



A review of the benefits and uses of garlic (*Allium sativum* L.) and onion (*Allium cepa* L.) from Islamic and scientific perspectives

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Review

Abstract

Background: Garlic (*Allium sativum* L.) and onion (*Allium cepa* L.) are herbaceous plants used for their medicinal and culinary properties since ancient times. They are also mentioned in the divine scriptures, such as the Qur'an as *al-fum* (الفوم) and *al-basal* (البصل), respectively, which have further popularised their wide utilisation as blessed plants. This study was aimed (1) to analyse scholars' interpretations of garlic and onion in the Qur'an and Hadith, (2) to assess the medicinal benefits of these plants in Islamic medicine, and (3) to explore the relationship between scientific findings and religious beliefs.

Methods: The library research method was employed. The literature review was performed using various sources including the Qur'an, Tafsir, Hadith, books, journal articles, and dissertations.

Results: The presented review on the benefits and uses of garlic and onion, particularly in medicine from the Islamic perspective, has been scientifically proven, such as for anti-fatigue and chest pain reliever. Garlic and onion possess various phytochemical properties such as antioxidant, antibacterial, and anticancer. These plants have been used to treat several ailments like hypertension, gastritis, and liver disease to name a few.

Conclusion: Garlic and onion possess a wide range of benefits and uses, particularly in medicine. Even though the benefits and uses of both plants are not mentioned directly in the Qur'an and Hadith, the analysis of *dalil* indicates a correlation between the scientific findings of garlic and onion and the revelation that was revealed 1400 years ago before the emergence of science and technology.

Keywords: *Allium sativum* L., *Allium cepa* L., medicine, Qur'an, Tafsir, Hadith

Background

In Islam, for believers (Muslims), the Holy Qur'an, the last divine revelation to the Prophet Muhammad (peace be upon him him (PBUH)), serves as a comprehensive and impeccable guide, leaving no aspect of life neglected. Therefore, Muslims rely on the Qur'an and Sunnah as comprehensive guides for life, encompassing health and medicine. The Qur'an is believed to possess potent healing properties for both physical and spiritual ailments, as confirmed by the Qur'anic verse in Al-Isra' 17:82. In this verse, Allah SWT says, "And We send down of the Qur'an that which is healing and mercy for the believers, but it only increases the wrongdoers in loss."

Healthy lifestyles and medication system are mentioned in the Holy Qur'an and Hadith. Many verses in the Holy Qur'an portray nature (*al-Ayat al-Kauniyah*), including those related to plants (Sumaiyah 2015). Allah SWT has placed great importance on these creations as He has mentioned several plants in many verses and chapters of His Holy Scripture. According to a comprehensive study conducted by Hossain *et al.* (2016), it was found that 27 different plants mentioned in 47 verses across 28 chapters of the Holy Qur'an belong to 22 genera within 18 families of the plant kingdom. Among these plants, garlic and onion are mentioned in Surah al-Baqarah, verse 61. Their medicinal values have been discussed in the religious scriptures. The origins of Islamic medicine can be traced back to Prophet Adam (Alaihis Salaam), and its development continued until it reached its culmination during the time of Prophet Muhammad (PBUH) (Hossain *et al.* 2016).

Over the years, herbal plants have attracted significant attention from researchers due to their biological properties. One notable genus is *Allium*, which belongs to the Amaryllidaceae family and comprises over 700 widely distributed species (Bastaki *et al.* 2021, Tepe *et al.* 2005). Notably, *Allium sativum* (garlic) and *Allium cepa* (onion), members of this genus, are also referenced in the Qur'an. Arabs commonly employed these plants during the time of Prophet Muhammad (PBUH) as an herbal remedy for various ailments, particularly in safeguarding children's health during seasonal transitions. Prophet Mohammad (PBUH) said, "Although onion and garlic have a bad smell, they are cures for 70 different illnesses that cannot be cured by any other means" (Zaid *et al.* 2012). Nowadays, scientific studies have proved the medicinal effects of garlic and onion for many diseases through experiments. For example, garlic consumption has been inversely linked to the risk of various cancers, including colon, breast, oesophageal, stomach, prostate, pancreatic, and other types. While daily intake in studies ranged from 2 to 20 g (WHO recommends 2-5 g), excessive consumption can cause adverse effects beyond odour. Garlic's protective effects are attributed to organosulfur compounds, notably allicin, which inhibit carcinogen formation, halt activation, enhance DNA repair, and induce apoptosis (Zaid *et al.* 2012).

