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Research Article

Poison and High Dose Drug as The Cause of Death in Detective Novels: A Comparison of Agatha Christie's and Ahmet Ümit's Works

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Abstract: **Objective:** The aim of this study was to compare the use of poison or high-dose drugs as the cause of death in Western and Turkish literature.

Materials and Methods: The works of Agatha Christie and Ahmet Ümit were examined as examples of crime novels. The use of poison or high-dose drugs as the murder weapon and cause of death, the properties of these drugs and substances, and the findings of poisoning were given in the work were evaluated comparatively.

Results: In the Agatha Christie novels, various poisons and drugs are given by mixing them into the victim's food or drink. The causes of the victims' death are cyanide in "Ten Little Niggers (And Then They Were None)", "Sparkling Cyanide" and "Mirror Crack'd from Side to Side"; and morphine in "Sad Cypress" and "Death Comes As The End". In Agatha Christie's other novels, strychnine, taxine, thallium, phosphorus, arsenic, hemlock, aconitine, belladonna, physostigmine, nicotine and a drug containing barbituric acid have been used as the murder weapon.

In the novels of Ahmet Ümit, murder weapons such as knives and pistols appear instead of poisonous preparations that kill the victim. On the other hand, Ahmet Ümit's novel "İstanbul Hatırası" shows that the victims were neutralized with propofol, a short-acting anesthetic, before being killed, and mivacurium, a neuromuscular blocker, in "Kırlangıç Çığlığı". The main theme in the novel "Sultanı Öldürmek" is that Fatih Sultan Mehmet may have been poisoned with opium or a similar substance, while in this novel the murder weapon is a letter opener.

Conclusion: The use of poison and high-dose drugs as a murder weapon is noteworthy in the works of Agatha Christie, while in only a few novels of Ahmet Ümit there have been statements about the use of certain drugs for a short period of time. Although killing with poison is a mysterious subject in Ottoman history, it can be interpreted as a foreign element in terms of the Turkish conception of crime.

Keywords: Agatha Christie, Ahmet Ümit, Crime, Drug, Poison

Öz: **Amaç:** Bu araştırmada Batı ve Türk edebiyatından polisiye eserlerde ölüm nedeni olarak zehir ya da yüksek doz ilaç kullanımının karşılaştırmalı olarak incelenmesi amaçlandı.

Gereç ve Yöntem: Polisiye roman örnekleri olarak Agatha Christie ve Ahmet Ümit'in eserleri incelendi. Cinayet silahı ve ölüm nedeni olarak zehir ya da yüksek doz ilaç kullanımı olup olmadığı, varsa bu ilaç ve maddelerin özellikleri ile zehirlenme bulgularının eser içerisinde veriliş şekli karşılaştırmalı olarak değerlendirildi.

Bulgular: Agatha Christie romanlarında çeşitli zehir ve ilaçların, kurbanın yemeğine ya da içeceğine karıştırılarak verildiği görülmektedir. Kurbanların ölüm nedenleri "Şampanyadaki Zehir", "On Küçük Zenci", "Ve Ayna Kırıldı"da siyanür; "Koltuktaki Ölü", "Sonunda Ölüm Geldi" romanlarında morfindir. Agatha Christie'nin diğer romanlarında striknin, taksin, talyum, fosfor, arsenik, baldıran otu, yüksük otu, güzel avrat otu ile barbitürik asit içeren bir ilaç cinayet silahı olarak kullanılmıştır.

Ahmet Ümit romanlarında ise kurbanı öldüren zehir terkipleri yerine bıçak, tabanca gibi cinayet silahları karşımıza çıkmaktadır. Öte yandan Ahmet Ümit'in "İstanbul Hatırası" romanında kurbanların öldürülmeden önce kısa etkili bir anestezik olan propofol ile, "Kırlangıç Çığlığı"nda ise nöromüsküler blokerlerden mivakuryum ile etkisiz hale getirildikleri görülmektedir. "Sultanı Öldürmek" romanında ana tema Fatih Sultan Mehmet'in afyon veya benzeri bir madde ile zehirlenerek öldürülmüş olabileceği iken bu romanda da cinayet silahı bir mektup açacağıdır.

Sonuçlar: Zehir ve yüksek doz ilacın cinayet silahı olarak kullanımı Agatha Christie eserlerinde dikkat çekici olarak karşımıza çıkmakta iken Ahmet Ümit'in sayılı romanında kısa süreli olarak bazı ilaçların kullanıldığına dair ifadelere rastlanmıştır. Zehirle öldürmek, Osmanlı tarihinde gizemli bir konu olsa da, Türk toplumsal suç anlayışı açısından yabancı bir unsur olarak yorumlanabilir.

