

# A historical and nutrition-dietetic analysis of food consumption habits in ottoman culinary culture in the light of travel books

Mert AĞAOĞLU<sup>1</sup>, Büşra AYAZ<sup>2</sup>, Yurdagül AYAZ<sup>3</sup>, Mustafa YAMAN<sup>4\*</sup> 

## Abstract

This review uses an interdisciplinary perspective to examine the eating habits of the Ottomans through the information conveyed in the works of western travelers who came to the Ottoman territory. Travel books, which are the primary sources for Ottoman history, were used to analyze the food consumption habits in Ottoman culinary culture. The impressions of western travelers were taken directly and displayed in quotation marks. Then, within the knowledge of the literature, the Ottoman food culture was interpreted in the context of nutrition and dietetics. During the period of the Ottoman Empire we can see that honey was used as a sweetener in desserts, that barley and rye were preferred in bread making, and half-baked bread, which was traditionally consumed in the Ottoman food culture, was enjoyed. According to the travels books, vegetables, grains, meat, dairy products, and olive oil were among the most consumed foods. The Ottoman Empire incorporated different factors and brought together a unique new culture. As seen, The Ottoman cuisine, which incorporated food from different cultures, owes its wealth to the innovations it developed within its social dynamics. According to travel books, healthy food and nutrition were at the forefront in the Ottoman period.

**Keywords:** Ottoman; culinary; culture; food; nutrition.

**Practical Application:** This review uses an interdisciplinary perspective to examine the eating habits of the Ottomans through the information conveyed in the works of western travelers who came to the Ottoman territory.

## 1 Introduction

Ottoman culinary culture played a major role in the Ottoman Empire. Throughout history, individual societies have created new cultures as people are constantly moving from place to place. The Ottoman Empire incorporated many different peoples and brought together a unique new culture by bringing these people together (İnalçık, 2014).

The origin of the word culture, which has passed into our language from French, is the Latin word “cultura” (Kabağaç & Alovera, 1995). Culture, as a word, means cultivation and agriculture. In another definition, culture is defined as all material and spiritual values that society has produced and created during throughout history. Society and geographic environment are needed for the formation of culture. Language, religion, eating and drinking habits, clothing, music, literature, and art are the main elements that constitute a culture. Cultural interaction and exchange occur during societies’ encounters due to trade relations, wars, and migrations. Civilization is the upper and most inclusive level of a culture that rises on robust, vibrant, and dynamic foundations. The most basic elements for a civilization are a settled life, cities, organized society, and a tradition of written literature. In addition to all these, an important indicator of civilization is a developed culinary culture. The Ottoman cuisine, which consists of influences from different cultures,

owes this wealth to the innovations it has developed within its diverse social dynamics (Gürsoy, 2013).

Pastry and meat were dominant in the culinary culture of the Pre-Islamic Ancient Turks who came from the nomadic steppe culture. After the Turks settled in Anatolia, they were introduced to vegetables and seafood through the settled Greek community. Therefore, the names of fish and vegetables have passed from Greek to Ottoman and into modern Turkish. Some of these names were taken as they are, and some of them were adapted to Turkish to be more suitable in terms of pronunciation (for example; mullet, horse mackerel, lobster, sea bream, sea bass, bluefish, mackerel, bonito, broad beans, cabbage, spinach, beans, artichoke, parsley). At the same time, the words *Kebab* (Figure 1) and *lahmacun* (Figure 2) apart from the words that are transmitted from Greek, have been transferred from Arabic as a result of contact with Arabs; and the words rice, eggplant, and meatballs came from Persian (İnalçık, 2002). This study uses an interdisciplinary perspective to examine the eating habits of the Ottomans through the information conveyed in the works of western travelers who came to the Ottoman territory. Travel books, which are the main sources for Ottoman history, were used as a basis, as well as other books and articles.

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<sup>1</sup>Department of History of Arts, Faculty of Arts and Sciences, Sakarya University, Sakarya, Turkey

<sup>2</sup>Department of History of Arts, Institute of Social Sciences, Istanbul University, Istanbul, Turkey

<sup>3</sup>Şehit Binbaşı Bedir Karabıyık Multi-Program Anatolian High School, Istanbul, Turkey

<sup>4</sup>Department of Nutrition and Dietetics, Faculty of Health Sciences, İstanbul Sabahattin Zaim University, İstanbul, Turkey

\*Corresponding author: mustafayaman1977@gmail.com



Figure 1. Turkish kebab.



Figure 2. Lahmacun.

