

Original article

OTTOMAN CERAMIC TILES IN THE MIHRAB OF AL-MURADIYYA MOSQUE 839 AH./1435 AD. IN EDIRNE, TURKEY

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Abstract:

The paper aims to study a collection of Ottoman ceramic tiles in the mihrab of Al-Muradiyya Mosque in Edirne archaeologically and artistically. These tiles were decorated with various decorative elements, including inscriptions, floral ornaments, geometric shapes, and architectural elements. They were the best Ottoman ceramic tiles in terms of the industrial and decorative style in the first half of the 9th H./15th G. century. The methodology of the paper included three domains: The descriptive study, analytical study, and comparative study. It was followed by the conclusion and results.

1. Introduction

Al-Muradiyya Mosque in Edirne is on a hill in the northeast of the city center [1]. It was established by the Ottoman Sultan Murad II [2] in 839 AH./1435 AD. [3] The general outline of the mosque adopted the inverted T [4], fig. (1). The entrance is in the middle of the northwestern façade of the mosque, facing the ablution fountain. Moreover, the mosque has one minaret, which is not the original, but it dates to the 13th H./19th G. century [1,5]. The inscription refers to the building as 'imārat rather than masjid (mosque), indicating that it was not originally built as a mosque. There are several layers of wall paintings, the oldest dating to the fifteenth century; these were discovered during restoration work in 1953 [6].

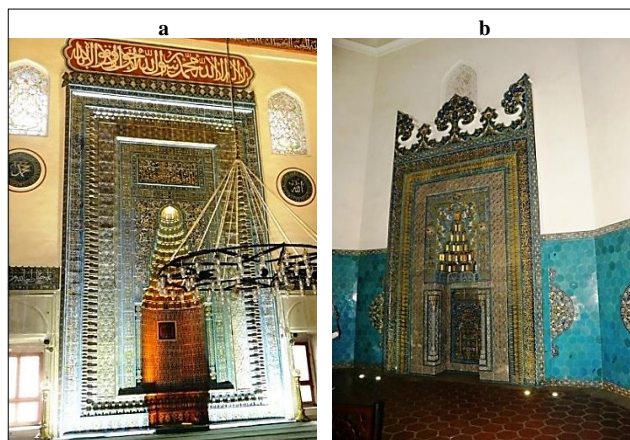


Figure (1) The south-eastern façade overlooking the tomb in Al-Muradiyya mosque in Edirne

2. Methodological Study

2.1. Descriptive study

The most noticeable item in Al-Muradiyya Mosque in Edirne is the magnificent mihrab, which adopts the features of Ottoman mihrabs at the time. However, it is totally covered in ceramics. The Ottoman mihrabs appear covered with marble, totally covered with ceramics, or partially covered with marble, topped by a tire of muqarnas figs. (2).



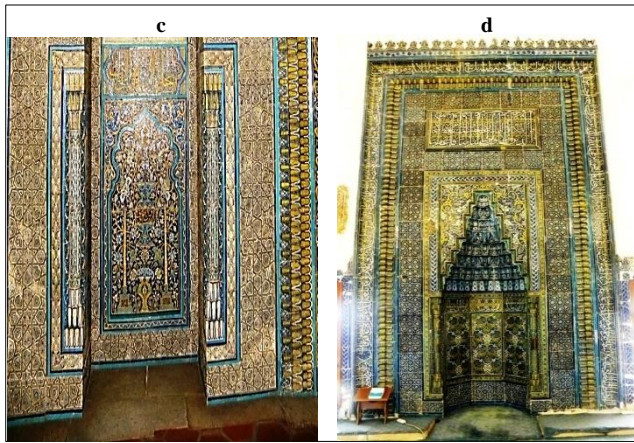


Figure (2) **a.** the mihrab of the mosque of Mehmed I 822-827 AH./1419-1424 AD. in Bursa, **b.** the mihrab of the mosque of the tomb of Mehmed I 822-827 AH./1419-1424 AD, **c.** decorative details of the mihrab, **d.** the mihrab of Al-Muradiyya mosque in Edirne 839 AH./1434 AD.

The mihrab of Al-Muradiyya Mosque is memorial. It is covered with multiple tiles and measures 3.65×6.35 sections [7,8], which are the 2nd largest mihrab tiles in terms of space after the mihrab tiles of the Green Mosque in Bursa, and they are largely similar. The niche of Al-Muradiyya Mosque in Edirne has some delicate designs in the tiles of Bursa [1]. The mihrab is covered with colorful tiles [9], which were not affected by the fires of the walls. The decorations were created in Cuerda Seca [10]. They define the entire form of the mihrab [2]. The mihrab is in the middle of the eastern-southern wall of the qibla iwan. It is a set of rectangular frames, with the internal ones encircling the mihrab niche based on two columns. Additionally, the niche is topped by a set of eight tiers of muqarnas. There are monochrome tiles separating the large ceramic tiles. They are narrow rectangular frames colored in light and dark blue and green and narrow decorative frames in blue and yellow braid decorations or delicate flowers of Hatayi in blue on a white or yellow background.

2.2. Decorative elements on the ceramic tiles of the mihrab

2.2.1. Inscriptions of the mihrab

2.2.1.1. Inscriptions in the first frame from outside

The first frame is divided from the outside into three written right-left sections, with another section on the left mirroring the same writings. They encompass a writing section encircling the mihrab. The first and third mihrabs contain two writing lines, with the lower part in the Thuluth script colored white (Allāhumma taqbal min al-Sultān Murād Khān, i.e., May Allah accept from Sultan Murad Khan) and the upper part in the Kufic script colored yellow to complete the text (Ibn Muḥammad ibn Bāyazīd Khān Naṣarahu Allāh, i.e., Ibn Muhammad Ibn Bayazid Khan, may Allah grant him victory). The writings are on a blue ground filled with delicate floral ornaments figs. (3-a & b). The middle writing section contains two lines, the lower with a Qur'an text in Thuluth and colored white^(a), fig. (3-c).

