A SCIENTIFIC RESEARCH ON AN OTTOMAN SUPERSTITION: DO THE CELADONS CHANGE THEIR COLOR WHEN TOUCHED BY A POISON?

OSMANLI DÖNEMI’NE AİT BİR BATIL İNANCA DAİR BİLİMSEL ARAŞTıRMAMA: ZEHİR SELADONLARIN RENGİNİ DEĞİŞTİRİR Mİ?

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ABSTRACT
This study aims to investigate whether there is a scientific reality within the popular belief of celadon demonstrating the poison. Thus, its use in the Ottoman Empire which contributed to the establishment of significant collection of celadon in the world was taken as the basis of this study. For this purpose, some similar superstitions and poisons in the world were studied. Accessible chemicals especially used in Ottoman Empire were selected and tested for the verification of toxicity with celadons.

It has been understood that the celadon, main subject of this study, is resembled to jade stone which was the most precious stone in early times of Far East and believed to protect from poison. Poisoning is remarkable as it can happen to anyone no matter what class they belong to and this concern was used to earn more money by merchants who took roads between East and West.

Chemical compounds which were used in daily life such as make-up materials were also used as weapons for poisoning in the Ottoman period. When these chemicals were tested with celadon, it has been observed that no color change has occurred. It also has been proved through these experiments that celadons don't protect from poisoning as antecedents thought.

Keywords: celadon, poison, Ottoman pottery, superstition, traditional Turkish pottery, Chinese porcelain, toxic, antidote

ÖZ

Osmanlı Döneminde makyaj malzemesi gibi günlük yaşamda kullanılan, aynı zamanda zehirleme silahı olan kimyasal bileşikler, seladon bünye ile denendiğinde, herhangi bir renk değişimi olmamıştır. Ayrıca bu deneylerle seladonların, ataların düşündüğü gibi zehirlerden korumadıkları anlaşılmıştır.

Anahtar kelimeler: seladon, zehir, Osmanlı seramiği, batılı inanış, çini, Çin porseleni, toksik, tiryak, panzehir.

Fig. 1. Celadon Dish Yuan Dynasty late 13th to early 14th century Topkapi Palace Museum TSM 15/260

1. INTRODUCTION

Many people thrive to describe unidentified events with their beliefs and these beliefs vary in accordance with the cultures of the societies. This study aims to investigate whether there is a scientific reality within the popular belief of celadon demonstrating the poison. Thus, its use in the Ottoman Empire which contributed to the establishment of significant collection of celadon1 in the world was taken as the basis of this study. For this purpose, some similar superstitions and poisons were studied. Accessible chemicals among these ones especially used in Ottoman Empire were selected and tested for the verification of toxicity with celadons by the second author of this paper, Ungsoo Kim, who is a material scientist in Korea, 2013.

2. HISTORY AND GENERAL INFORMATION ABOUT POISON AND POISONING:

“First known poisons were obtained from plants saps, animal venoms and minerals. They were used at the edges of arrows. The Ebers Papyrus is the earliest medical record (circa 1500 BC, that contains definitions of various poisons that contain hemlock (Conium maculatum, baldrıranotu), aconite (Helleborus niger, monkshood, an arrow poison of the ancient Chinese), opium (used as both poison and antidote), lead, copper, antimony (rastık taşı- mascara stone), arsenic, adamotu (Mandragora autumnalis, kankurutan) and Cyanogenic glycosides” (Tunçok 2012: 1). Poisons have become more varied today.

In the studies of Paracelsus (1493-1541), a physician and “Fathers of Toxicology”, is quoted saying that: “All substances are poisons; there is none which is not a poison. The right dose differentiates a poison and a remedy” (Radenkova, 2008: 47). In the history, it can be seen that there were also incidents of poisoning by accident or poisoning caused by unawareness besides deliberate attempts. As the poisonous substance could be used to poison someone itself, its reaction or interaction with another substance also could cause poisoning.

“After the discovery of America, tomatoes were brought to Europe and the well situated folks had plates made of pewter (Candlin, 1981) while others were using wooden trenchers during that times. Pewter plates contained lead about 30% at most. Food with high acid content caused some of the lead to leach onto the food, causing lead poisoning and death. This happened mostly with tomatoes and for the next 400 years or so, tomatoes were considered poisonous. There was indeed a belief that the plant was poisonous, primarily due to its resemblance to belladonna and deadly nightshade” (Yeboah, 2015: 5).