## 2 Details on Ottoman culinary culture from the language of western travelers

### 2.1 Honey desserts

Tobacco is in large glass jars in tobacco shops. These look like jars filled with almond sugar in candy shops. It is sold in ice cream. There are shops selling honey desserts and halva (Figure 3) (a type of flexible honey gelatin) (Flaubert, 2016, p. 284).

As honey is rich in functional compounds, it was added to the content of a variety of desserts consumed during this period. Due to the variation of botanical origin honey contains small amounts of proteins, enzymes, amino acids, minerals, trace elements, vitamins, aroma compounds and polyphenols. In most ancient cultures, honey was used for both nutritional and medicinal purposes. An alternative medicine called apitherapy has developed in recent years and offers treatments based on honey and other bee products against many diseases (Alvarez-Suarez et al., 2010). Honey is very rich in polyphenols and the main ones are flavonoids, phenolic acids, and phenolic acid derivatives. These are compounds known to have antioxidant properties (Pyrzynska & Biesaga, 2009). Honey has numerous nutritional and biological effects such as antimicrobial, antiviral, antiparasitic, anti-inflammatory, antimutagenic, anticancer and immunosuppressive activities. Different clinical nutritional studies have confirmed various effects after honey ingestion, such as



Figure 3. Halva.

enhanced gastroenterological and cardiovascular health. Prophet Muhammad recommended honey against diarrhea in hadith books. In many clinical studies, honey application has been reported for the prevention and treatment of gastrointestinal disorders such as peptic ulcer, gastritis, gastroenteritis (Bogdanov et al., 2008). An increase in hemoglobin content and a better skin color were seen when infants were fed honey instead of sucrose (Takuma, 1955).

In the evening, we fill our stomachs with beautiful melon, lots of thyme and honey, flour butter and a kind of dark dough pudding made of confectionery (Flaubert, 2016, p. 290).

The habit of consuming thyme for Turks is due to the variety, taste, and health benefits of thyme species in Anatolia. Thyme (*Thymus* sp.) protects the human body against germs and is a traditional herb that is mostly consumed as a tea or as a spice in meals. The Ottomans consumed this plant with meals because of its many benefits to health, especially to regulate blood sugar after meals (Durmuş et al., 2016).

The thyme plant has one of the highest levels of antioxidants among herbs. Although there are different types of thyme plant, there are various bioactive compounds in their chemical compositions. The thyme plant has one of the highest levels of antioxidants among herbs. It contains many flavonoids, phenolic antioxidants like zeaxanthin, lutein, naringenin, luteolin and thymonin. All have been determined to have antiseptic, antispasmodic, antitussive antimicrobial, antifungal, antioxidative, and antiviral which have supportive immune system effects *in vitro* and *in vivo* studies. Flavonoids and phenolic compounds belong to the group of bioactive components in the structure of many plants, such as thyme which provide hydrogen repelling free radicals formed in the human body. These properties create positive health benefits on the human body (Dauqan & Abdullah, 2017).

Pudding is a dessert that consists of both sugar and milk. Pudding production takes place at high temperature. It is thought that caramelization and Maillard reaction may occur as a result of heat treatment during the production of this pudding. As a result, many harmful compounds are formed. Functional compounds in thyme and honey prevent the formation of this harmful production (Nagai et al., 2018; Yusufoglu et al., 2020).

## 2.2 Bread and Dough

Rye was the most cultivated grain, and rye bread was also ubiquitous. It was a black bread; it had a bad taste for unaccustomed people, but the people of the region respected it very much, and when they stopped on the road, they fed it to their horses with the rye bread (Wittman, 2011, p. 284).

Rye (*Secale grain L.*) is very rich in bioactive components such as phenolic acids, alkylresorcinols, benzoxazinoids and lignans. Besides, rye contains important dietary fibers such as arabinoxylan, cellulose,  $\beta$ -glucan, fructans and lignin (Jonsson et al., 2018). Rye is Europe's most important bread grain in addition to wheat and is consumed mainly as bread in Northern Europe. In these countries, almost 40% of dietary fiber comes from rye foods. It has been reported in many clinical studies, the dietary fiber found in rye better regulates blood glucose levels than with refined wheat bread. Consumption of grain products produced from rye has been reported to reduce the risk of diabetes, cardiovascular disease and some cancers (Bondia-Pons et al., 2009).

Hayrettin Pasha was previously appointed as the police director by the Babiáli. We had a long conversation before we went to the inn that had been reserved for us. I need to add what my companion said about this conversation: Hayrettin Pasha complained about the conservatism of the local people: They could not give up their old habits. For this reason, he had to assign a particular baker to bake the bread for him to eat and teach the locals, but it still did not benefit the people. The older man said that the bread made in this region was not suitable for health, and I agreed. (Yozgat) (Barth, 2017, p. 126).

