

Anesthetic Drug Used by Şerafeddin Sabuncuoğlu in the 15th Century: Murkid

15. Yüzyılda Şerafeddin Sabuncuoğlu'nun Kullandığı Anestezik İlaç: Mürkid

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Abstract

In this review, it was aimed to investigate Sabuncuoğlu's contributions to surgery and the anesthetic effects of almond (*Amygdalus communis*, *Prunus dulcis*, *Prunus amygdalus*) and *Mandragora autumnalis* plants in the mixture called murkid, which he used for anesthesia and analgesia during surgery, in terms of modern medical pharmacognosy. The surgical techniques that Sabuncuoğlu applied was investigated in the light of the literature in detail together with the mixture called Murkid. Using reference sources, it was investigated Sabuncuoğlu's contributions to surgery and the anesthetic effects of almond (*Amygdalus communis*, *Prunus dulcis*, *Prunus amygdalus*) and *Mandragora autumnalis* herbs in the mixture called murkid, in terms of modern medical pharmacognosy. Murkid is a mixture that was discovered hundreds of years ago and was found to be very effective when evaluated during its time. However, it is toxic if the dose is not adjusted. Also it has dose dependent side effects such as blurred vision, headache, skin rash, vomiting, and tachycardia. Almond is considered to be from the Latin species "*Amygdalus communis*" in the "*Rosaceae*" family. Bitter almond seeds should not be consumed. The seed contains "laetrile" known as vitamin B17 and antitumor "taxifolin". Its leaves are used in the treatment of diabetes. Sabuncuoğlu is a Turkish physician who successfully applied and transferred some of the surgical techniques and anesthesia practices used today from centuries ago, far ahead of his time. There is a need for studies on the use of the active ingredients contained in Murkid in the field of anesthesia in modern medicine.

Keywords: Anesthesia, history of medicine, Murkid, Şerafeddin Sabuncuoğlu

Öz

Bu derlemede, Sabuncuoğlu'nun cerrahiye katkıları ve cerrahi esnasında anestezi ve analjezi amaçlı kullanmış olduğu murkid adlı karışımdaki badem (*Amygdalus communis*, *Prunus dulcis*, *Prunus amygdalus*) ve adamotu (*Mandragora autumnalis*) bitkilerinin, modern tıbbi farmakognozi açısından, anestezik etkilerinin araştırılması amaçlanmıştır. Sabuncuoğlu'nun uyguladığı cerrahi teknikler, Murkid adı verilen karışımla birlikte literatür ışığında detaylı bir şekilde incelenmiştir. Referans kaynaklardan yararlanılarak Sabuncuoğlu'nun cerrahiye katkıları ve mürşit adı verilen karışımdaki badem (*Amygdalus communis*, *Prunus dulcis*, *Prunus amygdalus*) ve *Mandragora autumnalis* bitkilerinin anestezik etkileri modern tıbbi farmakognozi açısından araştırılmıştır. Murkid, yüzlerce yıl önce keşfedilen ve kendi döneminde değerlendirildiğinde oldukça etkili olduğu görülen bir karışımdır. Fakat doz ayarı yapılmadığında toksiktir. Ayrıca doza bağlı; bulanık görme, baş ağrısı, deride kızarıklık, kusma, taşikardi gibi yan etkilere sahiptir. Badem, "*Rosaceae*" familyasında yer alan latince "*Amygdalus communis*" türünden kabul edilmektedir. Badem çekirdeklerinin acı olanları tüketilmemelidir. Tohum B17 vitamini olarak bilinen "laetrile" ve antitümör "taksifolin" içerir. Yaprakları diyabet tedavisinde kullanılmaktadır.

Sabuncuoğlu, günümüzde kullanılan cerrahi tekniklerinin ve anestezi uygulamalarının bir kısmını zamanının çok ötesinde, yüzyıllar öncesinden başarı ile uygulamış ve nakletmiş bir Türk tıp adamıdır. Murkid'in barındırdığı etken maddelerin modern tıpta anestezi alanında kullanımı ile ilgili çalışmalara ihtiyaç vardır.