Anahtar Kelimeler: Agatha Christie, Ahmet Ümit, İlaç, Suç, Zehir

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Ethical Declaration
This study was written in accordance with the Helsinki Declaration, and the ethics committee approval was not obtained since written documents were examined in terms of comparative literature.

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1. Introduction

Detective novels are literary works about crime and reflect the conception of crime in the society. Crime can be studied in a wide range from concealing an important truth to human murder, but in detective novels, death and enigma often form the main subject. However, detective novels, which must ultimately have logic and reason, are different from stories that contain fantastic elements related to ghosts and the other world (1,2). Detective novel, also known as murder novel *(cinai)* and crime novel, has gained its true identity in the 20th century. In Western and Turkish literature, there are important representatives of this literary genre, which has evolved and changed over time.

Agatha Christie (1890- 1976), English detective novelist, is the world's greatest crime writer. Agatha Christie, who has written more than 80 crime novels, also wrote short stories in the final years of her life. She wrote one of her most famous novels, "Murder on the Orient Express" in the Pera Palace Hotel in Istanbul, which maintains Christie's room as a memorial to the author. After her marriage to an archaeologist in Syria, Istanbul served as a bridge between them (3,4). Agatha Christie is also known as the most-translated author and the best-selling fiction writer of all time. Hercule Poirot and Miss Marple are detective characters introduced by the author and internationally renowned.

Ahmet Ümit (1960-) is one of the most successful detective novelists of Turkish literature. He began to write his first stories in 1983, and his first detective novel "Sis ve Gece" *(Fog and Night)* (1996), also translated into Greek, has earned the title of the first Turkish detective novel translated into a foreign language. Ahmet Ümit, who uses the lenses of various scientific disciplines like philosophy, psychology, sociology, history and toxicology in his works, takes on social events and organized crime rather than individual crimes. The author, who considers mystery to be one of the most important literary genres, argues that crime and evil re-present life to us. During the last 30 years, he has published nearly 30 works, most of them are detective novels. The Chief Inspector Nevzat stands out as the main character repeated in his works (5).

A detective novel has three main elements: the murder (crime), the killer, and the police detective investigating the murder and trying to find the killer. Besides this question "who is the killer", how the crime is committed, time and space dimensions of the narrative, and the psychological analysis of the characters are also important building blocks of the detective novel. Criminal evidence can be presented to the reader in varying ways during the narrative, and the author's cunning and the reader's awareness compete at this point. The murder weapon can often be cutting/ piercing instruments, firearms and sometimes poisons.

Although it is thought that detective novel does not convey real-life situations, it is possible to be inspired by real events, since a logical fiction is essential. For example, Ahmet Ümit's novel "Kar Kokusu" *(Odor of Snow)*, published in 1998, shows traces of the author's experience in Moscow. "Kukla" *(Puppet),* another novel of Ahmet Ümit, was also written inspired by the Susurluk incident (5). Agatha Christie's inspiration came from drugs and poisons. She worked as a volunteer nurse during the First World War, and it provided her with medical knowledge as well as experience in the effects and side effects of drugs (6).

Agatha Christie in Western literature and Ahmet Ümit in Turkish literature are authors who have not only given the best examples of detective novels but also contributed to the development of this literary genre. The aim of this study was to examine the use of poison or high-dose drugs as the cause of death in the novels of Agatha Christie and Ahmet Ümit by comparing Western and Turkish literature.

2. Materials and Methods

The criminal elements and the novel structures in Agatha Christie's and Ahmet Ümit's works were examined. Agatha Christie's novels mentioning poison or high dose drug use as murder weapon, "Sparkling Cyanide"(7), "Mirror Crack'd from Side to Side" (8), "And Then They Were None/ Ten Little Niggers" (9), "A Pocket Full of Rye" (10), "Sad Cypress" (11), "Curtain" (12), "Death Comes as The End" (13), "Cards on The Table" (14), "Lord Edgware Dies" (15), "The Mysterious Affair at Styles" (16), "The 4.50 from Paddington/ What Mrs. McGillicuddy Saw!" (17), "The Pale Horse" (18), "Dumb Witness" (19), "The Big Four" (20), "Appointment with Death" (21), "Five Little Pigs" (22), "They Do It with Mirrors" (23), "Three Act Tragedy" (24), "A Caribbean Mystery" (25), "Crooked House" (26) were compared with Ahmet Ümit's novels, "İstanbul Hatırası" (*A Memento for Istanbul*) (27), "Sultanı Öldürmek" (*To Kill a Sultan*) (28) and "Kırlangıç Çığlığı" (*Swallow's Cry*) (29) in terms of properties of substances used, delivery routes, drug effects and poisoning findings. The way the authors handled these items and all the data were evaluated with the relevant literature.