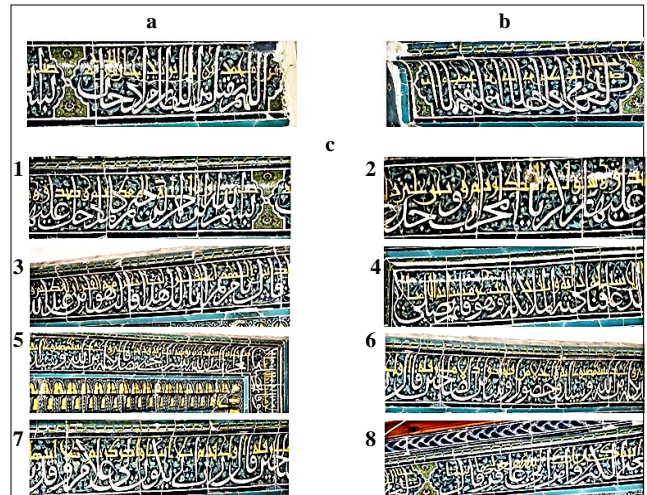


Figure (3) **a.** the 1st writing section to the right of the mihrab niche, Al-Muradiyya mosque in Edirne, **b.** the 3rd writing section to the left of the mihrab, **c.** details of the inscriptions of the 2nd writing line in the mihrab of Al-Muradiyya mosque in Edirne

■ Transliteration

bi-Smm Allāh al-Raḥmān al-Raḥīm kullamā daḥhala ‘alayhā Zakarīyā almihrāba wajada ‘indahā rizqan Ǿ qāla yā Maryamu annāa laki haādhā Ǿ qālat huwa min ‘indi Allahi Ǿ inna Allaha yarzuqu man yashā‘u bighaīri ḥisābin (37). Hunālika da‘ā Zakarīyā Rabbahu Ǿ qāla Rabbi hab lī min ladunka dhurrīyatan ṭayyibatan Ǿ innaka Samī‘u alddu ‘ā‘i (38) fanādathu almalā‘ikatu wahuwa qā‘imun yuṣallī fī almihrābi anna Allaha yubashshiruka bi Yahyāāmuṣaddiqan bikalimatīn minā Allahi wasayyidan waḥaṣūran wanabīyan minā alṣṣāliḥīna (39) qāla Rabbi annāa yakūnu lī ghulāmun waqad balaghaniya alkibaru wāmra ‘atī ‘āqirun Ǿ qāla (40).

The upper line in Kufic has a prayer religious text that reads:

((Ṣadaqa Allāh al-‘Azīm wṣdq rasūluhu al-Karīm wa-naḥnu ‘alā dhālika min alshāḥdyn Allāhumma aghfr lanā bi-hurmat al-Qur‘ān al-‘Azīm .. ank Anti al-Ḥaqq al-Raḥīm.. Bāsiṭ al-arḍ wa-rāfi‘ al-Samā "" alladhī .. kadhālik Allāh yf‘l mā yshā "")).

■ Translation

In the name of Allah, the Entirely Merciful, the Especially Merciful: Every time Zechariah entered upon her in the prayer chamber, he found with her provision. He said, "O Mary, from where is this [coming] to you?" She said, "It is from Allah. Indeed, Allah provides for whom He wills without account." (37) At that, Zechariah called upon his Lord, saying, "My Lord, grant me from Yourself a good offspring. Indeed, you are the Hearer of supplication." (38) So, the angels called him while he was standing in prayer in the chamber, "Indeed, Allah gives you good tidings of John, confirming a word from Allah and [who will be] honorable, abstaining [from women], and a prophet from among the righteous." (39) He said, "My Lord, how will I have a boy when I have reached old age and my wife is barren?" The angel said, "Such is Allah; He does what He wills." (40).

The upper line in Kufic has a prayer religious text that reads:

(Allah Almighty said the truth, His noble Messenger said the truth, and we are witnesses to that. O Allah, forgive us for

the sake of the sanctity of the Great Qur'an. Indeed, You are the Truth, the Most Merciful. The Expander of the Earth and the Raiser of the Heavens. Thus, Allah does what He wills.)

2.2.1.2. Inscriptions in the rectangular frame of the upper part of the mihrab

A rectangular frame is in the upper half of the mihrab, which encompasses an inscription, i.e., Qur'an verses, on a background of floral ornaments, some of which are in the Thuluth script in white on three bands that read, fig. (4)^(b)

(*Alladhīna yaqūlūna Rabbanā innanā āmannā fāghfir lanā dhunūbanā waqīnā 'adhāba alnnāri* (16) *alṣṣābirīna wālṣṣādiqīna wālqānitīna wālmunfiqīna wālmustaghfirīna biā-l'ashāri* (17). Those who say, "Our Lord, indeed we have believed, so forgive us our sins and protect us from the punishment of the Fire," (16) *The patient, the true, the obedient, those who spend [in the way of Allah], and those who seek forgiveness before dawn* (17). Others are in yellow in the Kufic script. In the middle, they are divided into two lines. They read^(c): *Shahīda Allahu annahu lā ilaha illā Huwa wālmalā' ikatu wa 'ulū al'ilmī qā'iman biālqisṭi lā ilaha illā huwa Al'azīzu Alḥakīmu* (18) *inna alddīna 'inda Allahi al'islāmu* (19) *Allah witnesses that there is no deity except Him, and [so do] the angels and those of knowledge - [that He is] maintaining [creation] in justice. There is no deity except Him, the Exalted in Might, the Wise. (19) Indeed, the religion in the sight of Allah is Islam* (19)).

