab. 1. The information of some coins from the Tis (Hekmatizadeh, 2016)

No	Register Number	Diameter	Weight	Material	Date	Mint	Description
1	4880	2.70 cm	4.00 g	AR	no date	Shapur Iranshahr	The date is illegible due to the pressure of the format
2	4915	2.80 cm	4.20 g	AR	no date	Shapur Iranshahr	The date is illegible due to the sulfate
3	4950	2.70 cm	4.00 g	AR	no date	Ahuramazd Ardeshir	The date is illegible due to the sulfate
4	5003	2.80 cm	4.00 g	AR	no date	Ahuramazd Ardeshir	The coin is Broken and incomplete. The Date is illegible due to sulfate
5	4917	2.80 cm	4.20 g	AR	no date	Ahuramazd Ardeshir	The date is illegible due to the pressure of the format
6	5040	3.00 cm	4.10 g	AR	no date	Balkh	The date is illegible due to the sulfate
7	5052	2.50 cm	3.50 g	AR	no date	Darabgard	The coin is Broken and incomplete. The Date is illegible due to sulfate
8	4890	2.80 cm	4.20 g	AR	no date	Kerman	The date is illegible due to the sulfate
9	5018	2.70 cm	3.50 g	AR	no date	Mishan	The date is illegible due to the sulfate
10	5014	2.90 cm	3.60 g	AR	no date	Neiriz	The date is illegible due to the sulfate
11	4955	3.20 cm	4.20 g	AR	no date	Estakhr	The date is illegible due to the sulfate
12	5002	2.70 cm	4.00 g	AR	no date	Ardeshir	The date is illegible due to the sulfate
13	5047	2.90 cm	4.00 g	AR	no date	Ardeshir	The date is illegible due to the sulfate
14	4949	2.80 cm	4.00 g	AR	no date	no mint	The date and mint are illegible due to the sulfate
15	5009	2.50 cm	3.60 g	AR	no date	no mint	The mint and the date are illegible due to the pressure of the mold
16	4897	2.50 cm	3.60 g	AR	no date	no mint	The coin is Broken and incomplete. Mint and date are illegible due to sulfate

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