In fact, half-baked bread, which is traditionally consumed in the Ottoman food culture, preserves its nutritional value more due to the shorter heat treatment time (Catak & Caman, 2020). The traveler is talking about the bread being unhealthy, but half-baked bread is healthy because it preserves its nutritional value. For this reason, there is a contradiction with what the traveler says.

The people living in Syria are delighted in terms of nutrition. They eat salty olives, harmful and indigestible cheese, badly baked and coarse bread pressed into a flat round, rancid butter, or sometimes oil. They eat meat very rarely, but when they eat, they add a delicious and satisfying meal made of rice, which they call rice. Their main drinks are water (Barth, 2017, p. 126).

Considering the eating habits of different nations living in Ottoman lands other than the Turks, it is not very similar to the Anatolian Turkish food culture. As examined in the Syrian example, it is seen that rice with salt, fat, and plenty of carbohydrates was consumed. On the contrary, it has been observed that the balance of sweet and sour, which balances

each other in a meal, is preserved in the Anatolian Turkish food culture (Cankül & Ayvalı, 2020).

## 2.3 Vegetables and fruit

Menavino states that the Ottomans believed that eating pears before meals were beneficial for health. He says that if they overeat and feel uncomfortable, they consume one peach seed. It is known that in the 16th century, cold lemon sherbet was served in the middle of a meal in a feast in the summer months (Covel, 2009, p. 174).

Pear is a fruit rich in monosaccharide content and dietary fiber. Therefore, when a pear is consumed, it balances blood sugar (Movahedian et al., 2020). Since its consumption before meals will balance blood sugar, it can reduce food intake during a meal. In addition, due to the pectin content of pears, it absorbs cholesterol in the body and can protect the body against environmental toxins. The fat and protein content of pears is very low, and when consumed regularly, it cleans the blood (Özaydın & Özçelik, 2014).

Ottaviano Bon, who had visited the palace in the 17th century during the reign of Sultan Ahmed I, states that the dried plums brought from Egypt were used in fried and boiled dishes. Prunes and grapes were the most commonly used products to flavor dishes in Ottoman cuisine. Luigi Bassano, who was in Istanbul during the reign of Sultan Suleyman I, states that the Ottomans put cumin and poppy seeds in bread. Albertus Bobovius, who worked in the Enderun part of the palace during the reign of Sultan Mehmet IV in the second half of the 17th century, explains that the Ottomans did not eat in a hurry but instead filled their stomachs slowly. Describing the palace at the end of this century, Tavernier informs us that two meals a day were eaten in the palace; meat and rice were consumed at dinner between 3 and 5 o'clock (Tavernier, 2010).

Prunes contain dietary fibers, carbohydrates, amino acids, vitamins, minerals and antioxidant polyphenolic phytochemicals such as chlorogenic acid, neochlorogenic acid, caffeic acid, coumaric acid, and rutin. Prunes are highly famous in folk medical practices. Because, it has laxative and digestive properties and used for treatment of hypertension, diabetes, jaundice and fever. It is mentioned above that dried plums are used in frying and boiled dishes. During the frying and boiling, many mutagenic/carcinogenic substances are occurred that harm human health (Jabeen & Aslam, 2011). Prunes contain many antioxidant polyphenols (Bobasa et al., 2020) and it has been reported that foods high in polyphenols reduce oxidation (Cengiz et al., 2020; Yusufoglu et al., 2020). Therefore, it is thought that polyphenol in prunes reduces oxidation during the frying and and boiling.

Poppy seeds, 45-54% fat and 20-30% protein, were added to bread in the Ottoman Empire. Poppy seeds are rich in unsaturated fatty acids such as oleic and linoleic acid, and there addition to bread increases its nutritional value (Öztaşan et al., 2017).

Cumin (*Cuminumcyminum*) is an important spice that is used for culinary purpose due to its special aromatic effect. Cumin, a

traditional spice, has been widely used since the Middle Ages, as it is a symbol of love and loyalty. The cumin seeds contain fixed oil, volatile oils, essential oils, and other elements. Besides, it contains many beneficial components against various diseases such as pinene, terpinene, cuminaldehyde, oleoresin and thymol (Fatima et al., 2018).

This reddish, clayey soil, whatever its depth, was of good quality. These efforts of the people were also rewarded; in these selected areas, fruits, wheat, and vegetables were out. The grapes served to us on the table were of uncommon size and beauty. (Wittman, 2011, p. 90).

