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REVIEW: An Investigation on the Properties of *Zingiber officinale* Rose and Its Application in Nutrition and Medicine Based on Scientific and Islamic Texts

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ABSTRACT

Introduction: Zingiber officinale Rose (ginger) has been used for many purposes in traditional medicine since 2500 years ago. This study intends to introduce the ginger plant, some of their applications in the field of human health in traditional and modern medicine, and their conformity with Islamic and Quranic findings.

Material and Methods: Administrative and therapeutic information of ginger was searched in related and valid books and databases of Web of Science, PubMed, SID, Google Scholar, and Scopus. Ginger keyword was searched in the Quran and hadiths and its medicinal and pharmacological properties; also in traditional Persian medicine and laboratory studies, the day, was collected from published articles. In order to confirm the obtained info-rmation, it was matched with Quranic and narration versions, and the obtained information was analyzed, compiled, and presented.

Results: Avicenna has mentioned the positive effects of ginger in his Canon of Medicine. The Food and Drug Administration of the Ministry of Health in Iran has also introduced ginger as a dietary supplement. Ginger's name is mentioned in the Quran, in verse 17 of Surah Al-Insan. In narrations and quoting scientists as well as in modern medicine and articles, the effects and application of this plant in the field of medicine and nutrition have been mentioned.

Conclusion: The results have shown that the use of ginger in nutrition as a spice or supplement and in Persian medicine as a medicament has a scientific and practical basis, and studies on this issue are confirmed both in science and Islam. Findings obtained from laboratory and clinical studies can also be effective in the proper use and preparation of appropriate medicinal forms of this plant.

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Introduction

The use of medicinal plants has long been welcomed and researched in traditional medicine in many countries of the world, this is common and in addition to use as nutrition, it is used as a medicine and in medicinal product and in the treatment (1, 2). From different organs and parts of plants such as roots, stems, flowers, leaves, fruits and also its various forms in fresh, dried and chopped form, medicinal and nutritional uses are always made and are also used (3).

In recent centuries and years, the use of chemicals has become very popular and has been widely used in the matter of nutrition and as a medicine. In addition to the many advantages it has brought, unfortunately, it has also caused harms and disadvantages. And human beings have tried to compensate it and eliminate damages and minimize the damage with the approach of using natural materials and of course with an expert view (4). Therefore, the approach to the use of medicinal plants as well as traditional and Islamic medicine has always been emphasized and useful. Like fire under the ashes, it became flammable, active and executive (5, 6).

Ginger with English names Ginger, Quranic and Arabic Ginger, scientific *Zingiber officinale* Rose is a perennial herbaceous ginger family with about 70 native species of Southeast Asia with slender, straw-like stems and shiny bayonet leaves that grow from the tuber stem. In summer, the stem comes out of the ground. In some ancient texts, it is also referred to as ginger, Shengviro and Zhangvir. Ginger (a plant with a swollen rhizome) is native to India, China and Pakistan and is generally present in the diet of most parts of the world - as a spice in the food industry (7). Ginger, in some ancient texts is also referred to as Ginger or Shengvir-Zhangvir. Tajiks also call it Inbir.

Ginger contains various substances such as carbohydrates, free fatty acids, amino acids and non-volatile compounds such as gingerol (causes its taste and inhibits the growth of cancer cells - large intestine), starch and vitamins A and C. 6-gingerol is one of the bioactive compounds of ginger, which is related to the main factors of plant spiciness and anti-inflammatory, antioxidant and anti-tumor properties (8). Ginger rhizome is prepared from a powder called ginger spice, the taste of which is spicy and fragrant. It has been used for a long time to flavor foods in traditional medicine, and the Food and Drug Administration (Ministry of Health) also uses ginger as a supplement. Has been introduced by food (9) and is also considered as a dietary supplement by the World Health Organization (10). Ginger has a valuable place in ancient Chinese medicine since ancient times and even today. This plant was known and used in ancient Iran under the name of Zhangvir and was brought to the west from Iran and Arab countries. The therapeutic use of ginger was first recorded by the Greek physician Dioscorides in the first century AD, although centuries ago it was exported to Europe from the Far East until the Middle Ages, where it was used as a Ginger has been known as a cooking ingredient. In traditional medicine, ginger has been used as an absorber around the head, throat and stomach, and by eating or rubbing it, it has been used to treat dark circles caused by redness (11). Traditional Iranian medicine, Avicenna, in the Canon and Mohammad Momen Tonekaboni in “the gift of Hakim Momen”, mentioned the positive effect of this substance. In traditional medicine of other societies, ginger is prescribed and used to treat dysmenorrhea (painful menstruation) (12) Ginger stimulates the digestive system. And it is very useful for digestion. Cancer protection and antioxidant effects are important effects. Ginger has a long history in medicine and has been used as an anti-inflammatory agent for musculoskeletal diseases in traditional Chinese medicine for more than 2500 years (13)