1 “Celadon wares in the Topkapi Saray were nearly all made in the area of Longquan in Zhejiang in 13 th to the late 15 th century” (Krahl, 1986: 233).
As pewter plates, tin free cups\(^2\), lead glazed ceramics (Fralick vd. 2016: 17-18) and silvered plate glass (No Authors -Hints and Notions, 1884: 224) are the other kitchen utensils that have been found out to be poisonous in time.

There are lots of poisoning victims in different cultures and civilizations besides some notable ones as Socrates (399 BC) (Tunçok 2012: 1), Cleopatra (Radenkova 2008: 47), Seljuk Sultan Alaeddin Keykubad (1237) (Redford 1993: 220), Ottoman Sultan Bayezid I (1403) (Sakaoğlu 2010: 60) and Sultan Abdülaziz (1876)\(^3\) are the best known victims among the Turks.

3. SOME OTHER BELIEFS AS POISONING PROTECTORS İN THE WORLD’S HISTORY:

Globally, it can be seen that, some superstitions have also developed along with various antidotes found against poisoning. It is also observed that such beliefs may vary due to geographical and cultural interactions. “For instance, in England during the 15\(^{th}\) century, unicorn horn, coconuts and lodestones were the objects that believed to protect from poison” (Ettlinger 1943: 227-249). In America, almost all gems were believed to have remedial value by Indians. “Sapphire was used as an antidote for poison, and jade as a cure for kidney disease” (Forrest 1951: 122). Precious stones were used for making medicines also in the Ottoman Empire.

“During the early times, in Far East, jade was the most important material that showed the poison besides lots of remedial specialties. Jade is the common term for an extremely hard mineral called nephrite. Ancient Chinese valued jade more than any other gems or stones or even precious metals, including gold. Jade was a symbol of wealth, power, and excellence due to its rarity” (Roberts 2010: 61, For jade Stone's value and usages see also: Chau Ju-kua and others 1911: 90, Hogarth 1999: no page numbers).

Beside Ancient China, it was also important for Central Asia: “The tenth-century polymath al-Biruni noted that the Turks called it the 'victory stone', and decorated their swords, belts and saddles with jade” (The British Museum; (Accessed in August 12, 2014). “In Samarqand the most famous jade piece of all was naturally the tomb of Timur, secured by his grandson Ulugh Beg in 1425” (Pinder-Wilson and Watson, 1960: 19, 21).

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2\(^{\text{\footnotesize{\textendash}and one of these is not to eat the sour food kept in untinned, containers made of copper, which have been kept in there for some time...."}}} (Tuğ, 2000: 107)

3\(^{\text{\footnotesize{\textendash}The English Ambassador said 'It still has a strong smell of chloroform, I could not stay in there for long' after he visited the Sultan” (Akman and others, Kloroform Zehirlenmeleri, Accessed in August 9, 2018).}}

4\(^{\text{\footnotesize{\textendash}A Jade Cup Inscribed With The Name Ulugh Beg Gurgan. Chinese or Central Asian. Early 15th century” (Wilson and Watson, 1960: 23; See also: 100 Objects British Museum, Jade Dragon Cup; (Accessed in July 20, 2018).}}

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Fig. 3. Gold bowl, with bezoar stone attached. Russo- Islamic. Thirteenth Century. (Born 1936: 269)

Bezoar stone was also one of the protection items used against poison in Far East⁵ and Europe⁶. “The bezoar stone is a concretion that forms in the stomach or intestines of many animals, including goats, deer, horses and cows. The stones were placed in drinks to determine if they had been poisoned. In addition, they were also powdered and swallowed to protect people from poison” (Webster 2008: 29, Ferrier 1976: 201).

In addition to these, in the past—and even today, in Europe and Asia, the rhinoceros horn was believed to be effective in protecting people from poisoning besides being a preferred container material for beverages or drinks amongst the executive authorities⁷. “Popes and kings used to carry rhino-horn cups with them as poison detectors. Legend has it that poisoned drinks would cause the cup to explode” (Raloff 1979: 347). Rhinoceros are still being killed for these kinds of superstitions (Milliken and Shaw 2012).