Delicious grapes are grown in these vineyards. They offered us plenty of grapes and grape must for dinner (Barth, 2017, p. 100).

We walk to the village. A coffee house whose roof is being repaired. We smoke hookahs and eat grapes with bread (Flaubert, 2016, p. 265).

As seen in the Ottoman Empire, grapes are consumed both with meal and alone. Grapes is one of the most popular and consumed fruits in the world, are rich in phytochemicals such as phenolic acids, flavonoids, stilbenes, and proanthocyanidins, all of which are strong antioxidants. Epidemiological studies indicated that the consumption of grapes with reduced risk of chronic diseases such as certain types of cancer and cardiovascular disease. In addition, *in vivo* studies have shown that grapes have strong antioxidant activity, inhibit cancer cell proliferation and suppress platelet aggregation, as well as lower cholesterol (Yang & Xiao, 2013). Polyphenols contained in foods slow down starch digestion (Ademosun et al., 2021). Therefore, as bread is rich in starch, when consumed with grapes, they will slow down starch digestion, and since grapes will increase the blood glucose level more slowly, they will also decrease the bread's glycemic index.

Pilgrims disturb people to get alms; they swarm like greedy vultures on the watermelons that we eat so greedily to the green skin (Flaubert, 2016, p. 157).

We eat watermelon for lunch at La Gita. An old woman huddles to pick up the shells from the ground (Flaubert, 2016, p. 160).

Scarce fruits and vegetables contain lycopene. Watermelon is one of the most lycopene-rich foods after tomatoes. According to clinical studies, lycopene is known to be effective against cancer (Korolev et al., 2020). In addition, in other studies, it is recommended that watermelon peel should be consumed with other food due to its nutritional and functional properties (Imoisi et al., 2020).

We are having dinner in a tavern. A stew with tomatoes inside. We eat this stew with our hands, drinking snowy sherbet that smells of grapes, roses, and molasses (Figure 4) (Flaubert, 2016, p. 179).



Figure 4. Grape molasses.

As for table vegetables, turnips, okra, coussa squash, tomatoes and a vegetable-like bean we know as French beans are what they eat the most. There is also a root brought from Beirut, Akka, Sidon, or Dimyat. It looks a bit like a potato when cooked, but the color is darker, and the shape is not that smooth. The locals consider it a healthy and beautiful vegetable, peeled and boiled, and many dishes. Okra is a delicious and mucous vegetable. It adds a delicious taste to soups (Wittman, 2011, p. 124).

It is possible to add other vegetables with excellent flavors to this list: Cabbage, cauliflower, spinach, lettuce, fennel, turnip, cucumber, radish, and onion; I must say the onions are very sweet (Wittman, 2011, p. 124).

We stayed in the camp of the Turks that day... Our location was perfect, and we had a well in a place with perfect water. But much attention was not paid to the vegetables brought to us. We were given some gourd, okra, and cucumber. On the other hand, plenty of mutton and chicken meat was brought. Our food was coming from my Grand Vizier (Wittman, 2011, p. 73).

Except for the broad bean, all of them grew in the wild. The peasants planted the beans in the cultivated fields. It was obvious that they were taking care of it. I learned that they extract oil from the seed and put it in their soup (Wittman, 2011, p. 73).

Broad bean (*Vicia faba L.*) is a plant whose seeds and green parts are consumed. It contains 20-36% protein, 32-61% carbohydrates, and a high amount of dietary fiber. In addition to the A, C, and B group vitamins, the broad bean is rich in phosphorus, calcium, sodium, iron, and potassium (Koç, 2016).

We came across a few henna fields. These yellowish or orangish dry leaves of the lovely bush are painted and used quite frequently in this region with Turkey. The branches are pruned to keep the bushes stunted.

They also grow cloves, lentils, and mustard plants (Wittman, 2011, p. 176).

Among the vegetables, beans are similar to the French beans but appear to be of low quality. Beets, hibiscus, lettuce, onions, turnips, and other radishes are grown in the gardens. The root of the radish is not round but long like a carrot. They also use lentils in soups and meals (Wittman, 2011, p. 199).

As can be seen, vegetables had an important place in nutrition in the Ottoman Empire. Vegetables meet most of the daily micronutrient intake. Especially the foods mentioned above which are rich in B group vitamins. It provides important contributions to the energy conversion in the metabolism (Tardy et al., 2020). The consumption of okra is frequently mentioned. Okra contains high levels of dietary fiber (TURKOMP, 2021) and its consumption is thought to balance blood sugar.