Anahtar kelimeler: Anestezi, Murkid, Şerafeddin Sabuncuoğlu, tıp tarihi

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Introduction

Şerafettin Sabuncuoğlu is an important Turkish physician who lived in Amasya between 1385 and 1468(?) in the Ottoman Empire period. In his time Amasya was one of the most important health centers. His grandfather Sabuncuoğlu Hacı İlyas Çelebi and his father Ali Çelebi were also chief physicians in Amasya before him. Medical developments in the Ottoman Empire continued as a legacy of the Seljuk Empire. At that time, medical madrasahs and hospitals were important institutions of health services. The hospital located in Amasya was called “Asylum”, “Bimarhane”, “Şifahane” among the people and in the 19th century it was converted just into “Asylum” that is psychiatric hospital (1,2).

Sabuncuoğlu contributed to the medical community with four of his works. Among his works, “Cerrahiyetü'l-Haniyye” is the most important. This work includes surgical instruments, devices and colorful pictures of surgical treatment techniques. An important feature of this work that, it is written in a clear Turkish. Because although he writes and reads in Persian and Arabic well, at that time the surgeons were illiterate and the Anatolian people mostly spoke Turkish. Although Cerrahiyetü'l-Haniyye is the first illustrated medical book in the Islamic world, it is known that it was inspired by Albucasis's surgery textbook Al-Tasrif. This book is dedicated to the Ottoman emperirer of the period, Fatih Sultan Mehmet (3,4).

In terms of anesthesia and pain, Sabuncuoğlu recommends medical treatments for low back pain and sciatica, headache, toothache, sinusitis and eye pain (5). He used a herbal mixture called Murkid to provide superficial anesthesia for patients who needed surgery. Murkid, which is obtained by mixing the plant known as Mandrake among the people with almond oil, has analgesic and sedative characteristics.

According to the World Health Organization, approximately 80% of people all over the world still use herbs for their health problems. It is known that this rate is higher in developing countries such as Turkey (6). In this review it was aimed to investigate Sabuncuoğlu's contributions to surgery and the anesthetic effects of herbs almond (*Amygdalus communis*, *Prunus dulcis*, *Prunus amygdalus*) and Mandrake (*Mandragora autumnalis*), that in the mixture called murkid, which he used for anesthesia and analgesia during surgery, in terms of modern medical pharmacognosy.

Sabuncuoğlu's surgical techniques, he used in the light of the literature and discussed in his great work called “Cerrahiyetü'l-Haniyye”, made a significant contribution

to the surgical techniques of that time, were investigated in detail, as well as the mixture called Murkid, which he used and suggested for anesthesia centuries ago. This mixture consists of almond oil and Mandrake. Based on this content, almond extracts (oil) and Mandrake, which are widely used in various areas today, were evaluated in terms of its medical and traditional indications and the active ingredients and phytochemicals it contains, with reference to many herbal medicine monographs such as the Turkish Medicines and Medical Devices Agency (TITCK), pfaf.org (7-9).

Using reference sources, the anesthesia-analgesia and sedative effects of almond oil and Mandrake on human health were investigated. In addition to the medical use of these herbal extracts, their traditional uses, which are frequently used in different ways in almost every society and civilization as old as human history, are also taken into consideration.

Approximately 168 surgical instruments and 138 surgical and medical approaches were drawn or depicted in Cerrahiyetü'l-Haniyye. It contains cautery technique, some surgical procedures, orthopedic fractures/dislocations, and cream, lotion and pomade recipes from medical treatments. In terms of content, this work includes some neurology, urology, orthopedics, neurosurgery, ophthalmology, plastic reconstructive aesthetic surgery, general surgery, obstetrics, oncology, thoracic surgery, dermatology and algology treatments.