Arab historian Masudi (896-956) says that, in his time, “there was a great trade in rhinoceros horns with China from Rahma in India….. Asiatics believe that rhinoceros horn detects the presence of poison, as tortoise-shell” (Chau Ju-kua1911: 233, 238). Tortoise shell, which was among several items of trade either produced or sold in Lambria, was believed to be capable of detecting poison. Tortoise shell has been imported into China for about two millennia where it is used extensively for decorative purposes (McKinnon 1988: 113).

During Ottoman Empire, there was another fired clay wares besides celadon used as a protector. “It was determined by the researches of Julian Raby that Ottomans import clay from Limni Island, which was against the poisoning, shaped by the potters of Istanbul- Eyeü. However, the speciality of these vessels suggests that they are not sold in the regular market. The presence of such small jugs in the European palaces (Tin-i Mahtum) indicates that they were sent as gifts by the Ottomans⁸ (Yenişehirlioğlu 2012: 86).

4. BEGINNING AND REASONS OF RELATION BETWEEN CELADON AND POISON:

Celadon, the subject of this study which is a type of a Chinese porcelain produced before the blue-white colored ones, is believed to have protective powers against poison. However, it cannot be proved when this belief first originated.

Chinese porcelain was preferred in the West as it was a porcelain product. They were first used in the Near East in the 9th century (Lane 1948: 3, Meade and others 1968: 170, Raby 1986: 55, Hobson 1909: 164). Ottomans started using in the 15th century (Raby and Yucel 1986: 28), Europe started by the end of the 13th century, thanks to Marco Polo (Sadberk Hanım Museum Collection, 1995: 117) and as gifts from the East⁹.

However it gained popularity in Europe with the efforts of the Dutch East India Company established in 1609 (Küçükerman 1987: 20).

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⁵ “In Malabar, the mo-so Stone (bezoar stone), worn in a finger-ring, if one is poisoned and licks it, one is at once cured; so it may well be considered as a life preserver”(Ju-Kua and others, 1911: 90).

⁶ “...there is no doubt that gold bowl (the Asiatic work of the fifteenth century and has two handle of European baroque work and a bezoar stone is attached by a chain) was used at one of the courts of the Renaissance, the table-ceremonies of which were dictated by the fear of poison…….” (Born, 1936: 273).

⁷ “Another interesting survival is a large celadon dish in the Museo degli Argenti, Florence, traditionally said to be presented to Lorenzo de’ Medici by the Sultan of Turkey” (Lighthoun, 1969: 229).

⁸ “In 1665: “The gravest mandarins of China, for greater splendour and pomp on the tables they set before their guests and at banquets do not give bowls of glass to drink from, but only cups with graceful carvings of the hard horn of the rhinoceros, esteeming that wine drunk in those will make men drink more freely and with more enjoyment that he who drinks there is free from all suspicions of poison…….” (Lightbourn, 1969: 261; See also: Ettlinger, 1943: 229).

⁹ “Another interesting survival is a large celadon dish in the Museo degli Argenti, Florence, traditionally said to be presented to Lorenzo de’ Medici by the Sultan of Turkey” (Lighthoun, 1969: 229).
Ottomans preferred porcelain amongst all types of earthenware for prestige besides the other reason rooted in the religion of Islam\(^9\). Apart from these two reasons, the first document proving its use for protection from poison is from the period of Sultan Selim II (1566-1574) (Gerlach 2007: 401-402).

In Europe, it is possible to conclude that the belief that items such as rhinoceros horn, bezoar stone and celadon detecting poison was spread by the European merchants of the 16\(^{th}\) century for promotion purposes, so that these items were widely recognized in Europe. “…because of the difficulties connected with obtaining the porcelain from Chinese by Dutch East India Company (1602), in order to enhance the value of their wares, they told all kinds of fabulous stories about the materials. They pretended that bones, fish-scales marine shells, egg-shells and other substances were employed…..They claimed all kinds of wonderful properties for the manufactured articles, for instance, that in their extreme delicacy, the fragile drinking cups were so sensitive to poison, that its contact would cause them to shiver into a thousand pieces or in other cases would produce a bubbling motion in the center of the liquid” (Haywood 1890: 79).