3. Results

Poisons and drugs used in Agatha Christie's and Ahmet Ümit's novels, their administration routes and toxicological findings are presented in Table 1.

In the novels of Agatha Christie, various poisons and drugs were given by mixing into the victim's food and drink or injecting. In these fictional murders, the victim took the poison without any suspicion, died in accordance with the chemical properties of the substance used and also showed signs of poisoning. What poison was used as a murder weapon could be understood at the end of the novel's by simple toxicological assessments and observations.

Cyanide was the poison that Agatha Christie used most often in her novels when fictionalizing murder. The cause of the victim's death was cyanide in the novels "Sparkling Cyanide" (7), "Mirror Crack'd from Side to Side" (8) and "Ten Little Niggers" (9); and taxine alkaloids in "A Pocket Full of Rye" (10). These poisons, which could act quite quickly, suddenly killed the victims in such a way as to maximize dramatic effect. There was a single victim in "A Pocket Full of Rye" (10), while serial murders were observed in "Ten Little Niggers "(9), "Sparkling Cyanide" (7), and "Mirror Crack'd from Side to Side" (8). In the novels, poisons were given by mixing them into the victims' drinks.

In the novel "Sad Cypress" (11), the murder was committed with morphine mixed into tea. The killer, a nurse using her pharmacology knowledge, drank the same tea, but she injected herself with apomorphine which induced vomiting and emptying her stomach. Morphine as a murder weapon was also used in Agatha Christie's other novels "Curtain" (12) and "Death Comes as the End" (13), in which the poison was given by adding it into the victims' drinks.

In Agatha Christie's novels, another character who used his authority and knowledge of medicine to commit murder is Dr. Roberts in "Cards on the Table" (14). He killed his victim with an injection of *Evipan*, a depressant drug such as morphine and containing hexobarbital; however, he incapacitated the victim with a drug called a *Veronal* (barbiturate) tablet prior to that. Dr. Roberts murdered his other victims with anthrax bacilli contamination and vaccine injection including an unspecified pathogen. *Veronal* tablet was a widely used painkiller until the middle of the 20th century. In the novel "The Murder of Roger Ackroyd", it was used by the killer to commit suicide. *Veronal* also was the murderer's chosen weapon in "Lord Edgware Dies" (15).

"The Mysterious Affair at Styles" (16) was Agatha Christie's first published novel. The murder weapon in the novel was strychnine. Strychnine, which could be very effective orally and lead to death even in low doses, was placed in the victim's dinner. The victim's death occurred later in the night after dinner. Strychnine, an ideal poison due to its quick absorption, was replaced by tasteless and odorless arsenic in "4.50 from Paddington/ What Mrs McGillicuddy Saw!" (17). Because of its easy dissolution, especially in hot drinks such as tea, the poison was given by adding into the drinks. In this novel, unlike the fiction of murder with sudden death, deaths occurred as a result of chronic exposure to arsenic.

Another novel by Agatha Christie comprising chronic poisoning cases was "The Pale Horse" (18). In this novel, the victims were exposed to a rare poison thallium. In addition to nonspecific symptoms such as fatigue and stomach complaints, typical hair loss symptoms were also mentioned in the novel. In "Dumb Witness" (19), another unpredictable poison was chosen as a murder weapon: high doses of phosphorus. The poison that was administrated in the victim's liver pills was detected by its characteristic glow in the dark.

In addition to lethal drug applications, some poisonous plants appeared in Agatha Christie's detective fictions. In "A Pocket full of Rye" (10), the victim was killed with cyanide and taxoides in yew plants. In the novel" The Big Four "(20), one of the victims helped solve the murder by writing in ink "yellow jasmine" on his newspaper before his death. The poison mentioned in the novel was gelsemine, and its source was Yellow Jasmine. Yellow Jasmine also was a plant growing all over the house where the victim died. In the novel "Appointment with Death" (21), it was seen that digitalis (or digoxin), cardiac drug derived from the foxglove plant, was given in lethal doses and by injection.