Garlic and onion have gained a remarkable reputation and have been highly valued in various cultures as having potent preventive and therapeutic medicinal properties for centuries (Suleria *et al.* 2015). Bulb, leaves, seed, and stalks of onion have been used traditionally for hypertension, as diuretic, to induce menses, asthma, cholera, the common cold, cough, influenza, ear pain, improve sperm production, clear face and skin spots, headache, eye diseases, baldness, dysentery, fever, jaundice, uterine aches, tuberculosis, and rheumatic pain (Arifin & Okudo 1996, Kumar *et al.* 2010, Shrestha 2007), and bulb of garlic has been used traditionally for the antidote, wound healer, dog bite, paralysis, digestive problems, asthma, intestinal pain worms, cough, hysteria, headache, and tuberculosis since ancient (Harris *et al.* 2001, Choudhary 2008, Londhe *et al.* 2011, Nya & Austin 2009, Thomson & Ali 2003).

Furthermore, the advancement of science and technology has indicated that herbs, especially garlic and onion, possess a wide range of benefits and uses that could benefit humankind and nature due to their astounding chemical compounds and biological properties. This is aligned with the Islamic frame of thought that views all plants as Allah's creation, which holds the key to the continuity of life. Their existence is indispensable for other creatures on earth, especially humans and animals. As mentioned in Surah al-Mu'minun:

وَأَنْزَلْنَا مِنَ السَّمَاءِ مَاءً بِقَدَرٍ فَأَسْكَنَتْهُ فِي الْأَرْضِ وَإِنَّا عَلَى ذَهَابٍ بِهِ لَقَادِرُونَ ۝ ١٨ فَأَنْشَأْنَا لَكُمْ بِهِ جَنَّاتٍ مِّنْ نَّخِيلٍ وَأَعْنَابٍ لَّكُمْ فِيهَا
فَوَاكِهُ كَثِيرَةٌ وَمِنْهَا تَأْكُلُونَ ۝ ١٩

(Al-Mu'minun 23: 18-19)

"Translation: And We have sent down rain from the sky in a measured amount and settled it in the earth. And indeed, We are able to take it away (18), And we brought forth for you thereby gardens of palm trees and grapevines in which for you are abundant fruits and from which you eat (19)."

The above verses indicate that plants are the source of sustenance (al-Rizq) and a life connector (Mikdar Rusdi *et al.* 2019). As such, it is undeniable that every plant created by Allah possesses many benefits and uses that could be made available to all mankind. Therefore, this study was aimed to analyze scholars' interpretations of garlic and onion in the Qur'an and Hadith,

to assess the medicinal benefits of these plants in Islamic medicine, and to explore the relationship between scientific findings and religious beliefs.

Materials and Methods

The library research method was employed to conduct a literature review involving the development of research questions and objectives, literature search and screening, assessing the quality of primary studies, data extraction, and data analysis (Templier & Paré 2015). The Holy Qur'an was the primary source of verses mentioning garlic and onion. Five Tafsir books, namely *Al-Jawāhir fī Tafsīr al-Qur'ān al-Karīm* by Shaikh Ṭantawī al-Jauharī, *Tafsīr al-Ayat al-Kauniyyah fī al-Qur'an al-Karīm* by Zaghlul al-Najjar, *Tafsīr Mafātih al-Ghaib* by Fakhr al-Din al-Rāzī, *Tafsīr al-Sha'rawī* by Shaikh Mutawallī al-Sha'rawī and *Tafsīr al-Miṣbah* by Muhammad Quraish Shihab were used to interpret the selected verses. The reference Hadith books used were *Sahih Muslim*, *Sunan Abī Daud*, *Sunan al-Nasa'i*, and *Al-Musannaf*. As for the secondary source, the prophetic medicine book (*Al-Tibb al-Nabawī*) by Ibn Qayyim al-Jauziyah and Jalaluddin Abdurrahman al-Suyutī was used. Other authoritative sources like books, journal articles, and dissertations from scientific databases such as JSTOR, Scopus, Springer, ScienceDirect, Web of Science, Google Scholar, NCBI, and PubMed were used for the scientific evidence.