It can be seen that the thought that the merchants have fabricated this superstition to make more sales was prominent in Paris in 1557.”…We shall add a fourth created by the superstition and imposture of merchants. For they say that it cannot bear poison, but breaks apart. …”\(^10\)

Although the resources show that in Europe, unlike the Ottoman Empire and Iran, Chinese porcelain was mostly used for decorative purposes (Carswell 2000: 129). It could be stated that another reason to prefer celadon that it was a healthy alternative to the unhealthy and fatal tableware, such as pewter used by the aristocracy in Europe.\(^11\) In the Ottoman Empire, pieces of Chinese porcelain were collected to be used (Raby and Yücel 1986:27).

People were interested in celadon as it resembled the precious jade stone\(^12\) in the East, unlike the Western societies and the belief concerning its protective powers against poison belonged to the Western people. “It is very instructive that this belief is only reported from Indonesia, the Malay Peninsula, India, Persia, and Egypt, where celadon was regarded as a rarity, but not from China where celadon was made” (Ettlinger 1943: 229).

It can be seen that poison is a material drawing public interest. For example: “…by the end of the 19\(^{th}\) century, cases of poisoning in the United States were so common, that it could be said that people were afraid of poisoning as it was an epidemic illness. Although, only one percent of the homicide cases submitted to courts were related to poisoning, the media took an interest in these cases, especially the ones related to women poisoning their husbands. In the mid 19\(^{th}\) century, the panic caused by the incidents of poisoning in England, the main concern of the public was the women committing homicide with this method” (Aykut 2010: 60).

It can be observed that this effect of poison, the ability to intrigue people, has been used in modern days especially in the announcements of exhibitions\(^13\) concerning Chinese porcelain or Ottoman artifacts for years (Savage 1961: 47). However, researchers as John Carswell, believe that it is redundant to repeat this interesting information in recently published books.“ ……and it is sad to have repeated once again the old, mistaken tale that nervous sultans thought they could detect poison by having their dinner served on celadon dishes……”(Carswell 1996: 146). It is inevitable not to agree with John Carswell. Today, this attention on poison still continues. An exhibition on poison titled “The Power of Poison” took place at American Museum of Natural History between November 2013 and August 2014 (American Museum of Natural History; (Accessed in July 26, 2018).

5. POISONS USED DURING THE PERIOD OF OTTOMAN EMPIRE:

This study aims to examine if some plants and minerals with high poisoning characteristics used by the Ottomans as a part of their daily lives chemically react with celadon. As the poisons are not in our occupations, names and information of poisons used during the period of Ottoman Empire were transferred

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\(^9\)"Prophet Muhammad: Do not drink from gold and silver vessels and do not eat from gold and silver plates, because indeed they are for them in this world and for you in the Hereafter. A person who drinks or eats from a silver or golden dish merely swallows into his stomach the fire of Hell” (Sahih-i Bahari Muhtasarı Tecrid-i Sarh, 2004: 700, 712; See also: Pala, 2012: 34-50).

\(^10\) Quote from “J. C. Scaliger, Exotericarvm Exercitationvm Liber Quintvs Decimus, de Sibiutilitate, ad Hieronym-mvm Cardamvm, Paris, 1557”(Lighthown, 1969: 231); “Drinking from a porcelain cup was thought to provide protection from arsenic, mercury, and aconite, a poisonous plant” (Gleeson, 1998: 51).

\(^11\) For the effects of wooden and unglazed earthenware vessels, see: Janse, 1944: 37.

\(^12\)’’... the origin of the colour was a desire to make imitations of jade vessels in this material, a greenish gray being the c

\(^13\) For example newspapers see: Wilson William, 1992; Eyman Scott, 2010; Righter Rosemary, 1996.
from the publications constituted by documents, without any evaluation. We have not encountered a scientific study carried out for the belief on celadon changing colour when touched by a poison.