Coniine, one of the poisons derived from plants, was mentioned in the novel "Five Little Pigs" (22). Coniine had been stolen from a laboratory, and it was found in a glass from which the victim had drunk beer. Like coniine from hemlock, aconitine extracted from monkshood or wolfsbane plant was used as a murder weapon in "4.50 From Paddington/ What Mrs McGillicuddy Saw!" (17) and "They Do It with Mirrors" (23). Nicotine, one of the alkaloid phytotoxins, also appeared as the poison that killed the victims in the novel "Three Act Tragedy" (24).

Another plant mentioned in Christie's novels was Atropa belladonna known as the source of the parasympathomimetic drug atropine. In the novel "A Caribbean Mystery" (25), this drug, which could be hallucinogenic in high doses, was added to the cosmetic ingredients of the victim and caused terrible nightmares. In this novel, as an example of local administration, the death of the

poisoned person did not occur. Interestingly, physostigmine that is the atropine antidote also was used as a murder weapon in the Christie's novel "Crooked House" (26).

Agatha Christie often used her knowledge of toxic substances in her novels written in the 1900s, and prepared her murder fiction in the light of this knowledge. When the novels written by Ahmet Ümit were examined from this point of view, it could be seen that he was interested in toxicology in his recent works. Ahmet Ümit's first detective novel "Fog and Night" was published in 1996. Murder weapons such as knives, iron sticks and pistols appeared in all of his novels. Agatha's poison preparations were replaced by cutting and piercing tools or firearms in the works of Ahmet Ümit.

Ahmet Ümit's novel "İstanbul Hatırası" (*A Memento for Istanbul*) (27) explored serial murders related to the history of Istanbul. The profile of the killer chosen by the author, who also narrated the details of the historical places in Istanbul, was made clear that the murderer had knowledge of medicine. Toxicological analysis of the blood of the victims revealed that an anesthetic substance called propofol, was used to incapacitate the victims, although not used as murder weapon. Propofol was also important in the novel as evidence that caught the killer.

A few years after "İstanbul Hatırası" *(A Memento for Istanbul*) published in 2010, Ahmet Ümit wrote a new novel named "Sultanı Öldürmek" *(To Kill a Sultan)* (28) published in 2012. In this novel, the author focused on a subject much discussed by historians, the death of Sultan Mehmed the Conqueror. The main characters in the novel were two history professors; one of them was killed with a letter opener. The author questioned that the possibility that Sultan Mehmed's death was a murder. He used details of slain professor's research with reference to the Freudian theory of "patricide", and then tried to reveal clues of a possible murder by referring to rumors that Bayezid, first son of Sultan Mehmed the Conqueror, was addicted to opium drugs, and that Sultan Mehmed considered his other son to be the Sultan after him. The history professor, the first victim in the novel, was killed while investigating this issue and making attempts for toxicology analysis. While the main characters of the novel argued that a simple toxicological analysis would be sufficient to clarify the possible murder of Sultan Mehmed, it was observed that the word "toxicology" was emphasized in different parts of the novel and even the short definition of "toxicology" was given.

Another novel by Ahmet Ümit, "Beyoğlu'nun En Güzel Abisi" *(When Pera Trees Whisper)*, published in 2013, told about street children using volatile substances, but the murder had no relation to substance use in the novel. The author returned to the theme of serial murders in the novel "Kırlangıç Çığlığı" (*Swallow's Cry*) (29) published in 2018. Similar to "İstanbul Hatırası" *(A Memento for Istanbul*), he created fiction that the killer had knowledge of drugs in murders involving messages. Ahmet Ümit, who also created a doctor character in "Kırlangıç Çığlığı" *(Swallow's Cry)* (29), described the use of drugs as a misleading element by letting the main character, Chief Inspector Nevzat, say: "The killer must have knowledge of medicine". However, the doctor was not the killer.

In "Kırlangıç Çığlığı" *(Swallow's Cry)* (29), the drug that used by the killer to incapacitate his victims was a neuromuscular blocker named mivacurium. In the novel, the characteristics of this drug were given in detail with the words of the character Zeynep, who was introduced by the author as a criminologist and had knowledge of toxicology. It was predicted that an overdose of the drug paralyzed the victims and killed them in higher doses; after the injection, they were aware of what was going on, but unable to act.

4. Discussion

Agatha Christie's novels show that the author has knowledge of toxicology. In a significant number of his works, she used poison or high-dose drugs as an effective means of murder. It is not surprising that Agatha Christie knew so much about drugs, as she is known to have worked in a hospital during the First World War and to have acquired her knowledge of chemistry here as well (6). In almost every novel she chose a different substance as a murder weapon and used it in her novel fiction in accordance with its physicochemical properties. In the author's novels, it can be seen that poisons thrown into the tea, that is, the hot drink. This is not coincidental; rather it is related to the dissolution properties of substances in hot liquids (30).