#### 2.4 Carob

Almost all day, we pass through the middle of the barren land covered with thistles and small carob trees, destroyed by the wind blowing from the sea (Flaubert, 2016, p. 176).

In the travel book of Breüning, which was a traveler in the Ottoman lands during the reign of Sultan Murad, it says that the Ottomans sweetened the compote and sherbet with honey. Reinhold Lubenau also writes in his work that the jams are sweetened by adding carob molasses (Belon, 2020, p. 185).

Carob (Figure 5) is a food that is frequently consumed today and has a high level of functionality. Studies have reported that carob has high antioxidant activity (Ibrahim et al., 2020; Tounsi et al., 2020). Carob contains high amounts of sugar like dried apricots. Polysaccharides in carob fruit as an excellent source of phenolic components and fibers. Besides, Carob pulp contains a large number of bioactive substances including, cyclitols, fibers, polyphenols, amino acids, and minerals. Consumption



Figure 5. Carob.

of carob in diet can prevent and treat various diseases such as diabetes, hyperlipidemia, irritable bowel syndrome and colorectal cancer (Loullis & Pinakoulaki, 2018). Studies have found that products made with carob have lower advanced glycation end products. The increase of advanced glycation end products in foods causes complications such as diabetes and certain type of cancer (Yusufoglu et al., 2020; Çatak, 2020).

Pierre Belon, who was a traveler in the Ottoman country between 1546 and 1549 during the reign of Sultan Süleyman I, writes in his travel book that everyone from the Ottoman aristocrat to his porter consumed garlic and yogurt after mixing them together (Belon, 2020, p. 37).

Garlic (*Alliumsativum L.*) is a bulbous plant species from the genus *Allium*, belonging to the Alliaceae family. Garlic has been used in different cultures throughout the world, as a spice, food, and for therapeutic purposes. It is known that garlic, as a natural antibiotic, has therapeutic properties on hypoglycemia, diabetes, and hypertension; antibacterial, antifungal, and anticarcinogenic effects have been reported in many studies (Özaydin et al., 2020).

Theophile Gautier, who came as a traveler to Istanbul, the Ottoman capital in the 19th century, states that mint juice was sprinkled on salads and greens. Julia Pardoe, who came to the Ottoman lands as a traveler in the same century, says that cooked chicken came with olives and was consumed in this way (Pardoe, 2017, p. 92).

It is seen that salads and greens were consumed in the Ottoman period. Although these foods are low in terms of energy due to their low nutritional value, they contain high amounts of vitamins and minerals (TURKOMP, 2021). Olive is a food rich in both vitamin E and oleic acid which are crucial for healthy nutrition. Vitamin E scavenges free radicals in the body, while oleic acid suppresses appetite and increases the fat burning rate in the brain (Belli & Yaman, 2020).

#### 2.5 Eggs

This man still feeds us the usual lamb meat and endless hard eggs. Seeing these, my throat gets choked. I eat dry bread as I did in the previous days. The Turks in front of me are having a terrible meal with eggs (Flaubert, 2016, p. 348).

Dinner with a dozen à la carte eggs cooked by a lady owner of the inn (Flaubert, 2016, p. 348).

Here they prepared an excellent breakfast for us: We enjoyed the food offered to us. But any European would undoubtedly find this breakfast very odd because our meal consisted of dried apricots and eggs (Barth, 2017, p. 163).

The traveler speaks of eggs as being bad and that the Europeans do not consume or like them. The egg is the most crucial food of animal origin in terms of its nutritional value. It contains high-quality protein and is especially rich in essential amino acids. In addition, eggs contain high amounts of vitamin B<sub>12</sub> and other water-soluble B group vitamins (TURKOMP, 2021).

## 2.6 Wheat

There was plenty of space here to grow fruit trees. Water canals irrigated these trees. In addition to wheat and barley, corn and millet were also grown (Barth, 2017, p. 30).

Unlike today, barley flour was consumed and used in bakery products in the Ottoman Empire. Barley contains beta-glucan, a high water-soluble dietary fiber. Beta-glucan especially lowers the glycemic index of foods and thus prevents the increase in blood glucose. In addition, beta-glucan reduces heart disease by lowering cholesterol (Tosh & Bordenave, 2020).

## 2.7 Meat

Dinner was pretty good. Especially the steak with minced onions, which is one of the local dishes of this place, was very delicious (Barth, 2017, p. 192).

We had lunch on the edge of a square-shaped ornamental pool, and the menu included figs, dried meat, and palm jam (Flaubert, 2016, p. 176).

