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Use of Saffron Against Dementia and Memory Impairment in Traditional Persian Medicine: A Historical Perspective

Leila Rasi Marzabadi[1,2], Reza Mohammadinasab[3], Javad Ghazi Sha'rbaf[4], Mostafa Araj-Khodaei[1,5], Seyyed Mohammad Bagher Fazljou[1], Mahnaz Talebi[6], Saeed Sadigh Eteghad[6]

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[1]Department of Persian Medicine, Faculty of Traditional Medicine, Tabriz University of Medical Sciences, Tabriz, Iran
[2]Student Research Committee, Aging Research Institute, Tabriz University of Medical Sciences, Tabriz, Iran
[3]Department of History of Medicine, Faculty of Traditional Medicine, Tabriz University of Medical Sciences, Tabriz, Iran
[4]Department of Islamic History and Civilization, Faculty of Theology, Azarbaijan Shahid Madani University, Tabriz, Iran
[5]Neurosciences Research Center, Aging Research Institute, Tabriz University of Medical Sciences, Tabriz, Iran
[6]Neurosciences Research Center, Tabriz University of Medical Sciences, Tabriz, Iran

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Correspondence
Mostafa Araj-Khodaei, Faculty of Traditional Medicine, Tabriz University of Medical Sciences, Department of Persian Medicine, Tabriz, Iran
Phone: +989128382094
e-mail: mostafaa33@gmail.com

ABSTRACT

In the last century, dementia became one of the most widespread diseases due to the aging world population. Alzheimer's disease is the most common type of dementia. Persian medical literatures have discussed disorders such as forgetfulness and their treatment under the topic "Nesian." Causes of these medical conditions have been also categorized. Poor memory and improving its treatment methods have long been important in traditional medical teaching. For example, saffron is one of the herbs used as a memory enhancer, and it has been cited many times in the related literature. This study sought to consider the history of saffron in the treatment of dementia by examining authentic books of traditional Persian medicine and by describing examples of medicinal compounds affecting saffron-based medications. In reviewing these books, in the eighth century CE, three centuries before Avicenna, Ibn Hakam from Damascus was the first physician who deliberated the role of saffron in the treatment of dementia in his book *Haroniye* (Aaron's book). After him, other great scholars including IbnSina, Ibn Elias Shirazi, and Dawood ibn Omar Antaki developed saffron-based formulas to improve the memory status of patients with forgetfulness.

Keywords: Adult, brain, dementia, historical review, memory booster, memory enhancement, saffron

INTRODUCTION

By definition, dementia is the progressive destruction of cognitive functions in the context of consciousness (1, 2). This disease could be manifested as a set of dysfunctions, including memory impairments, language disorders, psychological and psychiatric changes, and disability in daily activities (3). The World Health Organization estimate that approximately 47 million people worldwide were living with dementia in 2015, which is expected to reach 75 million by 2030 and 135 million by 2050 (4, 5). Dementia has different types. The most common type is Alzheimer's disease, which has affected 10% of people aged >70 years. Alzheimer's disease is a progressive neurodegenerative condition that begins with short-term memory impairment in early stages, followed by cognitive, linguistic, behavioral problems, motor problems, and long-term memory disorders (6–8).

Crocus sativus L, known as saffron, is a plant from the Iridaceae family. This plant is one of the oldest useful spices in the world because of its color, taste, and extensive healing properties. Saffron is known as "red gold" worldwide (9–12). Iran has the largest ecosystem of this plant. Indeed, more than 90% of the world's supply of saffron is planted in Iran (13–16).

To our knowledge, the historical course of the effect of saffron on the treatment of dementia presented in Iranian medical literature has not been explored. Some articles may have discussed the role of saffron in history, but none of them has examined the context of the changes in the use of saffron in dementia in a historical context, especially with reference to Iranian medical books. Therefore, this study aimed to explore the historical importance of saffron in the treatment of dementia by considering ancient Iranian medical literature.

Saffron in Ancient Medicine

Saffron has been the focus of scientists since ancient times (17, 18) Aristotle (384–322 BCE), for instance, mentioned saffron as a fragrant plant (19). In the first century, Galen (129–c.200 CE) defined the properties of saffron in improving gastric diseases (20–22). In Galen's book translated from Syriac and most likely directly translated from Greek into Arabic by Hunayn ibn Ishaq (809–c.873 CE), saffron has been mentioned as a seminal stimulus (22, 23).

In the eighth century, *Haroon's Treatise on Medicine*, or Aaron's book, has mentioned saffron 21 times for treatment of various diseases, including stomachache, as well as for enhancement of liver problems and sexual potency (24–26).