Apart from the solubility of the drugs, Agatha Christie also used their other important properties such as being colorless and odorless, or toxic to cause sudden death in low doses (7-10, 17). Strychnine and cyanide as murder weapon could cause sudden death after a single dose. In some of her novels, Agatha Christie used substances such as arsenic and thallium to describe the poisoning of victims as a result of chronic exposures. The findings of poisoning were detailed in the novels, and the preliminary determination of the poison that caused the death was done in this way. An example of this is thallium causing hair loss (18, 31). In addition to the effects of poisons on the body, their physical properties are also presented as evidence in Agatha Christie's novel fiction. In one of

her novels, the victim was poisoned with phosphorus, which was determined by its characteristic glow in the dark. (19).

In Agatha Christie's novels involving poisons or high-dose drugs, it is seen that poisons are often given orally. In addition to substances that may be poison, the author also used toxins and high doses of routine drugs as the cause of death in the novel fiction. The vaccine toxin and Evipan (hexobarbital) given by injection can be cited as an example in terms of both the causative agents and the ways of administration (14). Veronal tablet, which was widely used as a painkiller until the 1950s, is also a drug containing barbiturates and is seen as the cause of poisoning in high doses in Agatha Christie novels. Barbiturates are drugs that can have dose-dependent anesthetic and lethal effects; therefore, their use as a painkiller did not last long (32).

Apart from toxic substances in nature, toxins and high doses of some routinely used drugs, Agatha Christie also appears to have important information about plants that may be poisonous. The phytotoxins mentioned in the author's novels are coniine (hemlock), taxine (yew leaves), atropine (belladonna), gelsemine (yellow jasmine), aconite (wolfsbane) and nicotine. Atropine is a drug typically given as eye drops which is also used to treat certain eye conditions today (33). This drug was locally administered by adding to the victim's cosmetic materials in one of the novels (25). While drugs given by oral or parenteral route have systemic effects, drugs applied locally do not show intense systemic effects, except when skin integrity is impaired, or when applied to the mucosa. In the novel, it could be seen that the victim did not die, despite showing signs of intoxication.

Ahmet Ümit, who took his place among Turkish crime writers with his first detective novel "Sis ve Gece" *(Fog and Night)*, has used historical and social events as well as crime and mystery in his works. The author states that there are no individual crimes that can be the subject of detective novels in Turkey, and that he chooses the subjects from organized crime (5). From this point of view, Ahmet Ümit's novels are not only literary works, but also include important sociological and historical analyses. He has written many detective novels and stories from the late 1990s to the present. "Agatha'nın Anahtarı" *(Agatha's Key),* which includes short crime studies from Turkey, was published in 1999. Agatha's traces are also seen in the first story of his newest book "Aşkımız Eski Bir Roman" *(Our Love is an Old Novel),* published in 2019.

The novels of Agatha Christie, the most widely read books in the 1900s, and Ahmet Ümit's novels presenting crime and social structure at the end of the century, have common features in terms of being translated into many languages. No note on poison or high-dose drug use was found in Ahmet Ümit's works until his book "İstanbul Hatırası" *(A Memento for Istanbul*), published in 2010. In "İstanbul Hatırası" *(A Memento for Istanbul*) (27), the killer character's use of propofol to incapacitate the victims is remarkable in this respect. Like Agatha Christie's barbiturates, propofol is a dose-related anesthetic, and its use is common today in surgery. Propofol, which is also a veterinary drug, is presented in the novel as an evidence to help solve the murder (34).

In relation to propofol mentioned in "İstanbul Hatırası" *(A Memento for Istanbul*) (27), there are details about the pharmacokinetics of this drug as well as the dose-dependent effect. Evidence based on propofol levels suggests that the victims did not resist before they were killed, but because the bodies could not be found in less than 48 hours, it could be not possible to detect the drug in blood. The onset time of propofol, a drug with rapid dispersion (half-life: 2-4 minutes) and rapid elimination (half-life: 30-60 minutes), is also approximately 30 seconds after single parenteral administration. It is a highly lipophilic drug that provides rapid induction of anesthesia (35). Propofol, which is applied into the vein and prepared as a lipid emulsion, is also called "Amnesia milk" because of its milk-like appearance. Propofol, which can cause severe cardiac dysfunction and respiratory failure in high doses, is also known as the drug that caused the death of African-American singer Michael Jackson, known as the "King of pop" in 2009, and the famous singer's death is still under discussion (36, 37).