Results and Discussion

Scholars' commentaries

Qur'anic explanation of the verse that mentions garlic and onion

Scholars have given various interpretations of the verse. The following are scholars' explanations about the food requested by Bani Israel in Surah al-Baqarah verse 61. The five *Tafsīr* used as references were *Al-Jawāhir fī Tafsīr al-Qur'ān al-Karīm* by Shaikh Ṭantawī Jauhari, *Tafsīr al-Ayat al-Kauniyyah fī al-Qur'an al-Karīm* by Zaghlul al-Najjar, *Tafsīr Mafātih al-Ghaib* by Fakhr al-Din al-Razi, *Tafsīr al-Sha'rawī* by Shaikh Mutawallī al-Sha'rawī and *Tafsīr al-Miṣbah* by Muhammad Quraish Shihab. In this study, the interpretation was focused on the plants which are garlic and onion.

(a) *Al-Jawāhir fī tafsīr al-Qur'ān al-Karīm*

The word *al-fum* is interpreted as wheat or garlic, and *al-basal* as it is, which is onion. The following sentence, (الَّذِي هُوَ أَذْيٌ) means something that lower in quality and (بِالَّذِي هُوَ خَيْرٌ) is referred to *manna* and *salwa*. Allah says, "Have you left something that good and taken something lesser?" and "How can you please by leaving the quiet, free, pure, and clear country life wherein little food makes the body become healthy, lives long and the soul becomes strong?" "You endanger your life in a city that causes your body to become sick and weakens the soul with the disease, degrading the law and the death of courage, rely on the group and the guard of the city where they need to be entrusted to the group of armies". The ummah is entirely impoverished by law, naked from their power, covered with humility, and clothed with humiliation.

The medical benefits from this verse are that city life and the calamities of health trigger diseases that are deadly in the long term. Medical experts mentioned that in modern medicine, physicians urge humans to reduce their consumption of chemical drugs due to their effects that can endanger the body. They (the physician) stated that the people in the village are physically strong and healthy in spirit or mind because their diet is limited to wheat and dates, and they urge all humans to restrict their diet to seed grains and fruits and reduce the intake of foods that contain chemical substances as long as they can afford to get grains and fruit. The verse (فَالْأَسْتَبْدِلُونَ الَّذِي هُوَ أَذْيٌ بِالَّذِي هُوَ خَيْرٌ) pointed out that living in a village with *manna* and *salwa* is better than living in a city that usually consumes spices and meat as well as a surrounding full of humility, lawlessness, cunning, and greed.

(b) *Tafsīr al-Ayat al-Kauniyyah fī al-Qur'an al-Karīm*

Zaghlul al-Najjar (2007) interpreted the verse by stating that it is clear that the lower (الأذْي) are « البقل والقثاء والفوم والعدس » and that which is better (الذي هو خير) is *manna* and *salwa*. "الفوم" has been said in it that it is wheat (includes other grains that are baked such as corn and barley) or that it is garlic, and the first saying is more appropriate. "البصل" includes onions, garlic, leek, shallot, and others.

The superiority of proteins derived from the meat of birds over those derived from both beef and legumes, as well as the superiority of sugars and other carbohydrates derived from the sky over their counterparts in vegetable crops, are matters that were not realised except in the 20th century, wherein they were referred to in the Holy Qur'an and have been revealed in more than 14 centuries after the Prophet Muhammad PBUH and in an overwhelmingly illiterate nation. They are regarded as scientific evidence of the Holy Qur'an's truthfulness and the revelation received by the Last Messenger.

(c) *Tafsīr Mafātih al-Ghaib*

Al-Razi (1999) stated that according to 'Alqamah, Ibn Mas'ud, and Ibn Abbas, *al-fum* is recited as *al-sum*, which means garlic. On the other hand, Ibn 'Abbas interprets *al-fum* as meaning wheat and bread. This view is similar to Mujahid, 'Ata, and Ibn Zayd. However, the second opinion of Ibn Mas'ud is that if the meaning of *al-fum* is wheat, then why does Allah bring the verse (قَالَ أَتَسْتَبْدِلُونَ الَّذِي هُوَ أَدْنَىٰ بِالَّذِي هُوَ خَيْرٌ) while wheat is considered a fine and honourable food. Therefore, the word *al-fum* is *al-sum* which corresponds to lentils and onions in verse compared to wheat.