In the Ottoman Empire, poisonous ingredients were parts of the daily life as used for various purposes (Kocacik ve Mat 2014: 21-38). Medicines and poisonous substances were freely produced and sold by unqualified doctors and pharmacists, street vendors, herbalists (aktar), root sellers (kökcü), paste makers (Macuncu) etc. In addition to the professional pharmacists and pharmacies, as a result, a lot of cases occurred where the common people were accidentally poisoned. “Thus, in the Ottoman Empire during the 19th century, herbalists and root sellers were restrained from selling poisonous substances such as fish berry (balık otu, Anamirta cocculus), wormseed (Horasani, Artemisia cina), black hellebore (karaçöpleme, Helleborus niger), Jimson weed (Tatula otu, Datura stramonium) (Disel and the others 2015: 51-55), cantharides (kunduz böceği), semen strychni (Cevzü’l-kay, Strychnos nux-vomica L.), colocynth (Ebüechil karpuzu, Citrullus colocynthis) and blue vitriol (gözoTaşı) (Yıldırım, 2009-2010: 273- 283)\(^4\). Corrosive sublimate and arsenic were the most commonly used poisons. Both poisons were available in herbalist as they were used in daily life for different purposes. For example, corrosive sublimate (aksülümen), which composes of mercury and chlorine (Gümüşatam 2010: 1070), was a substance used in cosmetics (Aykut, 2016: 117)\(^5\) highly demanded by the Ottoman women to make their skin lighter. Arsenic (siçanotu), in some cases mentioned as “semm-ül-fâr” in the documents, was used to kill rats and also as a medicine applied on the scalp to remove lice” (Aykut 2010: 59).

In the Ottoman Empire, poisoning was a commonly preferred method of murder as it was easily accessible and according to the laws, the penalty for murdering someone by poison was not too severe, as the victim could choose not to drink/eat the poisonous substance. “……..a poisoner is liable only when he forces the poisonous substance down the victim’s throat, not when the victim consumes the poison voluntarily. The basic rule, therefore, is that a poisoner is not liable for diya if his victim consumes the poison voluntarily with his own hand……..the poisoner's victim has the option not to consume the poison” (Imber 1994: 206, 214). “Also, as poison was not a weapon primarily designed to kill, person who committed homicide by poison was not tried for premeditated murder” (Aykut 2010: 64).

The poisonous substances used in this study have been obtained from two publications\(^6\) serving as documents related with the Ottoman Palace. First reference is included in the drug names dictionary, (RT=): Ramazan Tuğ, Poisons and antidotes according to Gunyetü’l Muhassilin and an 18th century Ottoman pamphlet\(^7\). The second reference is included in collection of various resources and documents (AB=): Arif Bilgin, titled The herbs used to make medicine in the Ottoman period\(^8\). The names of the plants given in these two resources were compared with the toxic plant names \(^9\) published by the “Turkish Ministry of Agriculture and Rural Affairs General Directorate of Protection and Control”, and with the plants which also have poisonous characteristics used in the daily life of the Ottomans for various purposes. In the table below, the name of the plant in Latin has been given in the first column, the name of the plant or substance in Turkish has been given in the second and the abbreviation of the reference’s (as RT or AB), page numbers and the various names used in the references has been mentioned in the third column. The poisonous plants and minerals used during the period of Ottoman Empire are as follows:

<table>
<thead>
<tr>
<th>Name of the plant in Latin</th>
<th>Name of the plant in Turkish</th>
<th>Reference and the other name used in the publication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adonis vernalis</td>
<td>Keklik gözü</td>
<td>AB:9, Aynü’l-hacel</td>
</tr>
<tr>
<td>Anchusa officinalis</td>
<td>Siğirdili</td>
<td>AB: 14, 11.Lisân-ı sevr</td>
</tr>
<tr>
<td>Anamirta cocculus</td>
<td>balık otu</td>
<td>AB: 14</td>
</tr>
<tr>
<td>Aristolochia rotunda</td>
<td>Zeravend-i Mâdevver yuvarлak zeravent:</td>
<td></td>
</tr>
<tr>
<td>Artemisia cina</td>
<td>Horasani, aci pelin, vermut</td>
<td>AB: 12 Horasâni</td>
</tr>
</tbody>
</table>

\(^{16}\) Copper (II) sulfate, also known as cupric sulfate or copper sulphate was used as an emetic in the past (causing vomiting).”Aksülümen, A Poison of Ottoman Times; (Accessed in February 6, 2018); (Karlsson and Noren, 1965: 331)

\(^{15}\) in Aykut’s manuscript (2016) says aksülümen as ceruse…. “White lead” p. 117, but most authorities say that Aksülümen is Hg₂Cl₂, for example see: Erker and Güngörün, 2013: 36.

\(^{14}\) For plant names used in Anatolia at the end of 15th century see: Gürlek, 2011: 123- 145.