Meat has an essential place in the daily diet of people. Meat is the easiest to produce among animal foods. Due to its properties such as taste, high biological value, satiety, and thanks to its richness in complex B vitamins and various minerals and essential amino acids, it has an essential place in human nutrition (McAfee et al., 2010; TURKOMP, 2021).

If there is soup or liquid food in the bowls, the spoons are handled immediately. If there are solid foods, guests can pick them up with their fingers. No matter how repulsive these customs may seem to the feelings and opinions of the British, the deliciousness of the food was already enough to make us accept the situation. These traditional methods, which shook us so much, succeeded in eliminating our tendencies to be meticulous after a while. The meat was usually cut into small bites, making it easier to eat. But this time, the ducks were all being served in the middle. The owner of the feast was tearing the ducks with his fingers and distributing them to his guests (Wittman, 2011, p. 28).

In Ottoman, lamb is not allowed to be eaten until April. Pork is forbidden to Muslims altogether, but pork is still allowed to be sold on the markets in early spring because foreign representatives or ambassadors, or Christians buy it. This indulgence also allowed us to

buy large pork legs, but unfortunately, we sent it to a Turkish bakery to cook it. When the situation arose, we found ourselves in a very unpleasant situation. The poor baker was fined twenty piastres (Wittman, 2011, p. 55).

We stayed in the camp of the Turks that day... Our location was very good, and we had a well in a place with perfect water. But much attention was not paid to the vegetables brought to us. We were given some gourd, okra, and cucumber. On the other hand, plenty of mutton and chicken meat was brought. Our food was coming from Grand Vizier (Wittman, 2011, p. 46).

Chicken and turkey meats, which are still widely consumed in Turkey, also play an important role in human nutrition. Chicken meat, which is low in calories and fat, has quality protein value and the short fiber of chicken meat is also healthy, as it is digested quickly. It also supports the nervous system as it contains B<sub>2</sub>, B<sub>6</sub>, and B<sub>12</sub> (Demirci, 2015).

If available, they usually eat a little bit of bread or biscuits, cheese, onions, olives, and vegetable oil. They rarely have reached the luxury of eating animal food. Their favorite food is mutton and poultry in a dark broth with rice. But such a luxury is uncommon for most of the soldiers filling the battalions of the Turkish army. They have turned to other, less expensive pleasures. The first to come to mind is coffee and tobacco. They drink the coffee (Figure 6) as dark as possible, while the tobacco they are very addicted to is smoking by putting them on sticks that they have never separated from their sides. Since the Qur'an forbids wine, the main drink of every Muslim is water (Wittman, 2011).

It is known that coffee is one of the world's major commodity and is the most important trade product in the world after oil. Coffee was brought to Istanbul by Selim I in 1519, after the military action in Egypt. Turkish coffee was introduced to France and Parisian society for the first time in 1669 by the Turkish ambassador Süleyman Ağa. Coffee, which spread to Europe thanks to travelers and traders, gained its real fame after the Ottoman Siege of Vienna in 1683. The armies of the Ottoman Empire, which were defeated as a result of the siege, left plenty



Figure 6. Turkish coffee.

of coffee behind while withdrawing from the gates of Vienna (Balci, 2019). Because of its health benefits, coffee has been associated with a lower risk of diseases such as type 2 diabetes, obesity, cardiovascular disease and certain types of cancer. Coffee contains many bioactive compounds such as caffeine, chlorogenic acids and diterpenoid alcohols, which have been associated with many potential health benefits. For instance, caffeine reduces the risk of developing neurodegenerative disease and type 2 diabetes, and chlorogenic acids and diterpene alcohols have many health benefits, including antioxidants and chemoprotectants (Gökçen & Şanlıer, 2019).

The Ottoman State was established in the Söğüt district of Bilecik. This region is in the middle of the olive-olive oil culture. Due to the easy access to olive and olive oil, olives and oil were consumed frequently in the Ottoman Empire. Olive oil is a type of oil that is obtained from olives collected from the olive tree by a variety of techniques. This oil is consumed both hot and cold and has a unique flavor and aroma. Olive oil has antioxidant, anti-inflammatory, and anticarcinogenic properties. It has a strong protective effect against various diseases, especially helping to prevent membrane lipids and intracellular molecules (Visioli et al., 2002). Oleic acid, one of the main components of olive oil, protects the cell membrane, and lipoproteins fight against oxidative stress by reducing LDL cholesterol and triglycerides (Trichopoulou & Dilis, 2007).