Abi Ibn Ka'ab and Zuhair al-Farqaby have differences of opinion about the word (أَدْنَىٰ). Strong opinions suggest that the word could be lowered for religion or for the world. And the first opinion (benefits in religion) is not what is meant because if the food they asked for is less valuable in religion, then why does Allah answer them with the verse مَا سَأَلْتُمْ then the remaining meaning of (أَدْنَىٰ) is lower in worldly aspects (worldly benefits). If that is the case, the worldly benefits should not be interpreted as the food that is already there being more important than the food that you ask for. This is because different races have different food preferences. Certain foods may taste good to one race but not for another. However, it's important to note that while the existence of *manna* and *salwa* are confirmed, the existence of the food they requested may be doubted. This could be due to the fact that they were able to obtain *manna* and *salwa* without difficulty, whereas they struggled to obtain the food they requested. Hence, the first opinion is more important.

(d) Tafsir al-Sha'rawi

Al-fum is interpreted as wheat or garlic, while *al-basal* is onion. The foods that Bani Israel has requested are considered the food of enslaved people, thus indicating that they prefer to live in slavery. They chose to leave *manna* and *salwa*, which are better compared to the inferior food demanded. However, in this case, the inferior is not in a state of being vile as what is produced in the favor of Allah SWT cannot be described as a disgrace. Allah has created His creation with reason and by direct command with the word "Be." The creation created by the direct command "Be" is finer than those created with a reason, as there is no trait on it, indicating a pure gift from God. Meanwhile, creations for reasons, such as ploughing the land or sowing seeds, have some part or responsibility.

Therefore, what comes solely from the hereafter (*al-Ākhirah*), where Allah has gifted, is something with no reason except with the word "Be," and all the sustenance (*al-Rizq*) either from the world or hereafter is endowed by Allah SWT. Allah SWT describes the sustenance of the hereafter as sustenance without reason, which possesses a better and greater value than the sustenance provided with reason. Hence, the verse الَّذِي هُوَ أَدْنَىٰ بِالَّذِي هُوَ خَيْرٌ carries the meaning of replacing the sustenance that comes directly from Allah, namely *manna* and *salwa*. Both of these foods bring them (Bani Israel) close to the sustenance of the hereafter if compared with the sustenance of the world.

(e) Tafsir al-Misbah

The food in the form of *manna* and *salwa*, such as honey, is delectable and nutrient-dense and is a Divine gift they rejected and demanded to be replaced. As such, vegetables are easier to obtain in the city than in the parched desert, so the Prophet Moses directed them to the city. Some interpret this line as if the Prophet Moses instructed, "Go to the city where Pharaoh tortured you." Because they are a race that does not appreciate the delights of freedom and does not value pure values, they will exactly get what they anticipate there. They constantly want to swap something excellent for something awful, something valuable for something worthless.

Presumably, the first point of view is more accurate. As a result, the Prophet Moses did not pray, and there is no indication in this verse that he did. It is not natural to implore Allah to grant disobedient wishes. It's also not natural to seek something to replace something Allah has chosen for him, especially if it's of poor worth. They are truly disobedient, but it is not only their disobedience and those who beg for vegetables who are rebellious; they also exhibit a tremendous deal of neglect, for which they deserve humiliation as well as Allah's wrath.

Garlic and onion in Islamic medicine

Garlic and onion health benefits are not new in the realm of Islamic medicine and have been studied by many scholars such as Ibn Sina (980-1037M), Al-Qurtubi (1214-1273M), Al-Zahabi (1274-1348M), and many more. Therefore, the benefits of both plants were described based on three Islamic medicine books written by three famous scholars, namely Abu Bakr Muhammad Ibn Zakariya al-Razi (864-925M), Ibn Qayyim al-Jauziyah (1292-1350M) and Jalaluddin Abdurrahman al-Suyuti in (1445-1505M). In addition, two books written by Al-Jauziyah and Al-Suyuti shared the same title which is Medicine of the Prophet (*Al-Tibb al-Nabawi*), while the Al-Razi book is titled The Comprehensive Book on Medicine (*Al-Ḥāwī fī al-Tibb*).