"Kırlangıç Çığlığı" *(Swallow's Cry)* (29), one of Ahmet Ümit's latest novels, is similar to "İstanbul Hatırası" *(A Memento for Istanbul*) (27) in terms of murder fiction. In this novel, it is seen that the victims were incapacitated by high dose drugs before they were killed. The drug chosen in this novel is mivacurium, a neuromuscular blocker. It is used as an adjunct drug in anesthesia and provides relaxation of muscles in short-term surgical procedures. Its effect begins in approximately 2-3 minutes depending on the intravenous dose, and it is rapidly hydrolyzed by the plasma enzyme cholinesterase. Clinical efficacy lasts approximately 15-20 minutes in adults and the drug's effect disappears within half an hour (38). Mivacurium became more known in 2001 when Vickie Dawn Jackson, a former nurse, killed 10 patients with this paralyzing drug (39). This drug, which can cause death due to apnea and bradycardia at higher doses, can also be toxic and fatal in individuals with pseudocholinesterase deficiency.

Propofol and mivacurium, mentioned in Ahmet Ümit's novels, are seen only as drugs that facilitate murder, although overdoses of the drugs can be lethal. The author's novel "Sultanı Öldürmek" *(To Kill a Sultan)* (28) also contains toxicological assessments and determinations; however, the murder is seen to be committed with a cutting- piercing tool. In this novel, the first victim investigated the death of Sultan Mehmed the Conqueror, and mysteriously died leaving some papers about another mysterious death, the death of the Sultan. The author, who opened the doors of history to the reader while following the murderer, makes references to Franz Babinger's book "Mehmed the Conqueror and His Time" (40). Babinger's book, published in 1953, on the fifth centenary of Istanbul's conquest, mentions that the Conqueror may have been killed by poisoning. In the novel, it is stated that the artist and eminent museum curator Elif Naci suggested opening the Sultan's tomb in 1964 and conducting toxicological analysis, and that the intellectuals of the period did not see any harm in this; however, the matter faded away. The notes of history and the dialogues between the characters created as historians show that there is no consensus on this issue, and also those who think that the possibility of the Sultan being killed should not be discussed at all are not in the minority. If Sultan Mehmed the Conqueror was killed with a metal-like poison, and his body was mummified, it is thought possible to detect traces of poison today.

To date, no evidence has been found that Mehmet the Conqueror was poisoned and no analysis has been done. In the novel "Sultanı Öldürmek" *(To Kill a Sultan)* (28), the author tells about a poem by Aşıkpaşazade, a contemporary chronicler of history, which suggests that the Sultan died as a result of poisoning: *"To whom did the physicians give that fatal vial/ From which the sultan drank, Lacerating his liver (lungs)/ Destroying him, consuming him in toxic fire/ As he fell, he asked why they had slain him/ Leaving him to perish in blood and agony…"* These lines, which Babinger considered as the depiction of poisoning, were not questioned by most of the Turkish historians, and they stated that none of the curatives or medicines was effective and that he died due to illness. Without any evidence, only based on the physical properties of the Sultan, it has been also suggested that Sultan Mehmed the Conqueror had diabetes and his death was caused by diabetic ketoacidosis, because gout disease which was a known illness of the Sultan would not result in such a clinical picture (41,42).

In his novel "Sultanı Öldürmek" *(To Kill a Sultan)* (28), Ahmet Ümit reviews the death of Sultan Mehmed and the Freudian theory of "patricide" through the first victim's research. The relationship between the Sultan's sons, Cem Sultan and Bayezid II, who took the throne in place after dying the Sultan, are mentioned in the novel. It is also mentioned in letters documenting that Bayezid was addicted to opium-like drugs in his youth and therefore apologized to his father. In the novel, Ahmet Ümit includes Babinger's suspicion of poisoning related to the death of the Sultan and likely being his son Bayezid II who killed the Sultan.

In 1966, Tekindağ (43) published his article "Fatih'in Ölümü Meselesi" *(The Question of the Conqueror's Death),* and under the titles "poisoning hypothesis" and "denial of poisoning hypothesis" he emphasized that Babinger's claims were not acceptable, and that the death of Sultan Mehmed the Conqueror was due to gout attack, and it was detailed in the texts of Aşıkpaşazade. The words of Aşıkpaşazade cited by Tekindağ are as follows: "*The cause of his death was the pain in his foot, the physicians were incapable of treating, and they gave şarabı fariğ (a kind of syrup), and he died."* Although there is no information about the content of the drug given to the Sultan, it is known that gout can cause severe pain.