Murkid is a mixture that was discovered hundreds of years ago and was found to be very effective when evaluated during its time. Although murkid is not a medicine used directly today, it has historical importance and has contributed to medical developments. Almond is considered to be from the Latin species “*Amygdalus communis*” in the “Rosaceae” family. There are synonyms named *Prunus amygdalus* and *Prunus dulcis*. It is classified as morphologically and biologically in various ways. Bitter almond seeds should not be consumed. Today, the oil extracted from its seeds, is used for medicinal purposes. The seed contains “laetrile”, known as vitamin B17, and antitumor “taxifolin”. Its leaves are used in the treatment of diabetes. Almond oils are used for dry skin in aromatherapy. TITCK; recommends to use carefully in hypoglycemic patients and discontinue 2 weeks before surgery. There is a small amount of hydrogen cyanide in its leaves and seeds. Low doses of hydrogen cyanide stimulate breathing and improve digestion. It is also used in cancer treatment. However, high doses may cause respiratory arrest and death (2,10,11).

Mandrake is known as “adam otu” in Anatolia because its roots resemble human being. *Mandragora Autumnalis*, commonly known as “Mandrake”, is in the “Solanaceae” family. Only one species grows in Anatolia. Some authors consider it is the same as *Mandragora Officinarum*. Even though they are different species, they have similar effects because they are from the same subfamily. It contains hyoscyamine and scopolamine alkaloids. Thus, it also has anticholinergic, hypnotic and hallucinogenic effects. In the past, it was used to treat depression, mania, and stomach ulcers. It can cause amnesia and reduce bronchial secretion. Mandrake was used for surgical anesthesia until the 19th century. However, it is toxic if the dose is not adjusted. Also it has dose dependent side effects such as blurred vision, headache, skin rash, vomiting, and tachycardia (2,10,12).

Surgery and anesthesia have evolved together through centuries. The development of surgical techniques and the birth of modern anesthesia are in the same time. If we look at the content of Sabuncuoğlu’s *Cerrahiyetü'l-Haniyye* from the perspective of today’s modern medicine: In Sabuncuoğlu’s studies in neurosurgery; on spinal dislocations, sciatic nerve, and approaches to back pain are shown with drawings (5,13). In general surgery treatments of hemorrhoids, anal fissure, perianal abscess, and inguinal hernia are depicted (14). The approach to the treatment of circumcision, urethral stenosis, imperforate anus, hypospadias, epispadias, urethral atresia, and perianal abscess in pediatric surgery are depicted and explained (15). Normal birth and manipulations related to obstetrics (16); treatment of upper and lower extremity fractures and

dislocations related to orthopedics and traumatology (17) are explained with drawings. The treatment of rib fractures, pneumothorax, and sternal fractures related to thoracic surgery is written (18). In addition to the treatment of maxillofacial injuries, gynecomastia, and hermaphroditism diseases related to plastic reconstructive and aesthetic surgery (19), treatment methods of urological surgery (20,21) are described. Dermatological treatments (22), treatment of proptosis, hypopyon, chalazion and pannus in ophthalmic surgery (23) procedures related to the treatment of varicose veins (24) and approaches to oncological surgery (25) methods are explained. In addition; he described acupuncture points and application methods (26). Some of these treatments have continued to be used till today.

It was unthinkable that Sabuncuoğlu, who described many surgical techniques mentioned above, did not know the importance of anesthesia for surgical procedures. For this purpose, he described Murkid. The “Mandrake” in Murkid has been described before in the Hittite tablets, in Ancient Egypt, in ancient legends, in the famous *Materia Medica* of Dioscorides, in the Bible and in Medieval Europe and also mentioned by Hippocrates. In many cultures it was associated with fertility. Mandrake, which has been the subject of many legends in the past due to its hallucinogenic effects, has a long medical history and superstitions played an important role during the time it was used. It was used by witches, especially in Europe. That is why it is less used today. Leaving aside its bad reputation, it can be used in the appropriate dosage and duration under the supervision of healthcare professionals (Figure 1) (27).