\(^{12}\) Tuo, 2006:144-148. (= RT)

\(^{13}\) Bilgin, 2006: 9- 17. (=AB)

\(^{11}\) Köç, “Zehiri Bitkiler Listesi”, (accessed February 6, 2018)
<table>
<thead>
<tr>
<th>NAME OF THE SUBSTANCE</th>
<th>IN LATIN</th>
<th>NAME OF THE SUBSTANCE IN TURKISH</th>
<th>REFERENCE AND THE NAME USED IN THE PUBLICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asarum europaeum (Rhizoma asari)</td>
<td>Ezarun, kedi otu, avşar otu, çetük otu, çoban düüğü (kökü)</td>
<td>AB: 11 Esarûn</td>
<td></td>
</tr>
<tr>
<td>Bryonia dioica</td>
<td>RT: 145 Faşera</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alisma plantago-aquatica</td>
<td>Deniz mumyası, kazayağı</td>
<td>AB: 13 Kafî’l-yehûd</td>
<td></td>
</tr>
<tr>
<td>Chenopodium album</td>
<td>Kazayağı</td>
<td>AB: 13 Kasabü’z-zerîre</td>
<td></td>
</tr>
<tr>
<td>Citrullus colocynthis (L.), Schrader (cucurbitaceae)</td>
<td>acıkarpuz</td>
<td>RT: 145 Hanzal</td>
<td></td>
</tr>
<tr>
<td>Citrullus colocynthis</td>
<td>Hanzal, Ebûcehil karpuzu, acı elma</td>
<td>AB: 12 Hanzal</td>
<td></td>
</tr>
<tr>
<td>Convolvulus scammonia</td>
<td>Mahmude otu, yer pelidi, Mahmûde</td>
<td>AB: 14, RT: 146</td>
<td></td>
</tr>
<tr>
<td>Cordia mixa</td>
<td>Sibistan, it memesi, Acem eriği, Mısır nabkı.</td>
<td>AB: 15 Mevîzec</td>
<td></td>
</tr>
<tr>
<td>Datura stramonium</td>
<td>Tatûre, Tatula otu, şeytan elması</td>
<td>AB: 16, RT: 147</td>
<td></td>
</tr>
<tr>
<td>Daphne mezereum</td>
<td>Dafne, mezeryon, gulapa</td>
<td>AB: 14 Mâzeryun</td>
<td></td>
</tr>
<tr>
<td>Delphinium staphisagria</td>
<td>Mezvek otu, bit otu, mezevek, kokar ot, dağ üzümü</td>
<td>AB: 15 Serahs</td>
<td></td>
</tr>
<tr>
<td>Dryopteris filix-mas</td>
<td>Eğrelti otu, serhas</td>
<td>AB: 15 Serahs</td>
<td></td>
</tr>
<tr>
<td>Ecballium elaterium</td>
<td>Eşek hıyarı, karga düleği, acı dülek</td>
<td>AB: 14 Kıssâü'l-hımâr</td>
<td></td>
</tr>
<tr>
<td>Helleborus orientalis Lam.</td>
<td>Kara harbak</td>
<td>RT: 146</td>
<td></td>
</tr>
<tr>
<td>Helleborus niger</td>
<td>Siyah boyuz otu, kara çöpleme, karaca, ot, kış gülli, kaplan boğan</td>
<td>AB: 12 Harbak [ç]-esved</td>
<td></td>
</tr>
<tr>
<td>Heliotropium europaeum</td>
<td>Bambul otu, siğil otu, aygün çiçeği</td>
<td>AB: 10 Banbal otı</td>
<td></td>
</tr>
<tr>
<td>Hyoscyamus albus</td>
<td>Beyaz ban otu</td>
<td>AB: 9 Ak benç</td>
<td></td>
</tr>
<tr>
<td>Juniperus communis</td>
<td>Kara arduç</td>
<td>RT: 146</td>
<td></td>
</tr>
<tr>
<td>Lithospermum officinale</td>
<td>Göz darısı, taşkesen otu, inci otu,</td>
<td>AB: 12 Gözgü tarusı</td>
<td></td>
</tr>
<tr>
<td>Lycium europaeum</td>
<td>Karpuz, dikenli karpuz, karpuz, zeybek, zeybek düğümü</td>
<td>AB: 12 Harbak-t-ebayz</td>
<td></td>
</tr>
<tr>
<td>Nitrum, sal petrae Kalium nitricum, nitrax kalium, nitras kalicus, nitras potassicus, nitrim, sal nitrum, kalium nitricum,</td>
<td>Burç, Gökçe, ökse, purç bitkisi</td>
<td>AB: 11 Dıbk</td>
<td></td>
</tr>
<tr>
<td>Solanum nigrum</td>
<td>İt üzümü, köpek üzümü İnebü’s-sal’eb (tilki üzümü)</td>
<td>AB: 13, RT: 146</td>
<td></td>
</tr>
<tr>
<td>Strychnos nux-vomica</td>
<td>Kargabüküne ağacı (meyvesi)</td>
<td>AB: 10 Cevzü’l-kay</td>
<td></td>
</tr>
<tr>
<td>Teucrium chamaedrys</td>
<td>Yer meşesi, yer palamudu, k.CreateCommand, dalak otu, kemedris, hamadre</td>
<td>AB: 13 Kemâderyus</td>
<td></td>
</tr>
<tr>
<td>Urginea maritima</td>
<td>Ada soğanı, unsul, ancel, yaban soğanı</td>
<td>AB: 10 Basalû’l-unsul</td>
<td></td>
</tr>
<tr>
<td>Viscum album</td>
<td>Burç, Gökçe, ökse, purç bitkisi</td>
<td>AB: 11 Dbdk</td>
<td></td>
</tr>
</tbody>
</table>