Al-Razi (2002) quoted the benefits of onion, saying that if the juice is dripped in the nose or inhaled, it can clear the head and the brain, and if cleaned with water like eyeliner on the eyes, it can treat watery eye pain. In contrast, excess eating causes the eyes to become blurred. Applying drops to the ear can alleviate ear issues like water infiltration, hearing impairment, and auditory buzzing. It relieves shortness of breath if applied to the palate; if crushed and inhaled, it can increase appetite. Furthermore, the water is beneficial for menstruation. Consuming the baked onion will stimulate sexual desire, increase semen, and open haemorrhoids' holes. It can also treat dog bites and poisons by soaking it at night, then eating it with bread and drinking the soaked water in the morning. It can also treat diseases caused by water contamination and help with hair growth due to hair loss. However, if consumed excessively, it can cause damage to the mind and lead to forgetfulness.

Meanwhile, Al-Jauziyah (2003) described basal as hot in the third degree and possessing excess wetness. It helps against pollution and prevents hot wind, referred to as the stomach. It also stimulates sexual desire, strengthens the stomach, aids in sperm production, lightens the colour, dissolves phlegm, and cleanses the stomach. Onion grains help against vitiligo, a lack of pigment in certain areas of the skin, and are used as an ointment around the area affected by alopecia, a skin disease characterised by partial or total loss of hair. Furthermore, when onions are combined with salt, warts are effectively dissipated (and used as an ointment on the warts). Smelling onions can help one avoid vomiting if one feels queasy after taking a laxative. Also, when onion water (extract) is supplied through the nose, it clears the head and dissipates the scent of laxatives.

In addition, when used as ear drops, onion extract can aid with hearing loss, tinnitus, pus, and water build-up in the ear. When onion grains are combined with honey and applied to the white area of the eye, they can be used as eyeliner to dry out the water that damages the eye, causing cataracts. Cooked onions are nutrient-dense and can aid with icterus, jaundice, coughing, and chest discomfort. It also has diuretic properties and calms the bowels. The dog bites heal when water (extract) is mixed with salt and rue and squeezed into the injured region, it will heal the dog bites. Finally, when administered as a suppository, it will open the orifices of the haemorrhoids. However, if consumed excessively, it would cause forgetfulness, affect the mind, and change the odour of the mouth.

Finally, Al-Suyuti (1999) described onion as hot and wet. Its benefit is that it prevents water changes in those who consume it. In addition, it enhances food flavour, promotes sperm production, and reduces phlegm. After taking medicine, sniffing an onion helps avoid vomiting. When one consumes meat with onions, it will get rid of its unpleasant odour. In his book, Al-Suyuti also mentioned that it has been related to Muawiyah, the Prophet, may Allah bless him and grant him peace, who presented some delegations food seasoned with onions and stated, "Eat of this seasoning and say, 'Whoever does not eat of this seasoning, or whatever else diffuses the odour of the earth, will experience harm from its waters and will suffer injury.'" Onions might give one a headache and make their vision blurry. A person's intellect suffers when they consuming too many onions, leading to forgetfulness. Raw onions are the only source of this type of injury.

Garlic is a spicy plant with an oily bulb and a pungent smell that is an eye irritant due to allyl sulfide (Kamal 1975). During the time of Prophet Muhammad PBUH, the Arabs persistently used garlic as an herbal remedy for a variety of diseases, especially for children upon the arrival of summer and winter (Lingga 2012). Various pharmacological actions of garlic were recorded in Islamic medicine such as stomachic, antipyretic, and intestinal antiseptic. Other than that, it is also effective as an expectorant in pertussis and asthma, preventing dental caries, diuretic, emmenagogue, carminative and aphrodisiac (Kamal 1975). Practically, colic and urinary stone diseases can be cured by consuming garlic boiled in water or milk. It can also be used as an ear drop to improve hearing. The garlic extract known as monk's oil (*dihn al-ruhban*) was a potent remedy for the bedridden.