Education, research, teaching and learning of humanities and Quranic sciences and such studies and researches seem necessary; Ayatollah Javadi Amoli says: Achieving the

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status of infallibility is not exclusive; What is exclusive and a blessing and no one can achieve it with effort and endeavor is prophecy, mission and Imamate, which God says: "Allah knows best as He has made His message" The Infallible Imams are only twelve, but it is possible to become pure and undefiled, just as Hazrat Fatemeh Zahra had the Queen of Infallibility without having the position of prophethood, mission and Imamate. (Abdullah Javadi Amoli, Electronic Journal of Captivity 2009 No. 8); Acceptance of religion without research, investigation, study, and the right to comment is not accepted by the Almighty, which is also emphasized by Islam and the Qur'an. In the Qur'an, he severely rebukes those who have accepted a religion simply because it was the religion of their fathers and grandfathers, calling them blind people who are unable to see the truth, and calling them to the truth like a cry for cattle (Sura Al-Baqara verses 170 and 171).

"And when it is said to them: 'Follow what God has sent down!' They say, "No, we follow what we found our fathers on." What if their fathers did not understand and they were not guided? (170). The example of the disbelievers is like one who cries out (to save sheep and animals from the clutches of danger); But they hear nothing but noise; and they do not understand the truth and the meaning of his speech. These disbelievers, in fact are deaf and dumb and blind; hence they do not understand anything! (171) (Translated by Ayatollah Makarem Shirazi). Science is not exclusive, it will be acquired and implemented with effort, knowledge and experience, so according to the interest and records of using colleagues with expertise in the field of medicinal plants, traditional medicine, pharmacy, medical and relief sciences, writing, and culture. In order to study these cases, enlightenment and presentation, and considering the importance of discussing traditional medicine and combining and expert view with modern medicine and reviewing the findings of Islam and the Quran, reviewing the medicinal properties and characteristics of ginger with the introduction approach. This study was performed on medicinal properties, use in nutrition, traditional and modern medicine and laboratory studies and in accordance with Islamic and Quranic findings that were not performed in this way.

Methods

Information on the medicinal and therapeutic effects of ginger, its target organ and other products in related and authoritative books as well as reputable scientific databases such as Web of Science, PubMed, SID, Google scholar, Scopus with the keyword ginger in the Quran and hadiths and of course properties and its pharmacological and pharmacological use in traditional medicine and laboratory studies were collected from the published articles. In order to confirm the obtained information, it was matched with the Quranic version and narration, and the reliable and relevant information was examined, and with the software and evaluation, the obtained information was analyzed, compiled and presented. The validity of the existing experiments and results has been based on studies and experiments and has confirmed its importance and application in traditional medicine and Islam.

Discussion

Ginger in medicine and research

Laboratory studies show that ginger has anti-inflammatory effect by inhibiting cyclo-oxygenase and lipoxygenase pathways (14).

It has also been shown to have antioxidant, anti-cancer, anti-coagulant effects and is effective on decreasing blood pressure, lipids and heart disease. Ginger strengthens the digestive system and is anti-seizure, anti-flatulence, anti-nausea and vomiting, lowers blood cholesterol, and is effective in treating colds, flu, anorexia, mental problems, rheumatism and intestinal spasm. (15)

The effect of ginger on primary dysmenorrhea in students of Qazvin University of Medical Sciences by Pakniyat et al. (2019). The results showed that the herbal medicine

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ginger (500 mg ginger pill) has a great effect on reducing the severity of dysmenorrhea and it was suggested to achieve the appropriate dose of the drug for complete treatment of dysmenorrhea and other symptoms associated with menstruation. Further studies should be designed and performed (16).

Ginger can also be as effective in the treatment of primary dysmenorrhea as ibuprofen and mefenamic acid (17). Fresh ginger and its syrup with ginger tea produce heat in the body. Researchers have developed nanosomes containing ginger extract to fight cancer.

Research has shown that ginger has potential anti-addictive properties against chronic morphine use (18).

Ginger can reduce inflammation and pain from strenuous exercise (19).

Different extracts of this plant have protective effects against chemical damage induced by chemicals. For example, pretreatment with ethanol extract of the plant rhizome is effective in acetaminophen-induced hepatotoxicity (20).

According to the results of research by Khalili et al. Ginger plant has an effect on reducing the rate of acute and chronic pain and inflammation in laboratory mice (21).