NAME OF THE SUBSTANCE IN TURKISH

NAME OF THE SUBSTANCE IN LATIN

REFERENCE AND THE NAME USED IN THE PUBLICATION:

Nitrum, sal petrae kalium nitricum, nitrax kalium, nitras kalicus, nitras potassicus, nitrim, sal nitrum, kalium nitricum, | Bure (burak, borax, güherçile) | RT: 145 |

S: sulphur, sülfür. | Kükürd (kibrit) | RT: 146 |
6. TESTS FOR THE VERIFICATION OF TOXICITY WITH CELADONS:

Among the toxic materials listed in the table above, relatively easily accessible chemicals were selected and tested for the verification of toxicity with celadons. Celadon samples were prepared using the clay body and glaze from Gangjin, Korea. Gangjin is one of the two major cities produced Korean celadons between 10th and 13th centuries. The chemical compositions of the clay body and glaze are shown in Table 1. Clay bodies were dried and pulverized to powder using an auto pestle. The powder was pressed into bar shape using a uniaxial press. Pressed samples were fired at 900°C, and then re-fired under reducing atmosphere at 1250°C after glazing.

Test solutions were prepared using five chemicals including PbO₂, As₂O₅, CuSO₄, Fe₂(SO₄)₃, and HgCl₂. 10 grams of each chemical were fully dissolved in 50 ml of deionized water for 24 hours. Three celadon samples were immersed in each test solution for time interval and inspected for colour variation using a spectrophotometer (CM-700d Minolta, Japan). The averaged CIEL*a*b* values among three samples were summarized in Table 3.

The series of experiments indicate no sign of colour change in celadon samples stored in the chemical solutions. Minor fluctuations in CIEL*a*b* values are shown for celadon samples, but no drastic change has appeared.

![Fig.4. Celadon samples immersed in the test solutions.](image)
Fig. 5. Celadon samples after being immersed in the test solution for time intervals.

Table 3. Color variation of celadon samples after being immersed in the test solutions.

<table>
<thead>
<tr>
<th></th>
<th>L*</th>
<th>a*</th>
<th>b*</th>
<th>L*</th>
<th>a*</th>
<th>b*</th>
<th>L*</th>
<th>a*</th>
<th>b*</th>
<th>L*</th>
<th>a*</th>
<th>b*</th>
<th>L*</th>
<th>a*</th>
<th>b*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pb₂O₃</td>
<td>54.48</td>
<td>-7.74</td>
<td>5.30</td>
<td>55.72</td>
<td>-7.07</td>
<td>5.12</td>
<td>55.64</td>
<td>-7.27</td>
<td>5.24</td>
<td>55.78</td>
<td>-7.33</td>
<td>5.26</td>
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<tr>
<td>As₂O₅</td>
<td>56.15</td>
<td>-6.74</td>
<td>5.22</td>
<td>55.45</td>
<td>-7.35</td>
<td>5.09</td>
<td>56.53</td>
<td>-6.07</td>
<td>5.20</td>
<td>56.83</td>
<td>-6.19</td>
<td>4.94</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CuSO₄</td>
<td>56.20</td>
<td>-6.63</td>
<td>5.05</td>
<td>55.06</td>
<td>-5.77</td>
<td>4.83</td>
<td>56.15</td>
<td>-6.60</td>
<td>5.03</td>
<td>55.18</td>
<td>-8.20</td>
<td>4.91</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Fe₂SO₄</td>
<td>56.23</td>
<td>-7.24</td>
<td>5.29</td>
<td>55.52</td>
<td>-7.38</td>
<td>5.33</td>
<td>56.02</td>
<td>-7.04</td>
<td>5.48</td>
<td>55.45</td>
<td>-7.62</td>
<td>5.01</td>
<td></td>
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</tr>
<tr>
<td>HgCl₂</td>
<td>57.23</td>
<td>-5.65</td>
<td>5.00</td>
<td>55.38</td>
<td>-6.36</td>
<td>4.80</td>
<td>55.83</td>
<td>-7.58</td>
<td>5.12</td>
<td>56.79</td>
<td>-5.43</td>
<td>5.33</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7. CONCLUSION