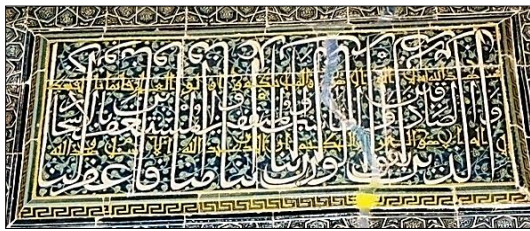


Figure (4) the inscription in the rectangular frame of the upper part of the mihrab of Al-Muradiyya Mosque in Edirne

2.2.1.3. Inscriptions in the mihrab niche

Inscriptions occupy three writing sections distributed to the three sides of the mihrab. The inscriptions are in two bands. The lower, fig. (5) is in white in the thuluth script and it reads^(d):

"*Inna Allaha wamlāykh. yuṣallūna 'alā Alnnabīyi. yā ayyuhā alladhīna āmanuwā*", i.e., *Indeed, Allah confers blessing upon the Prophet, and His angels [ask Him to do so]. O you who have believed.*" The upper band is in yellow in the Kufic script and reads: "*Ṣalluwā 'alayhi wasallimuwā taslīman. Allāhumma ṣall 'alā Muḥammad wa-ālihi*", i.e., *Ask [Allah to confer] blessing upon him and ask [Allah to grant him] peace. O Allah confer blessing upon Muhammad and his family*".



Figure (5) decorative details of the niche and sides of the mihrab

2.2.2. Floral ornaments on the ceramic tiles in the mihrab

Several tile decorations of Al-Muradiyya Mosque in Edirne use symbols borrowed from the Yuan pottery in the 8th H./14th G. century and the Ming decorations in the early 8th H./14th G. [11]. *) Floral ornaments are used as a background for inscriptions, as shown in the decoration of the first (outer) frame. The background is decorated with plant branches from which plant leaves emerge. The decorations are colored light blue with accents of yellow on a dark blue background, figs. (2-d: 4). Furthermore, it is implemented as a background for the inscriptions in the rectangular frame in the upper part of the mihrab, fig. (4), and a background for the inscriptions in the mihrab niche, fig. (5). *) The mihrab niche is covered with ceramic tiles decorated with floral ornaments consisting of half-palmettes and twisted plant branches arranged geometrically from which emerge triangular plant leaves executed in blue, green, yellow, and white. The largest tiles in the middle of the mihrab niche measure 49×43 cm compared to the tiles of the frames, fig. (5). *) The spandrels of the mihrab's arches are decorated with floral ornaments of the Hatayi made of multi-petal flowers and Chinese clouds in the form of modified leaves from wavy plant branches. The decorations are white, light blue, and bluish-green on a dark blue background, fig. (6). *) The modified plant leaves are white, and the Hatayi flowers are blue, encompassing the muqarnas of the 2nd (middle) frame of the niche. Moreover, the plant leaves are decorated with the points and segments of the star polygons in the third internal frame surrounding the mihrab niche and white decorations on a blue background. The delicate Hayati flowers are decorated in white on a white background of the muqarnas of the mihrab's semi-circular ceiling, fig. (6). *) The Hatayi flowers are used to decorate the narrow frame of the mihrab niche. The decorations are blue and black on a yellow background, fig. (6).



Figure (6) Outline of the semi-domed ceiling of the mihrab of Al-Muradiyya mosque in Edirne

2.2.2.1. Geometric shapes

The third internal frame of the mihrab is decorated with star polygons in blue and white, fig. (2-d). A mono-braid decorates the external frame of the mihrab, fig. (3-c1), and the twin braid decorates the mihrab niche, fig. (5). Furthermore, the braid decorations are used in the spandrels of the mihrab niche, fig. (6).

2.2.2.2. Architectural elements of the mihrab

The first tire is decorated on top with a row of windows in the form of a tri-fold leaf, fig. (2-d). *The middle frame* surrounding the mihrab niche is decorated with a tire of yellow muqarnas, fig. (2-d). Additionally, the semi-circular ceiling of the mihrab is decorated with eight tires of muqarnas, fig. (9). *Two ceramic columns* are on the sides of the mihrab niche decorated with white and yellow floral motifs, fig. (5).

2.3. Analytical study

The Ottomans moved to Edirne in the first half of the 9th H./15th G century, which became the 2nd capital before the conquest of Constantinople in 857 AH./1453 AD. They brought Iranian craftsmen from Bursa [8] to make ceramic tiles, such as those in Al-Muradiyya Mosque in Edirne. Studying the ceramic tiles of the mihrab of Al-Muradiyya Mosque in Edirne illustrates the following points:

2.3.1. Material

The mihrab is decorated with ceramic tiles in colorful stoneware [10] in *Cuerda Seca* (dry cord) [12], which is a creative method that originated in Andalusia. In this method, parts of the tile are colored, and others without colors, highlighting the color of the clay [13]. The Andalusian vessels of *Cuerda Seca* were made of red clay (Almaghara clay), consisting of red iron clay, with most of the pieces completely glazed and a few partially glazed. Ceramic tiles in *Cuerda Seca* were an advanced stage of the Zahra vessels with cords in the 4th H./10th G. century in terms of material, manufacturing style, and decoration [14]. The decorative areas are separated by a deep groove, and each area is glazed with a special color by a brush, and then the ceramic is leveled in the oven after glazing [15]. This technique moved from Andalusia to Iran, Anatolia, and India in the 8th H./14th G. century.