The consumption of biscuits by the Ottomans is also mentioned here. Biscuits are known as a food that are consumed to eliminate hunger for a short period of time. Foods that are consumed as hunger sedatives were consumed with a variety of beverages, and this is assumed to be a diet. Snack foods generally contain wheat flour, sugar, oil, and cocoa; therefore, snacks are high in carbohydrates and fat. It is thought that the Ottoman soldiers used biscuits during wars because of their high energy content. These biscuits contained milk and dairy products, whey powder, egg, cocoa, hazelnut, sesame, and coconut. These additives are known to have high nutritional values (Unal & Dean, 1991).

It is mentioned that meat was rarely consumed. It is thought that meat may have been expensive and therefore consumed less. Meat consumption is seen as an important source of activities in human metabolism as meat is rich in essential amino acids, fat, and water-soluble vitamins (A, D, E, K), and minerals (TURKOMP, 2021).

## 2.8 Milk and milk products

Cheese is a concentrated nutrient that contains the most critical elements of milk. It is a vibrant food, especially in terms of protein, vitamins, calcium, and phosphorus. For this reason, it is a food that has an essential place in our daily diet (Yöney, 1970; Vahabzadeh et al., 2017).

After drinking our coffee and eating curd cheese and quince for breakfast, we got ready to go on our expedition in the city (Barth, 2017, p. 70).

Casein, which is the most crucial component of milk, is very rich in protein. Since casein passes from milk to curd cheese,

it increases the nutritional value of the curd. In addition, there are serum proteins in the whey which are fundamental during the curdling of cheese. In addition, milk contains high amounts of vitamin B<sub>2</sub> and calcium. Vitamin B<sub>2</sub> is involved in energy metabolism, while calcium is important for bone health and the development of babies (Prudêncio et al., 2014).

In the village, we stopped by, they prepared a delicious breakfast and served cream, cheese, and honey with it (Barth, 2017, p. 208).

Sheep, cattle, and bread were plentiful in Büyükdere and sold at very affordable prices. It was the same for all types of poultry. Eggs are also plentiful. But cheese and butter are very ordinary. Vegetables are very similar to those in England. Broad beans, beans, peas, cabbage, cucumbers, squash, Watermelon, and the like are common. So are the fruits: peaches, apricots, pears, apples (but quite unsavory), figs, cherries, pomegranates, cranberries, mulberries, and grapes. In addition to these, there are plenty of walnuts and hazelnuts (Wittman, 2011, p. 16).

As a grain-based food, bread has an essential place in Turkey just as it had in the Ottoman Empire. Bread occupied an important place in nutrition during the Ottoman period with its rich vegetable protein and carbohydrate content (Yurdatapan, 2014).

Cereals grown in Turkey are rich in carbohydrates, protein, and fiber. The most popular of these foods is wheat. In addition to carbohydrates, fat, and protein, wheat also contains vitamins, which are essential elements of human and animal nutrition. Bread plays a vital role in food consumption because it is cheap, satisfying, and habitual (Dimitrov et al., 2017).

The people living in Syria are delighted in terms of nutrition. They eat salty olives, bad and indigestible cheese, badly baked and coarse bread pressed into a flat round, rancid butter, or sometimes oil. They eat meat very rarely, but when they eat, they add a delicious and satisfying meal made of rice, which they call rice. Their main drinks are water (Wittman, 2011, p. 126).

Camels drink slowly large amounts of water. They hadn't drunk for three days. We are silent too, but this water is disgusting! Ababdas do not want to sell us milk; milk is their only food. (Arabia) (Flaubert, 2016, p. 154).

Rich dinner. The water is disgusting! However, they promised me that I would drink water in Kuseyr! Kuseyr water is full of scary soap and rotten eggs to the shoes. Not another fragrance! Mixing some raki in it is in vain; it does not change the taste of this water (Flaubert, 2016, p. 157).

The white soil jugs that the women carried on their heads contained honey, milk, and drinking water (Wittman, 2011, p. 82).

Milk is a highly bioavailable food and contains essential amino acids, fat, lactose, important minerals (calcium (Ca), phosphorus (P), vitamins (riboflavin (B<sub>2</sub>), vitamin B<sub>12</sub>), and high-quality protein components. One liter of milk provides 113% of vitamin B<sub>12</sub>, 104% of vitamin B<sub>2</sub>, 50% of vitamin A and pantothenic acid, 30% of vitamin D, and B<sub>1</sub>, which should be consumed in the daily diet. Milk plays an important role, especially in metabolic activities and its essential components are vital for human nutrition (Seğmenoğlu & Baydan, 2012).