We can conclude based on these documents that the superstitious belief of celadon changing colour when touched by poison is a myth. And this myth emerged in Europe or in Ottoman Empire during the 16th century and supported by the Dutch East India Company’s merchants during 17th century to make celadons more popular and valuable. The belief in jade stone in early times of Far East with its ability to protect from being poisoned must have affected the West due to the resemblance between celadon and jade stone.
It can be seen that, human beings try to solve certain problems that cannot be solved scientifically through faith. Creating a myth and gossip may be the fastest methods to disseminate information. Poisoning is remarkable as it can happen to anyone no matter what class they belong to. It is seen that celadon has gained popularity as a result of information dissemination which was developed against poisoning, simply by gossiping to earn more. It has been proved that there is no scientific truth in the fact that celadon protects from poisoning as a result of the experiments conducted at the end of this study.

**BIBLIOGRAPHY**

**Published Works**


Bilgin, Arif. Osmanlı Döneminde İlaç Yapımında Kullanılan Tibbi Bitkiler (The herbs used to make medicine in the Ottoman period), Osmanlılarda Sağlık:1.p.9- 17, 2006.


Forrest, James T. Folk Medicine, Midwest Folklore: 1.2, p.121-123, 1951.

Fralick, Michael MD and Thomspson, Aaron MD MPH and Mourad, Ophyr MD MSc, Lead Toxicity From Glazed Ceramic Cookware, CMAJ, 188, p. 17-18, 2016.


No Author. Hints and Notions, The Decorator and Furnisher: 4. 6, p. 221-228, 1884.


Sadberk Hanım Müzesi Kataloğu, İstanbul: Vehbi Koç Vakfı Yayını 1995.


Yeboah, Anthony Kwasi. *A Survey On Postharvest Handling, Preservation And Processing Methods Of Tomato (Solanum Lycopersicum) In The Dormaa And Tano South Districts Of The Brong Ahafo Region Of Ghana*, (Master of Science Degree Thesis), Ghana: Kwame Nkrumah University Of Science And Technology Institute Of Distance Learning, 2011.


**Online Resources**

100 Objects British Museum, Jade Dragon Cup; (Accessed in July 20, 2018)
https://sites.google.com/site/100objectsbritishmuseum/home/jade-dragon-cup

Akman Prof.Dr. Süleyman, Özcan Doç.Dr. Mustafa, Çavuşlar Özge, Kansu Ayşe, Yeşildağ Anıl Ayşe, Malçok Nur: “Kloroform Zehirlenmeleri”, *Istanbul Technical University Faculty of Arts and Sciences*, Notes from the Forensic Chemistry Course.vital Articles on science; (Accessed in August 9, 2018)

Aksülümen, A Poison of Ottoman Times;(Accessed in February 6, 2018)
http://maviboncuk.blogspot.com/2012/08/aksulumen-poison-of-ottoman-times.html

American Museum of Natural History; (Accessed in July 26, 2018)
https://www.amnh.org/exhibitions/the-power-of-poison/

http://www.bahcebitkileri.org/tag/zehirli-bitkiler

British Museum; (Accessed in August 12, 2014)
http://www.britishmuseum.org/explore/highlights/highlight_objects/me/j/jade_dragon_cup.aspx


Veggie Cage, “Tomato History”, (Accessed in February 6, 2018)
http://www.tomato-cages.com/tomato-history.html,

**Newspapers**