2.3.2. Manufacturing style

Ceramic tiles in *Cuerda Seca* marked a new artistic style in the Ottoman era, which totally differed from the Seljuk style. Using multiple colors was the first innovation by the Ottomans in ceramic art, especially in the Mosque and Tomb of Mehmed I in Bursa. It is worth noting that some decorations of the frame were slightly raised, as the raised frames helped separate colors, such as the red and manganese black lines that separated the various paints in the Green Mosque in Bursa [16]. Additionally, some raised decorations took the form of muqarnas [17] and star polygons. Ceramic tiles in *Cuerda Seca* in Al-Muradiyya Mosque in Edirne were made of red stoneware [16], with high percentages of silica (80-85%) [18]. They resembled, in terms of manufacturing and decorative methods, the tiles of the mihrab of the mosque of Mehmed I in Bursa. Some had a different manufacturing method in terms of the clay elements, with the white clay being the most diverse, decorations below the paint in blue and black on a white background, as well as the turquoise glass paint, whose decorations are largely influenced by the decorations of Chinese porcelain [19]. The similarity between *Cuerda Seca* ceramic tiles in Bursa, Edirne, and Kerman in the first half of the 9th H./15th G. century suggests the existence of a single mobile workshop operating in these cities. Tabriz craftsmen, who stamped their signatures on the tiles of the Green Mosque in Bursa, made these tiles, which resembled the ones used by the Timurids in the early 9th H./15th G. century. Raw materials determine the composition and characteristics of glazed tiles, with secondary elements (e.g., calcium, potassium, aluminum, and magnesium) distinguishing the different types of tiles [20,21]. Technique of making *Cuerda Seca* ceramic tiles in the 9th H./15th G. century: **a)** The decorations were implemented on clay by engraving or using mold. **b)** The clay was burned after the decorations. **c)** The separators were painted with wax or a mixture of wax and vegetable oil in black or red and black. **d)** The areas between the separators

were painted with metallic oxides in various colors [22,23] (after applying the white lining in some models). **e)** The tile was coated with a transparent glaze layer (in some models) and then returned [12,24].

2.3.3. Decorative style

Colors used in decoration: colors usually help date some pieces because each period of Ottoman history was characterized by certain decorative colors. For instance, Ottoman ceramics in the 8th- 9th H. (14th- 15th G.) centuries featured the use of solid colors, namely green, turquoise, blue, and black, as demonstrated in the mosques of Bursa, such as the façade of the Orhan mosque, Sultan Bayezid I mosque, mosque and tomb of Mehmed I in Bursa, Al-Muradiyya mosque in Bursa, Shah Malik Pasha Mosque in Edirne, and the Çinili Köşk in Istanbul. These tiles were influenced by the Seljuk ceramic tiles. Ceramic tiles of the 9th-10th H. (15th-16th G.) centuries were characterized by colors, such as yellow, gold, green, brown, black, turquoise, and light and dark blue that could be seen in the Al-Muradiyya Mosque in Edirne, the Green mosque and Green tomb in Bursa, Al-Muradiyya mosque in Bursa, and mosque and tomb of Mehmed I in Bursa. Their best example is the yellow ceramic tiles in Şehzade Mehmed's Tomb 950 AH./1543 AD. in Istanbul. Yellow or gold disappeared in the mid-10th H.-16th G. century, and tomato red emerged, which became a hallmark of Ottoman ceramics. This red shade appeared on the ceramic tiles of the Şehzade Mustafa Tomb in Bursa and the buildings of Istanbul in the second half of the 10th H./16th G. century and the first half of the 11th H./17th G. century.

2.3.3.1. White lining

The white lining used in the *Cuerda Seca* ceramic tiles was made of tin oxide.

2.3.3.2. Glazing

Glazing is coating clay or stone objects with molten glass, which existed before glassware [25]. The glaze consists of sand, lime, soda, or natron melted together at high temperatures; the same mixture is used in making glass [26]. Moreover, the transparent glaze produced by Iznik was highly pure and consistent due to calcium carbonate [24,27]. The glaze used in *Cuerda Seca* ceramic tiles was made of alkali lead [18,20,21].

2.4. Comparative study

Comparing the ceramic tiles in the mihrab of Al-Muradiyya Mosque in Edirne and the mihrab of the Green Mosque and the Green Tomb in Bursa shows that:

2.4.1. Outline of the mihrabs

The mihrab of Al-Muradiyya Mosque in Edirne is covered with ceramic tiles created using the *Cuerda Seca* technique. It comprises rectangular frames encircling the mihrab niche. On both sides of the niche, there are two columns on which a frame surrounding the semi-circular ceiling of the mihrab from three sides is based, fig. (2-d). This mihrab was influenced by the mihrab of the Green Mosque and the Green Tomb in Bursa, whose tiles were made in the *Cuerda Seca* technique. In the Green Mosque, the mihrab is a set of frames surrounding the mihrab niche; on both sides of the niche, two columns are the bases of the arch's spandrels, fig. (2-a). The mihrab of the green tomb is rectangular frames surrounding the mihrab entry with two columns of ceramics, fig. (2-b & c).

2.4.2. Contents of the ceramic divisions

2.4.2.1. Inscriptions

The first outer frame in Al-Muradiyya Mosque in Edirne is decorated with inscriptions on two tires; the outer is in small yellow Kufic, and the inner is in large white Thuluth. It resembles the first outer frame of the mihrab of the Green mosque in terms of script and colors. On the inner tire, they are both decorated with Qur'anic inscriptions but with different texts. They match in terms of form and content and differ in color from the inscriptions of the first outer frame of the mihrab niche of the Tomb of Mehmed I. The right and upper sides of the frame contain Qur'anic inscriptions from Surat Al Imran, verse 37, in Thuluth script in yellow on a blue background decorated with floral ornaments in yellow and white, fig. (2-b & c). The inscriptions on the left side of the mihrab contain a Prophetic hadith. Above the semi-circular ceiling of the mihrab of Al-Muradiyya Mosque is a rectangular frame decorated with inscriptions in Thluth and Kufic scripts colored white and yellow on a background adorned with modified floral motifs in blue, white, and yellow on a blue background, fig. (4). It resembles the frame above the semi-circular ceiling of the mihrab of the green mosque in terms of script and colors. They both have Qur'anic inscriptions but with different texts. The background is decorated in floral motifs following the Hatayi decoration in white and yellow on a blue background, fig. (2-a). Three writing sections of the mihrab niche of Al-Muradiyya Mosque have inscriptions on the three sides with writings distributed in two tires; the lower is in Thuluth script and colored white, and the upper is in Kufic script and colored yellow. They are Qur'anic inscriptions from verse 56, Surah Al-Ahzab, fig. (5). Moreover, the semi-circular ceiling of the mihrab of the green tomb is surrounded by four writing sections of a Prophetic hadith in two tires; the lower is in Thuluth script and colored yellow, and the upper is in Kufic script and colored white, fig. (2-b).

