

Review Article

The Emergence of *Fritillaria imperialis* in Written References of Traditional Persian Medicine: a Historical Review

Afsaneh Bonyadi¹, Seyyedali Mozaffarpur^{2*}, Mohammad Azadbakht³, Mortaza Mojahedi²

¹ Department of History of Medicine, Mazandaran University of Medical Sciences, Sari, Iran

² Traditional Medicine and History of Medicine Research Center, Babol University of Medical Sciences, Babol, Iran

³ Department of Pharmacogenesis, Mazandaran University of Medical Sciences, Sari, Iran

Received: 10.10.2016; Accepted: 15.12.2016

Abstract

Fritillaria plant belongs to the lily family (Liliaceae) and naturally grows in cold areas, highlands, rocky slopes and cliffs. This study examines the emergence of this plant in the written references of Traditional Persian Medicine (TPM). In this research, we searched native names of *Fritillaria imperialis* (laleh sarnegoun) in outstanding references of TPM including: *Almansori fi Teb*, *Al-Qanon fi Teb*, *Al-saidana fi Teb*, *Al-Abnieh an Haghayegh Al-Advieh*, *Al-Aghraz Al-Tibbia*, *Ekhtiyarat Badi'i*, *Al-Mo'tamed fi Al-Advieh Al-Mofrade*, *Tazkereh-ye Davoud*, *Tohfeh Al-Momenin*, *Makhzan Al-Aladvieh* and *MohitA'azam*.

Fritillaria is one among thousands of medical materials added to the pharmacopeia books in TPM from Avicenna's era (the 4th century AH) up to the 13th century AH. In our review, the first report of *Fritillaria* was found in the book of *Tohfeh Al-Mo'menin* written by Hakim Mo'men Tonekaboni. He discovered the therapeutic effect of the oil of *Fritillaria imperialis* against sciatica.

TPM was represented as a dynamic medicine, culture characterized by continual expansion of its written references.

Keywords: *Fritillaria imperialis*, Traditional Persian Medicine, Hakim Momen Tonekaboni

***Corresponding Author:** Seyyed Ali Mozaffarpur, Traditional Medicine and History of Medicine Research Center, Babol University of Medical Sciences, Babol, Iran; Email: seyedali1357@gmail.com.

Please cite this article as: Bonyadi A, Mozaffarpur SA, Azadbakht M, Mojahedi M. The Emergence of *Fritillaria imperialis* in Written References of Traditional Persian Medicine: a Historical Review. *Herb Med J.* 2017;2(1):39-42.

Introduction

The history of traditional medicine is as old as human life (1). Traditional Persian Medicine (TPM) is one of the oldest medical schools dating back to nearly ten thousand years (2). This paradigm of medicine introduced humeral theory to improve health and treatment for a large part of the world for centuries. Based on TPM, using medical materials and herbal drugs is one of the major therapeutic

steps. Prominent Persian physicians, including Avicenna, Haly Abbas, Rhazes *et al.*, have contributed for centuries to the accumulation of knowledge as they have written valuable books. Although TPM's rate of promotion has varied during its history, it has never been static.

Fritillaria imperialis is a member of the Lily family (Liliaceae) which consists of 99 species. It is widely distributed in moderate regions of the Northern

hemisphere (3-5). Nowadays 15 species are found in Iran. *Fritillaria imperialis* (also called Ashk-e Maryam) is one of the members of this family that grows every year in its endemic region and has a perennial large bulb. Morphologically, it has a thick brown cylindrical stem, bare of leaves under flowers. Located in the lower part of the stem, the spear-like leaves are green, oval and sharp. A bunch of leaves at the end of the stem grows and 5 to 8 Bell-shaped red flowers with curved peduncles appear at the end of leaves. This plant grows widely in Iran, usually in May (6). Flowers can be yellow, red and orange. *Fritillaria imperialis*'s significance in economy and tourism is confirmed (7). According to the policies undertaken by environmental protection agencies, *Fritillaria imperialis* considered as a genetic storage and aesthetic factor the protection of which is necessary. (Directive No. 15 Dated 27.11.1385 or 2.15. 2006. Supreme council on the Environment)

Today, in addition to the aesthetic value associated with *Fritillaria imperialis*, its medicinal value is acknowledged too. *Fritillaria imperialis* grows in few places around the world. This plant is native to southern Turkey, Cyprus and Iran (9). This plant has many therapeutic applications in China and is used in the treatment of dysmenorrhea, dental pain, a sore throat and rheumatic as well as muscular pain (10-11). The raw bulb of this medical material has been used as an important drug in traditional Chinese medicine for long years (10). In China this plant is used to treat cough and mucus (12).

In this study we want to track the emergence of *Fritillaria imperialis* in written references of TPM to understand its indications of treatment in other studies.

Methods

This research is a review of the literature that focused on the written references of TPM, to find the track of *Fritillaria imperialis*.