Gout is a disease not only suffered by Sultan Mehmed the Conqueror, but also by the sultans who came after him. It is known that surincan pill containing colchicine or surincan paste was used in the sultans' gout treatment (44). Colchicine is one of the oldest drugs obtained from plants and is currently used in acute gout treatment. It is used in acute attacks until nausea, vomiting or diarrhea begins. Many different types of medicines have pain-relieving properties may be also used in gout attacks. During the Ottoman period, opium was used as a paste and pill because of its painkiller properties. Those who sold opium (*afyon)* and opium preparations, which were also used as pleasantries, were called "*esnaf-ı afyonciyan*". The production opium and its use in the Ottoman Empire were described in the itineraries of European travelers who lived in 16th- 18th centuries. The Turkish opium cultivated in the Aegean region containing high quantity morphine, was regarded in Europe as the best quality of opium (45). Morphine-like opiates are known to have pain-relieving properties, but one of the characteristics is to reduce bowel movements and stop diarrhea.

It is known that Moses Bin Hamon, a Jewish-born physician who had been a palace physician since Bayezid II, treated Sultan Suleiman the Magnificent's gout attacks with opium-containing drugs, and other physicians opposed this treatment method (44). Opium may have been preferred by the Conqueror's physicians in case of a non-stop gout attack because it relieves pain and reduces diarrhea caused by colchicine. Ahmet Ümit illustrates

Table 1. Poisons and drugs mentioned in the novels of Agatha Christie and Ahmet Ümit

POISON/ DRUG	NOVEL NAME	ROUTE	EFFECTS OF POISON/ DRUG
AGATHA CHRISTIE NOVELS			
Cyanide	Sparkling Cyanide	Oral	Headache, dizziness, dispnea and vomiting, seizures, bradycardia, hypotension, loss of consciousness, and cardiac arrest
	Ten Little Niggers	Oral	
	A Pocket Full of Rye	Oral	
	Mirror Crack'd from Side to Side	Oral	
Morphine	Sad Cypress	Oral	Nausea, vomiting, stomach and intestinal spasm, constipation, respiratory depression, pupillary constriction, coma
	Curtain	Oral	
	Death Comes as the End	Oral	
Barbiturates	Lord Edgware Dies	Oral	Headache, paresthesia, speaking and walking difficulties, bradycardia, relaxation of muscles, breathing difficulty and respiratory arrest
	Cards on the Table	Parenteral/Injection	
Strychnine	The Mysterious Affair at Styles	Oral	Restlessness, tremors, tachypnea, muscle spasm, tachycardia, pupillary dilation, cyanosis
Arsenic	4.50 from Paddington	Oral	Acute: nausea, vomiting, burning in mouth and throat, severe abdominal pains, circulatory and heart failure Chronic: weakness, diarrhea, impaired consciousness, nervous system disorder, anemia, and typical lines in nails
Thallium	The Pale Horse	Oral	Acute: nausea, vomiting, diarrhea, neuralgia, paralysis, behavioral disorders Chronic: fatigue, headache, depression, loss of appetite, foot pains, hair loss
Phosphorus	Dumb Witness	Oral	Confusion and respiratory distress, arrhythmia, liver and kidney toxicity (by converting to phosphine gas in the stomach)
Taxsines/ Yew leaves	A Pocket Full of Rye	Oral	Nausea, vomiting, abdominal pain, arrhythmia, bradycardia, hypotension, headache, decreased respiratory rate
Gelsemine/ Yellow Jasmine	The Big Four	Parenteral/Injection	Vomiting, diarrhea, involuntary contractions, vision loss, blindness, paralysis
Digitalis/ Foxglove	Appointment with Death	Parenteral/Injection	Nausea, vomiting, diarrhea, yellow-green halos around objects, headache, lethargy, confusion, coma, bradyarrhythmias
Coniine/ Hemlock	Five Little Pigs	Oral	Headache, ataxia, excessive salivation, and tachycardia; bradycardia, motor paralysis, respiratory arrest (in late stage)
Aconitine/ Wolfsbane, Monkshood	4.50 from Paddington	Oral	Diarrhea, cold sweats, tingling in the body, excessive salivation, dry mouth
	They Do It with Mirrors	Oral	
Nicotine	Three Act Tragedy	Oral	Vomiting, nausea, lethargy, tachycardia, seizures, coma, respiratory arrest and cardiac arrest
Atropine/ Atropa belladonna	A Caribbean Mystery	Local	Hallucinations, short-term memory loss, agitation, respiratory failure, dry skin, fever, tachycardia, cardiovascular arrest (dose dependent)
Physostigmine	Crooked House	Oral	Nausea, vomiting, diarrhea, loss of appetite, dizziness, headache, sweating, seizures, respiratory failure, cardiac arrest
AHMET ÜMİT NOVELS			
Propofol	İstanbul Hatırası (A Memento for Istanbul)	Parenteral/Injection	Short-term sedative hypnotic effect; acute bradycardia, asystole, rhabdomyolysis, respiratory arrest in high doses
Mivacurium	Kırlangıç Çığlığı (Swallow's Cry)	Parenteral/Injection	Short-term neuromuscular blocker and skeletal muscle relaxant; paralysis, loss of consciousness and respiratory arrest in high doses
Opium/ Morphine	Sultanı Öldürmek (To Kill a Sultan)	Oral	Nausea, vomiting, stomach and intestinal spasm, constipation, respiratory depression, pupillary constriction, coma