2.4.2.2. Floral motifs

The floral motifs include: **a)** Nature-like floral motifs, e.g., flowers, trees, branches, leaves, fruits, and vases. **b)** Abstract modified floral motifs, e.g., the Rumi and Hatayi decorations. The mihrab of Al-Muradiyya mosque is decorated with real floral motifs more than Hatayi, which is a mixture of Chinese decorative elements of palmettes, half palmettes, Chinese clouds, lotus flowers, peony, as well as Iranian decorative elements of branches [28]. The Hatayi is less abstract than the Rumi decoration [29]. Hatayi is a Turkish word for a decorative style that originated in Eastern Turkistan. It evolved in the Ottoman era and became the most important. Thus, they used Hatayi for the first group that employed the style, i.e., the people of Hatayi [30]. The Hatayi decoration is mainly used in the mihrab's niche and arch spandrels, fig. (5 & 6), as well as the mihrab's entry and arch spandrels of the Green Tomb. However, they differ in the form of floral elements. The decorations of the mihrab entry of the Green Tomb include a vase with flowers, fig. (2-b & c). Moreover, the floral decorations appear as a background for the inscriptions in the mihrabs of Al-Muradiyya Mosque and the Green Tomb.

2.4.2.3. Geometric shapes

Full star polygons decorate the tiles of the 3rd frame in the mihrab of Al-Muradiyya mosque, figs. (2-d & 3-a & b). The decorations of this frame resemble those of the 3rd frame of the mihrab entry in the tomb of Mehmed I, fig. (2-b & c).

2.4.2.4. Architectural elements

a) Muqarnas: The 2nd frame of the mihrab of Al-Muradiyya Mosque and the Green mosque in Bursa is decorated with ceramic tiles in the form of muqarnas, two tires of yellow muqarnas, fig. (2-a & d). In terms of color, it resembles the middle frame of the mihrab niche of the Green Tomb, but they differ in the number of muqarnas tires, fig. (2-b & c). The semi-circular ceiling of Al-Muradiyya Mosque is adorned with eight tires of muqarnas, fig. (6), the Green mosque 13 tires, fig. (2-a), and the Green Tomb of six tires, fig. (2-a). **b) Windows:** The top of the first tire of the mihrab of Al-Muradiyya Mosque is adorned with a tire of windows in the form of tri-fold leaves with white modified leaves, fig. (2-d). In terms of size, they resemble the windows of the Green mosque's mihrab in the form of tri-fold leaves with yellow and white modified leaves, fig. (2-a). However, they differ in outline and size from the Windows of the Green Tomb's windows, which are large compound leaves, fig. (2-b:d). **c) Columns covered with ceramic tiles:** On both sides of the mihrab niche of Al-Muradiyya mosque are two columns covered with ceramics, fig. (5). They resemble the columns of the Green tomb's mihrab, fig. (2-a & b). They are cylinder columns with the capital of three tires of muqarnas and the pedestal of three tires of muqarnas in an inverted form. Additionally, there are two ceramic columns on both sides of the mihrab niche in the green mosque. Still, they differ from the columns of Al-Muradiyya Mosque's mihrab in the form of the capital and the pedestal, fig. (2-a). Examining the Cuerda Seca ceramic tiles in the 9-10 H./15-16 G. centuries revealed that: *) A mihrab originally from a Maraq (Broth) kitchen established by Prince Ibrahim Bey in 835AH/1432 AD in Kerman features red and black outlines separating various glaze colors. It is preserved in the Çinili Köşk (Tiled Pavilion) Museum in Istanbul. It resembles the mihrab of the Green Mosque in Bursa [6]. *) The mosque of Vizier Shah Melek Pasha (832 AH./1429AD.) [31,32] in Edirne has Cuerda Seca ceramic tiles [21,31] decorated with lancolate leaves, multi-petaled flowers, and trifoliate leaves in turquoise, white, and yellow [24]. In terms of manufacturing and decoration, this frame resembles the ceramic frame in the qibla iwan of Al-Muradiyya mosque in Bursa, suggesting that they were produced in the same workshop, figs. (7-a & b).

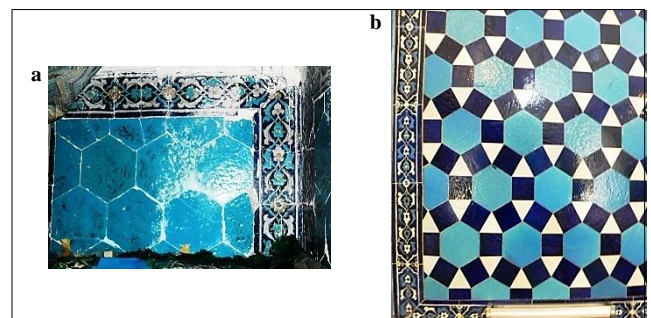


Figure (7) **a.** ceramic tiles in Shah Malik Pasha Mosque, Edirne, 832 AH./1429 AD., **b.** detail of ceramic tiles in Al-Muradiyya mosque in Bursa 828-830 AH./1424-1426 AD.