In *Ferdows al-Hikmah fi al-Tib* (*Paradise of Wisdom*), the first comprehensive medical book of Islam written in the ninth CE by Ali ibn Sahl Raban al-Tabari (838–c.870 CE), the author of medical resources of three medical

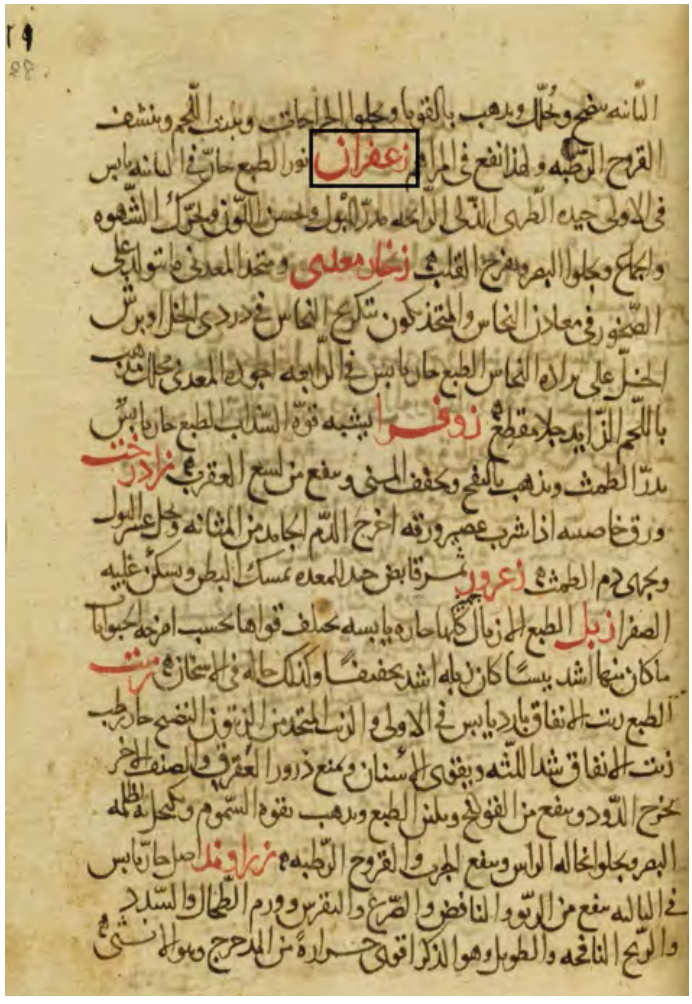

Figure 1. Therapeutic uses of saffron. Source: Taḥṣīl al-ṣiḥḥah bi-al-asbāb al-sittah تحصيل الصحة بالأسباب الستة Tiflīsī, Ḥubaysh ibn Ibrāhīm تفليسي، حبيش بن ابراهيم, British Library: Oriental Manuscripts, Or 8296, in Qatar Digital

Figure 2. Therapeutic uses of saffron, Canon of Medicin (al-Qānūn fī al-ṭibb). Source: al-Qānūn fī al-ṭibb القانون في الطب Avicenna ابن سينا, British Library: Oriental Manuscripts, Or 5033, in Qatar Digital Library

schools of ancient Greece, India, and Iran (27, 28), saffron has been mentioned 109 times, alone or in combination with other herbs, for the treatment of several diseases, including brain diseases (headache and forgetfulness), *eye* diseases, mouth, teeth, liver, lungs (cough), kidneys, diarrhea, and gout (27, 29, 30).

For many centuries, the efficacy of saffron in skin diseases, *eyes* problems, headache, melancholia, wound healing, diarrhea, liver and spleen diseases, and depression has been presented in other books about Iranian traditional medicine (19, 31, 32).

Some of the reference books on traditional medicine describing the therapeutic uses of saffron are shown in Figures 1, 2 (33–35). Moreover, recent studies have proved that saffron is clinically useful in improving symptoms of diabetes, Parkinson's disease, sexual disorders, atherosclerosis, depression, and cancers (36–40).

Early Historical Mention of Saffron to Treat Dementia

In Iranian medical literature, saffron has been repeatedly referred as an important and effective plant in the treatment of dementia. In their books, Iranian physicians (called *tabib* or *hakim*) prescribed different mixtures of saffron to treat dementia. Saffron is one of the most common ingredients of most of the prescribed medicines. For example, Masih ibn Hakam from Damascus has mentioned a mixture of different plants including saffron in his book *Haroniye* (41). This appeared to be the first mention of saffron to treat dementia by medieval-century physicians (42–44).