There is another lovely food called yogurt by the locals, and they bring it with desserts after dinner. Its preparation begins by letting the milk sour a little. Then they put a small amount of this in fresh milk and wait for it to settle a little. They serve this food with sugar. It tastes very nice, and when you add strawberries, it becomes like a cream. The milk sold here is usually a mixture. Goat, sheep, cow, and buffalo milk are mixed and sold (Wittman, 2011, p. 16).

The history of yogurt is very old. Studies conducted are probably based on the Turkish history of yogurt. It is reported that yogurt first came to Central Asia and then to Anatolia, and from there, it passed to Rumelia (Herdem, 2006). The richness of yogurt comes from milk and living microorganisms formed by the fermentation process. These microorganisms increase the digestibility of yogurt. Yogurt also has benefits on the intestinal flora. Additionally, it is stated that it accelerates growth and the lactic acid in yogurt content accelerates the absorption of calcium, phosphorus, and iron. Vitamin D, which is necessary for calcium and phosphorus absorption, is reduced by consuming yogurt daily (Seğmenoğlu & Baydan, 2012). Dairy products are rich in high-quality protein as well as vitamin B<sub>2</sub> and calcium. Adequate consumption of dairy products meets most of these two micronutrients, which are daily requirements (Willett & Ludwig, 2020).

The Ottoman Empire first became an empire with the transition to Rumelia in the period of Orhan Gazi and the reign of Sultan Mehmed the Conqueror. The Ottoman Empire, which expanded its lands from Anatolia to Rumelia, North Africa and Egypt, Arabia, the Caucasus, and the islands of the As a result of the interaction with these new cultures, many cultural elements were borrowed, however, these elements were adapted to the Ottoman culture through a filter and were never adapted fully. The cultural transfer was mutual, and the influence of the Ottoman Empire were soon seen throughout the cultures in these new lands. Culinary culture has also taken its fair amount from this situation, and new products and new dishes entered the Ottoman cuisine. However, the Ottoman Civilization has created a belonging by adding something on else, developing it, and adapting it to its own cuisine instead of applying the same one to one (İnalçık, 2014).

One of the best examples of this is seen with peppers and tomatoes. These new products, which reached Europe from the Americas and then to the Ottoman lands, have been evaluated

differently from their use in America and Europe. Stuffed peppers are one example of this difference. This dish, which is a product of the Ottoman peoples, shows the development and synthesis of the Ottomans by adding something to create something new. A similar manifestation occurred with tomatoes. Not unlike the sauces in Europe and America, the Ottomans also used them to make tomato paste and stewed dishes. However, tomato paste was made from peppers and stuffed made from tomatoes, and new flavors were added to the Ottoman cuisine. This innovation led to a transformation in the cuisine in the second half of the 19th century, and tomatoes and tomato paste started to replace dried fruits such as plums, currants, and apples (Isin, 2018; Yerasimos, 2015).

The change showed itself in desserts as well, and molasses, honey, and grape juice began to be used as natural sweeteners. In addition, refined crystallized sugar produced from sugar cane started to be used as a sweetener in many products. Sugar beets were first produced in factories in England in the beginning of the 19th century, and spread from England, to other parts of the world. Refined sugar is addictive, damages the body, accelerates aging, causes weight gain and diabetes. From the second half of the 19th century, with the introduction of refined sugar in the Ottoman Empire, especially in Istanbul, it was seen that diabetes increased, and related deaths occurred. The cause of death of the Ottoman sultans Murad V (died 1904) and Sultan Mehmed Reşad V (died 1918) along with the writer Ömer Seyfeddin (died 1920) were recorded as diabetes (Adıyaman, 2019).

The westernization which began with the reign of Sultan Mahmud II caused a transformation within the Ottoman society. Ottoman cuisine was also affected by these movements, and modifications began in the food culture. The most radical change was experienced in desserts with the introduction of refined sugar (Isin, 2018).

### 3 Conclusion

The Ottoman Empire incorporated different elements and brought together a new and unique culture by bringing these elements together. The Ottoman cuisine, which incorporated different cultures, owes its wealth to the innovations it developed within its social dynamics. Culinary culture also took its share from different cultures, and new products and dishes entered the Ottoman cuisine. The Ottoman Empire created a sense of belonging by adding to existing cuisines, and developing and adapting them to their own instead of applying the same one to one. During the Ottoman period, besides vegetables, fruits, barley, bread, meat, and dairy products, functional foods such as grapes and plums were frequently consumed. In light of travel books referenced, it is clear that healthy foods and nutrition were at the forefront throughout the Ottoman period.

### Conflict of interest

The authors declare no conflict of interest.

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