*) Ceramic tiles were used in the Three Balconies mosque in the center of Edirne [5], which was founded by Sultan Murad II in 841-851 AH./1437-1447AD [33]. The mosque is a new

model of Ottoman architecture in terms of its general layout, in its developed design of the domed mosque style [34] or having the sanctuary instead of the external portico (rewaq) [5,35]. It was the first mosque with three minarets [36] and was named the Three Balconies mosque because its tallest minaret (67.75 m high) had three balconies [1], which was only surpassed 127 years later when the Selimiye Mosque in Edirne reached 70.80 m [37]. Ceramic tiles in the form of two pointed arches, created by Iranian craftsmen [10], are found on the northeastern wall in the courtyard of the Three Balconies mosque. Color differences are manifested in both panels [24], suggesting that they were reassembled in the restoration period in the mid-12th H./8th G. century [38]. The two arches consist of a frame and a main field. The frame is decorated with compartments containing lotus flowers, half-palmettes, multi-petaled flowers [39], and serrated half-saz leaves. The main field features a two-line inscription on a background decorated with modified floral motifs in the Rumi style. The lower line in both panels, inscribed in the Thulth script, reads: "Allāhumma tuqbalu min al-Sultān ibn al-Sultān Murād ibn Muḥammad Khān, O, Allah, accept from the Sultan, son of Sultan Murad ibn Muhammad Khan." The decorations are in cobalt blue on a white background on the first panel and white on a dark blue background on the second panel. Additionally, the upper line is in turquoise Kufic script on the first panel and white on the second panel. In both panels, the text reads: "al-Jannah dār alskhyā/Paradise is the abode of the generous", fig. (8). The mihrab and qibla iwan of Al-Muradiyya mosque in Edirne are decorated in blue and white. Similarly, blue and white ceramic tiles are used in the three Balconies mosque. Several perspectives have been introduced on manufacturing blue and ceramic tiles in Al-Muradiyya mosque. For instance, Tahsin Öz [40] and Oktay Aslanapa argue that these tiles were manufactured in Iznik [1,33], but this has not been validated yet [19]. In contrast, Yarasimos [8], Millner, and Riefstahl [41] suggest that craftsmen from Tabriz, who relocated from Bursa to Edirne, created these tiles. Riefstahl believes that claiming the absence of this style in the decoration of the green mosque in Bursa is inaccurate [30]. The coffin of Siti Hatun in the mau-soleum of Sultan Mehmed I [39] was covered with ceramic tiles decorated with Hatayi motifs in blue on a white background, likely around 854 AH./1450 AD., suggesting they were manufactured in the same workshop [6]. Additionally, blue ceramic tiles on a white background, known in Egypt and Syria in the 9th H./15th G. century, [24] were created by Iranian craftsmen [41]. According to Lane Arther, craftsmen from Syria and Iran manufactured and decorated ceramic tiles in Al-Muradiyya Mosque in Edirne because this type of tiles was not found in the tiles of Al-Muradiyya mosque in Bursa.



Figure (8) underglaze-painted tile panel, northern side of the courtyard, Üç Şerefeli Mosque, Edirne

Comparing Ottoman ceramic tiles in Al-Muradiyya mosque in Edirne with the Iranian and Mamluk ceramic tiles in Syria and Egypt illustrated that: -) A mihrab originally from the Imami school in Isfahan, Iran, currently preserved in the Metropolitan Museum [42,43] is covered with ceramic mosaics with inscriptions in Thuluth and Kufic scripts, geometric patterns, and floral motifs in blue, white, and brown. It resembles the mihrab of Al-Muradiyya Mosque in Edirne in terms of decorative style. Both mihrabs feature inscriptions in Kufic and Thuluth scripts but differ in text and manufacturing technique. While the mihrab of Al-Muradiyya mosque in Edirne was constructed using the Cuerda Seca technique, the mihrab of the Imami school was constructed using ceramic mosaics. -) Blue and white ceramic tiles with Hatayi decorations under transparent glaze in Al-Muradiyya mosque in Edirne resembled the Mamluk ceramics in Syria and Egypt in the first half of the 9th H./15th G. century [24]. Ceramic products, including vessels and containers, were diverse in Damascus in the 8th H./14th G. century, but ceramic tile production was poor and limited to one color, i.e., turquoise. Timur invaded Damascus and Aleppo in 803 AH./1400 AD. and most of Anatolia in 804 AH./1401-1402 AD. He recruited Syrian and Iranian craftsmen to develop the capital, Samarkand [39]. After the return of Syrian and Iranian ceramic craftsmen, blue and white tiles made in the Ottoman and Mamluk states spread in the 2nd quarter of the 9th H./15th G. century [44]. Thanks to the increased contact between Mamluks and Ottomans in the reigns of Sultan Mehmed I and Murad II, craftsmen moved, and trade revived between the two kingdoms. However, the presence of tiles in archaeological sites usually leads to the conclusion that tiles were produced at the site because of the person who commissioned them. -) Blue and white tiles decorated with Hatayi motifs appeared in Cairo and Damascus and resembled those in Al-Muradiyya Mosque in Edirne [24,45]. Signatures are decisive evidence, pointing to Tabriz. The largest collection of blue and white ceramic tiles from the first half of the 9th H./15th G. century can be found in the Mosque and Tomb of Prince Ghars al-Din Khalil al-Tawrizi (823-825 AH./1420-1423AD.) in Damascus [39]. The work of Ghaibi al-Tawrizi in Damascus equaled the work of Tabriz masters in Bursa and possibly Edirne. Up to 1.5 m high, the lower parts of the walls of al-Tawrizi Mosque were covered with ceramics and decorations of naturalistic floral elements from the Hatayi style [24], a modified bird drawing, water jugs, a prayer rug-like shape filled with inscriptions, including the craftsman's name (made by Ghaibi al-Tawrizi) [39], as well as geometric motifs of hexagonal stars with white endings. Additionally, a tile from the Sayyida Nafisa mosque, currently preserved in the Museum of Islamic Art in Cairo, is signed with the name (Ghaibi) in the center of the reverse and (Ibn Ghaibi) on the obverse [6]. -) Ceramic tiles displayed in the Museum of Islamic Art in Cairo dated to the Mamluk era in the 9th H./15th G. century in Egypt and Syria resembled those of al-Tawrizi Mosque in Damascus and Al-Muradiyya Mosque in Edirne in terms of manufacturing and decorative style.