According to Al-Suyuti (1999), garlic helps to force out the afterbirth and triggers menstruation which leads to headaches and deteriorates vision. Garlic is beneficial for people with chilly temperaments, phlegmatic individuals, and palsy patients, but it causes semen to dry. It eliminates wind, soothes cold-related discomfort, and acts as an antidote to bites. Garlic paste can effectively heal animal bites and painful scorpion stings as well as expelling leeches from the throat. Applying garlic pulverised with vinegar, salt, and honey to the decayed tooth will break it and remove it (Al-Jawziyya 1998). This solution also helps to soothe the toothache. Due to the plethora of medicinal benefits of garlic, it is very much encouraged to incorporate it into our daily diet to boost the change in food consumption (Bhikha and Dokrat 2015). As the Prophet, may Allah bless him and grant him peace, said, "O 'Ali, eat garlic – were it not for my being visited by the angel of Allah (Jibril), I would eat it myself." And 'Ali, may Allah be pleased with him and grant him peace, advised against eating garlic except when cooked.

The correlation between the scientific finding of garlic and onion and the revelation

The Qur'an and Hadith are not only religious texts but also sources of information for Muslims. In Islam, seeking knowledge and participating in scientific endeavours is not merely a worldly or ordinary duty. Seeking out knowledge is counted as 'ibadah and an honourable service to humanity. According to Mohd. Shah Jani and Raudlotul Firdaus (2019), when science and its activities are considered to be part of 'ibadah, the content of science must be legitimate and conform to the revelation's depiction of truth. Thus, this topic presents analyses on the correlation of scientific findings on garlic and onions with the revelation, strengthening the authenticity of knowledge in Islam.

Analysis of the explanation of scholars about garlic and onion in the verse

Based on the exegesis of the Qur'anic verse that mentions garlic and onion in Surah Al-Baqarah verse 61, all five scholars unanimously agree with the meaning of *basal* as onion. However, they differ in opinion on the word *fum* wherein Tantawi (1931) and Al-Sha'rawi (1997) believe it is either wheat or garlic. Whereas Zaghul al-Najjar (2007) and Al-Razi (1999) opined that garlic is more suitable than wheat, Shihab (2002) did not interpret the word. Following these, four scholars, except Quraish Shihab, interpreted the food requested by Bani Israel in terms of comparison with *manna* and *salwa*. However, the justifications differ.

Firstly, Tantawi described the value of the food requested, including garlic and onion, by comparing life in the city with life in the village and providing medical explanation. He analogises that people in villages are healthier due to their diet by limiting their consumption to seed grains and fruits and that it is an indication (*isyarah*) that *manna* and *salwa* are better. On the other hand, residing in cities often leads to health disasters due to the consumption of chemical-laden food, implying (*isyarah*) that spices and meat pale in comparison to the nourishment provided by Allah. Meanwhile, Al-Najjar interprets garlic and onion as lower in contrast to *manna* and *salwa* by comparing the level of protein content in the meat of birds with the beef and legumes as well as the level of sugars and carbohydrates from the sky with the vegetable crops, all of which indicate that *manna* and *salwa* are superior.

Conversely, Al-Razi explains that garlic and onion are lower than *manna* and *salwa* in terms of their worldly benefits. He further explicates that it does not mean that the existing food is essentially more than what is requested because all races have their own food preferences. Therefore, he concluded that the meaning is that the availability of the food they request is unguaranteed compared to *manna* and *salwa*, which are bestowed directly from Allah and are confirmed to be available. On the other hand, the comparison made by Al-Sha'rawi is that he considered garlic and onion inferior to *manna* and *salwa*, but not in the sense that they are awful, because what is created in favor of Allah is not a disgrace. The difference is that *manna* and *salwa* are creations created by Allah with His direct command "Be" and endowed to Bani Israel as a pure gift, whereas garlic and onion are created for reasons in the world where they have part or responsibility, such as sowing their seeds for growth. Meanwhile, Quraish Shihab described that the food requested by Bani Israel is easier to obtain in the city than in the desert, which is why Prophet Moses did not pray. This is because it is not natural to request disobedient wishes from Allah SWT, and they deserve humiliation and His wrath.

All things considered, although Tantawi had equated living in the city with spices and other food containing chemicals as the factor for health deterioration, the situation nowadays is different since where a person lives is no longer the most important element in determining their health; rather, the food they consume has a greater impact on their overall wellbeing. Diets such as seed grains and fruits, which Tantawi has equated as healthier food, are akin to plants such as garlic and onion, which are all-natural creations growing on earth. In a similar vein, Al-Najjar also conducted a comparison of the nutrients in various foods. It demonstrates that, despite garlic and onion having a lower nutrient content than *manna* and *salwa*, Al-Najjar did not deny the existence of these plants.