Traditional to Medieval Medicine

In Persian medicine, *nesian* (نسیان) refers to the impairment of memory, thinking, and imagination that is consistent with the modern concept of dementia. This disorder is divided into three categories: deficiency (*noqsan*), absurdity (*botlan*), and disruption

Table 1. Manuscripts citing the use of saffron in boosting memory impairment

Century (CE)	Author	Manuscript	Suggested way of using saffron
8th	Masih ibn Hakam	*Aaron's Treatise*	Mixed with cinnamon, halileh, amla, and coconut with honey.
9th	Ali ibn Sahl Rabban al-Tabari	*Ferdows al-Hikmah fi al-Tib*	Use alone.
11th	Avicenna	*Canon of Medicine*	Mixed with soad kofi, darfelfel, and honey.
14th	Ibn ElyasShirazi	*Kefaye Mansouri*	Mixed with pepper, cinnamon, ginger, oud, senna, coconut, and honey.
16th	Davood ibn Omar Antaki	*Tadhkirat uli al-albab*	Mixed with pepper, cinnamon, watermelon, Indian hyacinth, valerian, coconut, incense tree, and honey.
16th	Mohammad Ibn mohammad abdallah	*Tohfe Khani*	Mixed with oud, valerian, pepper, cinnamon, etc.
19th	Mohammad karim ibn Ibrahim Kermani	*Daqaiq al-Ilaj fi al-Tibb*	Mixed with soad kofi, and extract of fennel.
19th	Mohammad Sadegh Ali Khan	*Makhazen al talim*	Smelling saffron.

(*tashvish*) (45, 46). Masih ibn Hakam from Damascus has mentioned a potion to treat dementia in the second volume of his book. In addition to saffron, this potion consisted of cinnamon (*Cinnamomum verum L.*), halileh (*Terminalia chebula L.*), amla (Phyllanthus emblica L.), coconut, and honey (47).

Three centuries later, Avicenna (980–c.1037 CE), the greatest physician in the Middle Ages (48–50), has mentioned, in his book *Canon of Medicine*, a mixture of plants, including frankincense, soad kofi (*Cyperus rotundus L.*), darfelfel (*Piper longum L.*), and saffron eventually mixed with honey for the treatment of dementia (19, 51, 52).

In the 14th century, Ibn Elias Shirazi (1320–c.? CE), in his book *Kefaye Mansouri* (Mansouri's Adequacy) referred to a combination of saffron, pepper, cinnamon, ginger, oud, senna, coconut, and honey as an effective drug to mitigate the symptoms of dementia and enhance memory (53). In his book *Khani's Masterpiece* in the 16th century CE, *Tohfe Khani* has also written an article explaining the treatment of dementia. He has also introduced a mixture of saffron, oud, valerian, pepper, cinnamon, etc., to enhance memory (54).

To our knowledge, no medieval physician has mentioned the effects of saffron on the treatment of amnesia, as much as Dawood ibn Omar Antaki (1543–c.1599 CE). In *Tadhkirat uli al-albab*, he has repeatedly emphasized the role of saffron in various compounds for the treatment of amnesia. This physician provided a tested compound consisting of saffron, pepper, cinnamon, watermelon, Indian hyacinth, valerian, coconut, incense tree, and honey for the treatment of amnesia (55).

Three centuries later, Mohammad Karim ibn Ibrahim Kermani (?–1871 CE) also proposed a potion to reduce the symptoms of dementia in his book *Daqaiq al-Ilaj fi al-Tibb* (*Accuracy of Treatment*). Furthermore, he introduced herbs such as saffron, soad kofi, and extract of fennel (*Foeniculum vulgare L.*) to strengthen memory and treat dementia (56).

Mohammad Sadegh Ali Khan, the last scholar who lived in India in the 19th century (?–1862), discussed the properties of saffron in the treatment of the dementia. He suggested that even smelling saffron is useful for the prevention and treatment of dementia, similar to aromatherapy (i.e., treatment through smelling plants) (57). A summary of manuscripts that mentioned the role of saffron in boosting memory is listed in Table 1.

CONCLUSION

Throughout history, saffron has gained a very powerful position in the treatment of dementia. This article also summarized the usage of saffron and its significant effects on dementia with reference to Iranian medical books. According to these books, the use of saffron alone or in combination with other drugs has had a surprising effect on brain function. With the spread of medical science, physicians in different centuries has expanded their knowledge about the beneficial effects of saffron on brain function, especially dementia; as a result, saffron has always been strongly recommended as an effective drug to treat forgetfulness.

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