Egypt and Syria decorated their buildings with hexagonal and square ceramic tiles painted under transparent glaze in blue and green on a white background like Chinese porcelain [24,39]. These tiles featured various decorations of floral branches with flowers, leaves, fruits, and trees, as well as depictions of animals, birds, camels, jugs, ships, and domed buildings in addition to geometric motifs, e.g., stars, triangles, lobbed circles, and polygons. These tiles decorated the walls of religious and civil Mamluk buildings. -) In the Museum of Islamic Art in Cairo, two Thuluth inscriptions of the Shahada (declaration of faith in Islam) are implemented in the mirror style on two tiles. The inscriptions, reading "La ilaha ila Allah" (There is no god but Allah), dated to the Mamluk era in Egypt in the 8th H./14th G. century, are white on a blue background. Mirror inscriptions are found in the mihrab of Al-Muradiyya Mosque in Edirne. Therefore, craftsmen from Syria or Egypt probably collaborated with Iranian craftsmen, who decorated Al-Muradiyya Mosque in Edirne with ceramic tiles. *) The two ceramic panels in the courtyard of Sultan Mehmed II Mosque (868-875AH./1463-1470 AD.) in Istanbul resemble the tiles of Busra buildings in terms of manufacturing and decorative style. They feature inscriptions interspersed with leafy branches and Arabesque decorations in the Rumi style [40]. They resemble the two ceramic panels in the courtyard of the Three balconies mosque in Edirne. The panels in the Fatih mosque are made using the Cuerda Seca technique in blue, white, and yellow [6], consisting of a frame and a main field. The frame is decorated with compartments filled with lotus flowers and plant leaves, while the main field is decorated with inscriptions on a background of modified floral motifs. In both mosques, the inscriptions comprise two lines: The lower in white Thuluth and the upper in the Kufic script. However, they differ in the text: It is a supplicatory text in the Three balconies mosque but remains of a Quranic text in the Fatih Mosque. *) The mosque of Sultan Selim I was built in 929-936AH./1522-1529AD. commissioned by Sultan Süleyman the Magnificent [33]. It contains the earliest examples of Cuerda Seca ceramic tiles [39], consisting of arched ceramic tiles above the windows decorated in Rumi and Hatayi styles, featuring water-crowfoot flowers, multi-petaled roses, and lotus flowers in varying decorative styles in blue (two shades), green, white, and yellow. *) The mausoleum of Sultan Selim I is within the funerary garden attached to his mosque and was commissioned by Sultan Süleyman the Magnificent in 929AH./1522AD. Its façade is adorned with magnificent examples of Iznik tiles decorated with Rumi style, manifesting the Iranian influences in the decorations of the mausoleum and mosque. As the earliest example in Anatolia in the 10th H./16th G. [39] century, the ceramic tiles of the entrance were made in the Cuerda Seca technique. They are decorated with floral motifs and repeated geometric shapes of a frame and a main field. The outer frame is decorated with Rumi and Hatayi motifs, while the main field features star-shaped medallions. The inner frame is adorned with modified multi-petaled flowers and the Chinese cloud (Chi), while

the main field is decorated with the Rumi style and multi-petaled flowers in yellow, green, blue, and white, fig. (9).



Figure (9) the Cuerda Seca panel of tiles with Rumi and Hatayi motifs, star plates, and inscription, Türbe of Selim I 929 AH./1522 AD.

*) The ceramic tiles covering the façade of the Princes' tomb attached to the mosque of Sultan Selim I in Istanbul were made in Iznik. The tomb, which was established in 929-930 AH./1522-1523AD, houses the sons of Sultan Süleyman the Magnificent. On both sides of the entrance are hexagonal ceramic tiles, each centered with a six-petaled blue flower, from which six tri-lobed flowers emerge in alternating blue and green against a dark blue background. The hexagonal tiles are framed by blue mosaic tiles. *) The façade of the Audience Hall (Outer Throne Rooms) of Topkapı Palace features ceramic tiles made using the Cuerda Seca technique outlined in black. The current hall dates to 993AH./1585 AD. in the reign of Sultan Murad III [46], although the original building was built in the reign of Sultan Mehmed II (855-886AH./1451-1481AD.) [47]. The entrance façade is covered with Iznik ceramic tiles [48] dated to the 2nd quarter of the 10th H./16th G. century [49], decorated with modified Rumi and Hatayi motifs, including tri-lobed leaves, multi-petaled flowers, and peony in yellow, green, and turquoise on a blue background. The decorations of these tiles closely match those of the façade of Circumcision Hall in Topkapı Palace, which was established in the reign of Sultan Süleyman the Magnificent (927-974 AH./ 1520-1566AD.) and renovated in 1052AH./1642AD. in the reign of Sultan Ibrahim [50] (1050-1058AH./1640-1648 AD.), fig. (10). The tiles were probably made in one workshop, and they are the oldest in Topkapı Palace [51].



Figure (10) details of tiles on the Circumcision room façade, early 16th century.

*) The best examples of Cuerda Seca ceramic tiles were achieved in the Mausoleum of Shahzade Mehmed in 950AH./1543AD. in Istanbul. They were made in Iznik and featured Timurid Iranian influences. The entrance façade and mausoleum walls were covered with tiles decorated with various inscriptions, floral motifs, and geometric shapes in blue, green, yellow, and turquoise on light green, blue, or turquoise backgrounds. Additionally, the arched space contains Quranic inscriptions from Ayat al-Kursi (Verse of the Chair), and the main field has inscriptions of the Beautiful Names of Allah against a background of Rumi and Hatayi floral motifs, fig. (11).