In a study, the radioactive protection effect of hydro-alcoholic extract of ginger in mice was investigated and it was found that intraperitoneal injection of this extract before exposure to gamma rays, improved the symptoms of radioactive disease and reduced mortality (22).

This plant significantly reduces the proliferation of helper T lymphocytes, inhibits the secretion of alpha IL1; therefore it can be effective in the treatment of chronic autoimmune diseases (23).

Ginger in nutrition

In addition to antioxidant effects, ginger increases digestive juices and has a positive effect on fast digestion of fats (24).

The level of knowledge and practice of students of Mazandaran University of Medical Sciences about foods and plants mentioned in the Quran was also conducted in the field by Fathi et al. (2015). Ginger was also studied and recognized. The highest and lowest correct answers were related to olives and salt respectively (25).

According to the investigations, ginger and its acetone extract dissolve well in oil and while having high stability, due to its strong phenolic and non-phenolic antioxidant compounds, it can prevent the formation of primary and secondary products. Also, since it has a strong chelating effect on copper metal, it can be considered as a strong natural antioxidant and chelating agent. (26).

The effect of ginger in some experiments and studies on stimulating aquatic growth has been reported positively (27, 28). Ginger powder has been effective in growth efficiency and aquatic safety parameters (29).

The effect of plant extract on the residual volume of the stomach in patients with mechanical ventilation admitted to the intensive care unit was investigated, determined and it was announced that ginger extract can reduce the residual volume of the stomach in mechanically ventilated patients admitted to the intensive care unit. Malnutrition caused by it in the patients of this ward, it was suggested to use this complementary treatment in these patients, which in the usual doses in studies, has no side effects to improve gastrointestinal motility and better tolerance of nutrition, so the side effects of malnutrition, the residual volume of the stomach, the risk of aspiration of its contents and the length of stay of patients in these wards will be reduced (30)

Zingeron is one of the active ingredients of ginger plant and if added to the diet of western white-footed shrimp, it will increase the growth index in this shrimp (31). This extract of ginger plant can stimulate growth in *Mesopotamichthys sharpeyi* in the stage "Finger height" (32).

Ginger, which has many bioactive compounds, has long been used as an herbal medicine and spice in a variety of foods and beverages. By coating ginger extract in colloidal nanocarrier systems, the bioactive compounds contained in it can be protected against environmental factors such as oxygen, light, heat, and radiation (33).

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Ginger is considered in various books of medicinal plants and ancient sources; historical material on the subject is mentioned in books related to medicinal plants and Islamic medicine, and the following are examples:

Ginger is appetizing and removes toxins from the body and is useful for rheumatism and leg pain (Miracle of Foods, p. 141); it also stimulates the glands, expels phlegm, and cleanses the intestines and stomachs (ibid., P. 140).

Abdullah and Hussein, the sons of Bastam, have said: Ahmad ibn Rabah, a physician who is one of the companions of Imam Askari (AS), spelled these medicines on us and said that he offered them to the Imam and prescribed them for the pain of the lungs (Encyclopedia of Islamic Medicine, vol. 3). Four ounces of pepper and four ounces of ginger and the same amount of pepper, rice, nutmeg and cinnamon, which are pounded in equal amounts, that is, four ounces, and 45 ounces from the smooth and good sea floor and 46 ounces from white sugar. Sift a cloth or straighten the hair with Parvizen (a tool that is used to sift sugar, flour and the like), then double all of the above and knead them twice with honey. Then, whoever eats it for the pelvis (pelvic pain) should eat three ounces of it, and whoever eats it for walking should eat 7 ounces, cooled with warm water, which removes any pain according to the command of transcendence, and with this medicine, no other medicine is needed. It is not that it does not need other medicines and it is good and experienced when it is taken for walking it should be eaten with honey (Al-Imamah Medicine, p. 76).

In the case of ginger from the perspective of traditional medicine (Avicenna), the following can be mentioned: Zerumbet or desert ginger, it is a plant similar to ground musk but thicker and came from Chin; it smells wet and its color is earthy. Its temperament is hot and dry up to the third and has carminative properties. Ginger makes the heart and chest happy. This plant is anti-diarrhea, and eliminates flatulence. Ginger is an antidote and neutralizer of pests and is very useful in this case and almost has the effect of Zedoary (of course, in this case, desert chicory and Bergamot seeds can be used instead), it also prevents vomiting. Ginger has fattening regarding cosmetics, and also eliminates the smell of wine, garlic and onions. (Law, Book II)

The Gift of the Wise or “the gift of the Momen” is a detailed book on Traditional Persian medicine taken from Iranian, Greek and Indian sources by Mohammad Momen Hosseini Dailami Tonekaboni Tabib Ibn Mohammad Zaman Dailami Tonekaboni, physician of Shah Suleiman Safavid.