this point in "Sultanı Öldürmek" *(To Kill a Sultan)* (28) when he states "*For days, the sultan had been battling severe pains in his stomach and the pain was now getting worse. His Persian physician, Hamideddin el-Lari, was the first to treathim, but try as he might, none of the curatives or medicines he administered seemed to have any effect. The sovereign, his face and body contorted in agony, called for Maestro Iacopo, also known Yakup Paşa was dismayed, and told his friend and sultan that el-Lari had given him the wrong medicines. The curatives he had been administered had clogged up his intestines and now there was little that could be done. And unfortunately, Iacopo was right. On the 3rd of May, a Thursday, Fatih Sultan Mehmed, writhing in agony, succumbed to his maladies and breathed his last."* As noted in the novel, medication considered useful was given to the Sultan, but the drug blocked his intestines and poisoned him. This suggests that the opium preparation used as a painkiller may have caused such an effect. If it is thought that opium (or morphine) overdose may have caused the death of the Sultan, it is expected that the lung (not the liver) is the most affected organ (i.e. respiratory depression) along with intestine obstruction. Opiates are known to cause pulmonary hemorrhage (bleeding in the lung) in high doses (46). Aşıkpaşazade's words "*… From which the sultan drank/ Lacerating his liver (lungs)/ destroying him, consuming him in toxic fire/ Leaving him to perish in blood and agony…*" actually indicate that the substance given to the Sultan damaged his lungs (not the liver) and caused a visible bleeding. *"Ciğer"* used by Aşıkpaşazade is a general term for the lungs (*akciğer*) and the liver (*karaciğer*). In English version of the book, this word has been translated as "liver", but it should be "lungs".

Whether Sultan Mehmed the Conqueror was killed by his son Bayezid II or he died due to wrong medicine and his illness is a controversial issue. However, it is known that Ottoman familicide is the subject of many investigations. Ahmet Ümit, in his novel "Sultanı Öldürmek" *(To Kill a Sultan)* (28), tried to find the answer to the question and the possible killer: "Who would benefit from the victim's death?" After the death of Sultan Mehmed the Conqueror, his eldest son Bayezid II became Sultan despite the opposition of the Conqueror's other son, Cem Sultan. Bayezid, whose death also was suspicious, was forced to relinquish his throne under the pressure of his son Selim II. Like his father, Bayezid II is known to be suffering from gout and to be on regular medication, and historical documents on Bayezid's death indicate that he may have been poisoned as well (47).

5. Conclusion

The use of poison and high-dose drugs as a murder weapon is remarkable in Western literature, especially in the works of Agatha Christie.

Agatha Christie has knowledge of the effects of drugs and toxins. There are many examples of pharmacological aspects such as dose-related effects, administration-based effects, antagonistic effects, drug absorption and adverse effects in the author's novels. Similarly, half-life of drugs and dose-related effects have been used in Ahmet Ümit's works.

In Ahmet Ümit's novels, drugs seem to be used to incapacitate the victims, and while high doses may also cause death. In the author's novel about the death of Mehmet the Conqueror, which remains mysterious today, the poisoning has been mentioned, but there is no clear statement regarding the name or content of the poison. As a result, although discussed in Ottoman history, murder by poison can be interpreted as a foreign element in terms of the Turkish conception of crime.

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