Outstanding books in pharmacology of TPM (called Mofradat in TPM) from the early Islamic centuries were searched to find the first reports about this plant. We searched the native name of *Fritillaria imperialis* (laleh sarnegoun and laleh vazhgoon) in the following books: *Kitab Al-Hashaish* which is an Arabic translation of *Dioscorides's De Materia*

Medica (200 BC), *Almansori fi Teb* written by Razhes (3th and 4th centuries AH), *The Canon of Medicine* written by Avicenna (4th and 5th centuries AH), *Al-Saydaneh* written by Abu Rayhan Al-Biruni (4th and 5th centuries AH), *Al-Abnieh* written by Abu Mansur Harawi (4th and 5th centuries AH), *Al-Aghraz* written by Seyed Esmail Jourjani (6th century AH), *Al-Mo'tamed* written by Malek mozafar Torkamani (7th century AH), *Ekhtiarat Badi'I* written by Haj Zianal Attar (8th and 9th centuries AH), *Tazkereh* written by Davoud Antaki (10th century AH), *Tohfe Al-Mo'menin* written by Hakim Mo'men Tonekaboni (11th century AH), *Makhzan Al-Aladvieh* written by Aghili Khorasani (12th century AH) and *Mohit A'zam* written by Muhammad A'zam khan Chashti (13th century AH).

Results

1. The list of names possibly associated with *Fritillaria imperialis* in the sources:

In the early texts of traditional medicine there are several names that may resemble *Fritillaria imperialis*. These terms include: *aklil al malek*, *arargheisari*, *shirpar* flower, *laleh vazhgoon*, *laleh sarnegoun*, *malodorus* laleh, *negin* flower, *ashk-e Maryam*. However, it seems that *laleh vazhgoon* and *laleh sarnegoun* are the most commonly repeated terms for *Fritillaria imperialis* in TPM references.

2. *Fritillaria imperialis* in ancient texts of TPM:

There was no mention of this plant in the early books of traditional medicine including *Al-Hashaesh*, *Al-Mansori fi Teb* written by Razhes, *The Canon of Medicine*, *Al-Saydaneh*, *Al-Abnieh*, *Al-Aghraz*, *Al-Motamed*, and *Ekhtiarat Badi'i*. Probably, they had not presumed any medicinal role for this plant, or even did not know it.

3. The first report:

According to this study, it seems that the first report about this plant is found in *Tohfe Al-Momenin*. In this book, Hakim Seyyed Mohammad Mo'men Ibn Amir Mohammad Zaman Hosseini Deylami has mentioned this plant under the name of *laleh sarnegoun* and has cited it: "*Laleh sarnegoun is the name of a famous plant, implanted in gardens. To make its oil, the root (bulb) should be beaten and then boiled with the same amount of sheep fat till its water is vaporized and oil remained. It is utilized for the treatment of Sciatica*".

The next report of this plant is available in *Makhzan Al-Advieh* written by Aghili Alavi Khorasani (14): “*Laleh sarnegoon is the Persian name of a famous plant found in gardens. To make its oil, its bulb should be beaten and then boiled with the same amount of sheep fat till its water is vaporized and oil remained. It is utilized for the treatment of Sciatica*”. Hakim Mohammad A'zam Khan (Nazim Jahan) (15) has also expressed this report with the same words: “*Laleh sarnegoon is the Persian name of a famous plant found in gardens. To make its oil, its bulb should be beaten and then boiled with the same amount of sheep fat till its water is vaporized and oil remained. It is utilized for the treatment of Sciatica*”. *Fritillaria imperialis* is one of the rarest species of flowers. It is considered as one of the wild native plants found in mountainous regions of Iran. This plant grows in a wide range in cold climates such as cold heights of Alborz, Kohgiluyeh and Booyer Ahmad, Oshtorankooch of Lorestan, and Golestan mountain in Khansar (all of them are mountains in Iran) (16).

On the basis of our study, the first report of *Fritillaria imperialis* with the name of *laleh sarnegoon* has been delivered by Hakim M'omen in his book, *Tohfe Al-Momenin* (11th century AH). In his description he mentioned the popularity of this plant (possibly at his era). Moreover, it seems that it had a decorative use.

Hakim Mo'men moved from Tonekabon (North of Iran) to Isfahan (in the center of Iran) in the 11th century AH. He investigated, searched and identified during his travel many of native Iranian medicinal plants. As we know, among the habitats of *Fritillaria imperialis*, Alborz is one of the most famous Iranian mountains. Hakim M'omen chose Alborz as the path from which he would move to Isfahan. So it seems that the routine habit of TPM physicians in adding their personal experience to the body of knowledge is true about this medical material too. *Fritillaria imperialis* is only one example among thousands of medical materials added to pharmacology books, as one part of the written references comprising TPM, from Avicenna era to Aghili's time.

This case corroborates the dynamics of TPM that has not limited itself to ancient knowledge, and has continually contributed to the expansion of human

knowledge through the depiction of physician's experience. This point about *Fritillaria imperialis* can be understood by the term of "Experienced" in Hakim Mo'men's phrases.

The next point advocated by this research refers to its recommendation for the local application of this drug. As probably Hakim Mo'men had been aware, the oral administration of this drug can be poisonous, so he recommended merely the topical application. New findings of medicine confirm this view of the so-called physicians based on the fact that there is a kind of dangerous and poisonous Glycoside named Cyclamine in fresh bulb of plants that is lost when heated (17).