Figure (11) underglaze-painted tile panel, Türbe of Shahzade Mohamed, 950 AH./1543 AD, Istanbul

3. Results

The artistic and archaeological study of the ceramic tiles of the Al-Muradiyya Mosque's mihrab and comparing them to the mihrab of the Mosque and Tomb of Sultan Mehmed I in Bursa illustrated the following: **a)** The study suggested that the manufacturers of the ceramic tiles in the mihrab of Al-Muradiyya Mosque in Edirne were Iranians who made the ceramic tiles in the Mosque of Mehmed I in Bursa. **b)** The manufacturer achieved appropriateness (ratio) between the dimensions of the mihrab and the prayer hall. **c)** In terms of form, different inscriptions were used in the Al-Muradiyya Mosque's mihrab, including the Thuluth and Kufic scripts in white and yellow. They also differed in terms of content and included Qur'an verses and prayers. **d)** The Hatayi decoration appeared in the niche and spandrels of the arch of Al-Muradiyya Mosque's mihrab. It was also used as a background for inscriptions and decorating geometric shapes and architectural elements. **e)** The ceramic tiles of the Al-Muradiyya Mosque's mihrab were made in Cuerda Seca. They resembled, in terms of manufacturing and decorative methods, the tiles of the mihrab of the Mosque of Mehmed I in Bursa. **f)** The shapes of star polygons in the mihrab of Al-Muradiyya Mosque resembled those of the Green Tomb in Bursa, as they had full star polygons. **g)** In terms of size, the shapes of windows in the mihrab of Al-Muradiyya Mosque resembled those of the Mosque of Mehmed I but differed from the windows of the mihrab of the tomb. **h)** The second frame of Al-Muradiyya Mosque resembled the second frame of the mihrab of the Mosque and Tomb of Mehmed I. They were all decorated with ceramic tiles in the form of muqarnas in yellow. **i)** Various geometric shapes were used in the mihrab, including rectangular frames, star polygons, writing sections, and braids.

4. Discussion

The mihrab of Al-Muradiyya Mosque in Edirne is covered with ceramic tiles decorated with various decorations like the Cuerda Seca ceramic tiles in the mihrab of the Green Mosque and Green Mausoleum in Bursa. The Hatayi decoration in the qibla iwan of Al-Muradiyya Mosque resembles the blue and white ceramic tiles adorning the hexagonal ceramic tiles in the Mosque and Mausoleum of al-Tawrizi in Damascus. The name of the tile maker in Al-Muradiyya Mosque in Edirne was not registered. Still, the significant similarity between the tiles of the mihrab in the Green Mosque and Green Mausoleum and those of the mihrab of Al-Muradiyya Mosque raises questions: Did the same craftsmen or their apprentices make the ceramic tiles in the Green Mosque in Bursa? Where were these tiles manufactured? Was it in a workshop near the buildings in Edirne, imported from a workshop in Bursa or Iznik, or imported from abroad? Did Syrian or Egyptian craftsmen participate in decorating Al-Muradiyya Mosque? No archaeological finds have indicated the names or places of ceramic tile makers in Al-Muradiyya Mosque in Edirne. Thus, there have been several opinions on the craftsmen and manufacturing places. These tiles were probably made locally by Tabriz craftsmen, who manufactured and decorated the Green Mosque and Green Mausoleum in Bursa or possibly imported from Bursa or elsewhere.

5. Conclusion

Patrons, including sultans, senior statesmen, merchants, and craftsmen, played a key role in the development of Ottoman ceramic tiles, especially Cureda Seca, which completely defined the mihrab of Al-Muradiyya Mosque (Andalusian influences). In addition, there were some blue and white tiles in the mihrab and qibla iwan (Chinese influences), and monochrome ceramic tiles used as narrow frames separating the large tiles (Seljuk influences). Ceramic tile production flourished in Damascus, Bursa, and Edirne in the second quarter of the 9th H./15th G. century. Chinese decorations, including the Hatayi and Chinese clouds, appeared on the Cureda Seca ceramic tiles and blue and white ceramic tiles. The name of the Iranian craftsman (Ghaibi al-Tabrizi) appeared on the tiles of the al-Tawrizi Mosque in Damascus and the tiles found in Cairo. Furthermore, signatures of Tabriz craftsmen appeared on tiles in the Green Mosque in Bursa, such as Ali ibn Ilyas Ali al-Tabrizi, who accompanied Timur to Samarkand after his conquest of Iran and Syria. Despite the diverse manufacturing and decorative styles, the tiles of the mihrab in Al-Muradiyya Mosque in Edirne were made simultaneously. The ceramic tiles of the mihrab in the Green Mosque and Green Mausoleum in Bursa are similar in manufacturing and decorative techniques to Al-Muradiyya Mosque in Edirne, confirming manufacturing by the same Iranian craftsmen, despite the absence of their signatures in Al-Muradiyya tiles. The significant similarities between the mihrab of the Green Mosque and the Green Mausoleum in Bursa and Al-Muradiyya Mosque in Edirne revealed that craftsmen from Tabriz probably supervised the manufacturing of the ceramic tiles in Edirne or their apprentices manufactured the mosque's ceramic tiles. These similarities highlight the role of Tabriz craftsmen and the Iranian school in creating the tiles of Al-Muradiyya Mosque's mihrab. Iranian craftsmen played a key role in developing the Ottoman ceramic tiles in the capital cities of the Ottoman Empire, i.e., Bursa, Edirne, and Istanbul. This development was manifested in Bursa in the Mosque and Tomb of Sultan Mehmed I and Al-Muradiyya Mosque, as well as the buildings of Edirne, such as Sahmelek Pasa Mosque and the three Balconies Mosque. In Istanbul, this was shown in the Mosque and Tomb of Sultan Selim I and the tomb of Şehzade Mehmed. Their ceramic tiles followed the Cuerda Seca technique that prevailed from the 9th H./15th G. century to the first half of the 10th H./16th G. century, in addition to the blue-white ceramic tiles that emerged in the first half of the 9th H./15th G. century, especially in Al-Muradiyya Mosque in Edirne.

Endnotes

- (a) The Holy Qur'an, Al Imran (Family of Imran), verses 37-40.
- (b) 1The Holy Qur'an, Al Imran (Family of Imran), verses 16-17.
- (c) 1The Holy Qur'an, Al Imran (Family of Imran), verses 18-19.
- (d) 1The Holy Qur'an, Al-Ahzab, verse 56.

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