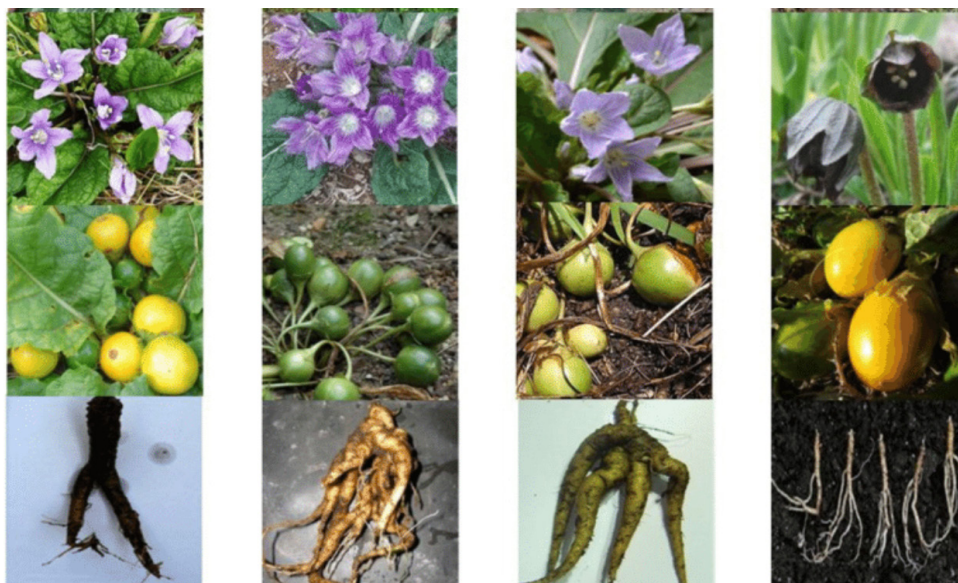


Figure 1. Different parts of *Mandragora officinarum* (28)

In this review when we examine the current pharmacognosy resources available, it is seen that medical practices, as in every field of science from past to present, are based on improving the previous ones. Sabuncuoğlu suggested that Murkid, which is a mixture of mandrake and almond oil, should be used for a certain dose and duration, the drug dose should be adjusted according to patient's weight, and stated that the patient should be followed up for a certain period after the surgical procedure. In this respect, it is seen that Şerafettin Sabuncuoğlu implemented some of the methods applied today and postoperative patient follow-up at that time (2,13).

Today, authors have stated that in the traditional medicinal use of both mandrake and almond (especially its seed), dose adjustments should be applied as with all medicines. Especially due to their high hydrogen cyanide content, it is stated that bitter ones of the almond seeds should not be consumed. When we examine the current monographs, it has been seen that the combined use of mandrake and almond oil has synergistic effects.

When we examine the ingredients, phytochemicals in the Murkid, it is seen that they are a perfect mixture according to the conditions of that time due to their synergistic effects in terms of analgesia, amnesia, hypnotism, decreased secretion, blood glucose control and hemodynamic stabilization for both surgical intervention and anesthesia.

Conclusion

Sabuncuoğlu is a Turkish physician who has successfully applied and transplanted some of the surgical techniques and anesthesia practices used today, far ahead of his time, centuries ago. He continues to inspire today's scientists with the illumination of his works. There is a need for further studies on the use of the active ingredients contained in Murkid in the field of anesthesia in modern medicine.

Ethics

Footnotes

Authorship Contributions

Surgical and Medical Practices: Y.Ö., K.E., Concept: Y.Ö., K.E., Z.S., Design: A.E., K.E., Z.S., Data Collection or Processing: G.A., Z.S., Analysis or Interpretation: Y.Ö., A.E., Z.S., Literature Search: G.A., Z.S., Writing: G.A., A.E.

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