In this traditional book, Celandine is described as a small type of turmeric plant, and since it is useful for the eyes, it is called hashish al-Khattaf. This plant is called turmeric in Persian, Tumeric and Curcuma in English, Heldi and Kurkim in Hindi. (Darolshafa Imam_Site of Astan Quds Razavi Therapeutic Institute). Turmeric is an underground stem or stem from the Zinjiberaceae family, from the genus Curcuma and its scientific name is *Curcuma domestica* Val. Turmeric ginger tea is also a healthy, low-calorie and decaffeinated beverage that has many medicinal and nutritional benefits (34), such as: protecting heart health, strengthening the immune system, and has the nature of strengthening brain and cognition improvement, is also beneficial in skin care, diabetes management, showing analgesic properties and helping digestion (Quds Online analytical news site).

Quranic and medicinal plant

Ginger is one of the ingredients of Indian spice, which is also known as curry powder. Dr. Benjamin Gilward Howers, in his book "What to eat and how to cook", mentions this spice well and uses it. Has ordered it for some foods (Healing Flowers and Plants, p. 117; and Benghamine Gilward Howers, Mehdi Naraghi _Translator_Publisher: International Publishing Company_affiliated to the Islamic Propaganda Organization-2014).

Ginger in the Quran

The plant of ginger is mentioned in Surah An-Ans: verse 17: They benefit from glasses full

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of wine mixed with Ginger. Some people have said ginger has the meaning of wine. Ginger is also the name of one of the springs of Paradise. In the translation of Al-Mizan commentary, it is mentioned that the residences of paradise use the fragrant aroma of ginger and pour it in the cup of drinks and that Ginger is purer. It is more fragrant when poured into their wine glass (15). Ginger strengthens and refreshes the heart and respiratory system and acts like a digoxin. Ginger dilates blood vessels and arteries and prevents the formation of blood clots. And this is where the wisdom of referring to the ginger plant becomes more apparent in the Quran.

Ginger in Islam

Imam Reza says: “Someone who wants to forget less and make his memory strong, should every day "eat three pieces of ginger mixed with honey and eat something prepared with mustard with his food" (Mostadrek-al-masaael, p:455). According to the medical teachings of Imam Reza (AS) and Avicenna medicine, ginger has many properties: antitussive, nausea and headache relieving. This plant is expectorant and is useful for foot pain. It relieves heartburn and relieves all pain. It should be consumed with honey because its high consumption causes sore throat and if half a teaspoon of plant root powder dissolves in a drink and has an anti-nausea effect after getting in the car. Ibn al-Qayyim says: "Ginger is a warming agent that helps digestion and has laxative property to a moderate degree. It is useful for treating liver disorders caused by cold and wet temperament. Eating it and applying it as kohlrabi is useful for treating poor eyesight caused by wet. It helps for having better intercourse and prevents bloating in the intestines and stomach, and is very useful for the liver and stomach of people with a cold temperament." Samen Al-Hajj (AS) also recommend it for maintaining agility and perform better daily tasks. Today it is known that ginger is one of the plants that can control the weight, as is one of the most effective natural substances in maintaining blood flow and preventing it from clotting, and by clearing the digestive system, it blocks the excess fat storage. Also, this plant can be effective through its various mechanisms such as anti-inflammatory and antioxidant in the treatment of various chronic and inflammatory diseases such as cancer, asthma, fatty liver and arthritis, etc (35). The emphasis of Islam and Qur'an on Ginger is because in the past, ginger was used in the treatment of various diseases such as neurological diseases, asthma, diabetes, arthritis, insomnia, stroke, etc. (36). In bahar al-anwar it is said that the ginger is a suitable remedy for people with short memory (Volume 5, p: 306).

Conclusion

The results confirm that the use of ginger (*Zingiber officinale* Rose) in traditional medicine as nutrition and medicine has a scientific and practical basis. The findings of projects carried out in clinical and laboratory studies can also be useful in this regard. It can be effective in the correct use, preparation and distribution of medicinal part of this plant and use as food, medicine and in industry. Of course, it is necessary to mention that more than a thousand years ago in traditional Persian medicine and of course in the Qur'an and Islam, this heavenly plant was mentioned and described. Therefore, by researching, studying and matching the findings with each other and evaluating and concluding correctly, the plant can be used in the right form. The effective dosage forms and dosing can be learned; therefore, study, research and investigations should be done.

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Conflicts of interest

The authors declare no conflict of interest regarding publication of this article.

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Authors' contributions

All authors have intellectually committed to the study design and process. The final manuscript was revised and accepted by all authors.

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