Another noticeable point in Hakim Mo'men's description is the detoxification of this plant's bulb by using fat. Moreover, TPM theories suggest that this process may enhance its effect on muscles.

The similarity between the texts written by Hakim Aghili and Hakim A'zam Khan, and Hakim Mo'men's arguments is another important point about *Fritillaria imperialis*. It seems that Hakim Aghili and Hakim A'zam trusted him. This instance may help us realize the structure observed by TPM physicians in their books. Hence, they considered one of their accepted books as the basis and then marginally added their opinions to it. If they also had new experiences about a particular herb or a drug that did not approve the basis, they would add them to the text with a high degree of venerability.

Therefore, it seems that *Tohfeh Al-Mo'menin* has always been accepted as a basis for posterior physicians in TPM because of its writer's self research and experience. Finding therapeutic effects of this plant in Hakim Mo'men's surroundings and presenting it to the world of science is an evidence of this claim.

Conclusion

Today, many functions have been proposed for this plant including analgesic effects (due to the existence of some Alkaloids e.g., impericine, foricine), efficacy in relieving various pains including dysmenorrhea, toothache, rheumatic and muscle pain (10-11), anti-cough and mucus effects (used in Chinese traditional medicine) (16) and anti-tumor effects (19). However, the pattern used by TPM physicians in the expansion of science implies the necessity to conduct more studies concerning the therapeutic uses of *Fritillaria*

imperialis.

Acknowledgment

We acknowledge Dr. Mohammad Ali Shams for editing the manuscript.

Conflict of Interest

The authors declare that they have no conflict of interest.

References

1. Saharoodi SH. Traditional medicine. Hayan publication;1386.
2. Zargarani A, Ahmadi SA, Daneshamouz S, Mohagheghzadeh A. Ancient Persian pharmaceutical vessels and tools in Iranian archaeological museums. *Pharm Hist (Lond)*. 2012;42(4):68-71.
3. Tsukamoto Y. The Grand dictionary of horticulture. Shogakukan, Tokyo. 1989;4:27.
4. Emami A, Ahi A. Medical botany. Mashhad: Mashhad University of Medical Science. 2012;p.403.[persian]
5. Azadbakht M, Azadbakht M. Medical plant systematic (According to APG). Tehran: Arjmand. 2013;p.95.[persian]
6. Haji Sharif A. Secrets of medicinal plants. Tehran: Hafez Novin. 2007. P.978-979.[persian]
7. Islamzadeh N, Hosseini M, Moradi H. The study of *Fritillaria imperialis* site by Ellenberg table. *J Sci Tech Natural Res*. 2010;1(5):83-93.
8. Hamidoghli S, Chamani E, Hamidoghli Y, Talei N. Effect of different plant growth regulators on direct bulbet regeneration from scale explants of *fritillia imperialis*. *Journal of crop production and processing (JCPP)*. 2015;5(16):211-8.
9. Ori K, Mimaki Y, Sashida Y, Njkaido T,etal. Persicanidine A; a novel cerveratrum alkaloid from the bulbs of *Fritillariapersica*. *Chemistry Letter*.1992;00:163-6.
10. Kitajima J, Noda N, Ida Y, Miyahara K,et al. Steroidal alkaloids of fresh bulbs of *Fritillariathunbergii* and of crude drug "Bai-mo" Prepared therefrom. *Heterocycles*.1981;15:791-6.
11. Sung Taekoo Yong II Park, Kyu Sang Lim, et al. Acupuncture analgesia new rat model of ankle sprain pain. *Pain J*. 2002;99(3):423-31.
12. Kaneko K, Katsuhara T, Kitamura Y,etal. New steroidal alkaloids from the Chinese herb drug «Bei-mu». *Chem Pharm Bull*.1988;36:4700-5.
13. Hakim Moumen SM. Tohfeh al-Momenin. Tehran: Nashr. Shahr; 2008. [persian]
14. Aghili Khorasani SM. Makhzan-AL'Aldvieh. Tehran: Entesharat Bavardaran; 2002. [persian]
15. Nazem Jahan MAK. Mohit-e-Azam. Tehran: Almai; 2015. [persian]
16. Oghli Hamid Q, the impact of explants and growth regulators on in vitro proliferation of *Fritillaria imperialis*. University of MohagheghArdebili. Faculty of Agriculture, MSc thesis. 1389.
17. Zargari A. Medical plants. Tehran: Tehran University Press. 1993;3:282-4. [persian]
18. Mard A, Sharifi M, Fathi M. Evaluation of analgesic effect of *Fritillaria Imperialis* aqueous extract in rats and comparison of its effect with morphine. *J Ilam Univ Med Sci*. 2005;13(3):1-6.
19. Nadeem MA, Rahman AU, Choundhary MI, Sener B, Erdogan I, Tsuda Y. New class of steroidal alkaloids from *Fritillaria Imperialis*. *Phytoch J*. 2002;63:115-22.