In addition, history has shown that they consumed both of these plants during their enslavement in Egypt. They were fed with garlic and other *Allium* vegetables to increase their strength, which is why they may have developed some fondness for these plants, as they missed them when they left Egypt with Prophet Moses (Bergner 1996). That is why Al-Razi says that it does not mean one type of food is more essential than the other because different people have different preferences. Thus, even though the foods Bani Israel requested are low compared to *Manna* and *Salwa*, they are not the plants that the world considers a disgrace because what Allah has created is not a dishonour. However, in this scenario, it is not the food they requested that includes garlic and onion. Their behaviours are disgraceful because of their arrogant disposition and lack of gratitude for the benefits bestowed upon them.

Analysis of the wisdom (al-ḥikmah) of selected Hadith that mention garlic and onion

Garlic and onions are famous for the pungency they emit when consumed. Many Hadith have recorded the characteristics of these plants associated with prohibiting going to the mosque. However, if the Hadith is perceived carefully, it does indicate something beyond the mention of these plants and the benefits they could serve, particularly as medicine. The following is an analysis of the selected Hadith and its correlation with scientific findings.

(a) Garlic and onion as an anti-fatigue and energy booster

The selected Hadith narrated the prohibition of going to the mosque after eating those plants and depicted the situation of the Companions during the Khaybar opening after winning the war. They were starving and fell upon these plants; thus, they ate them to their hearts' content (Muslim 1955). The same story is narrated in *Musnad Imam Ahmad* where the Companions say that their hunger had caused them fatigue, and thus, they ate those plants (Ahmad 1994). In the story, Prophet Muhammad did not forbid them from eating it as Al-Nawawi (1994) in *Sharh Sahih Muslim* gave his statement in explaining the Hadith "O people, I cannot forbid (the use of a thing) which Allah has made lawful, but (this garlic) is a plant the odour of which is repugnant to me". He stated: "In the Hadith, it is proof that garlic is not illegal (*harm*). It's a big deal for anyone to hold on like that. Our *Ashāb* disagreed on the law of garlic for Rasulullah PBUH, is it haram or did he leave because he did not like it? It is clear from the Hadith that it is not forbidden to Rasulullah PBUH."

Therefore, it can be understood that the prohibition mentioned does not refer to garlic and onion but restricts those who consume the plants from entering the mosque. Thus, in this situation, it can be considered *taqrir* for the action of the Companion who ate those plants because they were hungry and fatigued; it indicates that these plants can reduce their fatigue and provide energy. Moreover, history from ancient civilisations has shown that garlic increases strength by supplying energy. In ancient Egypt, garlic was fed particularly to the working class, which was involved in heavy labour, such as building the pyramids (Moyers 1996). Al-Bankani (2004) stated that the pyramid construction workers were given garlic before beginning their work in order to provide them with strength and protect them from illness.

Moreover, garlic was also consumed in ancient Greece as part of the military diet, especially when they were off to battle. Plus, garlic was fed to the athletes before the competition during the earliest Olympics, which originated in Greece, as it is considered a "performance enhancing" agent (Rivlin 2001). All of these have shown that garlic has been regarded as an energy source and prevents fatigue even before the emergence of science to prove it. Kawashima *et al.* (1986) conducted a study using a subjective or objective fatigue test to examine the impact of garlic on fatigue in athletes under an exercise load. They suggested that garlic particularly aged garlic extract, improved subjective symptoms caused by fatigue and increased the knee reflex threshold (Moriyama *et al.* 2007). As a result, this proves that garlic consumption reduces fatigue and provides energy.

(b) Garlic and onion as a chest pain reliever

Another selected Hadith is about the prohibition of going to the mosque after eating garlic until the odour dissipates, which also depicts the situation of a Companion named Al-Mughirah. He, whom Prophet Muhammad had told not to come near the mosque because he smelled of garlic, had shown the Messenger of Allah his fastened chest and had been excused from it (Ibn Abi Shaybah 1989, Abu Dawud 2010). According to Imam Ibn Ruslan (2016), the Hadith "He said: You have a (valid) excuse." This means being late for the congregation or eating garlic. Ibn al-Baytar said: Garlic is hot and heated, it removes bloating and dries the stomach, and if eaten, it releases worms. And Al-Razi said: It dissolves the wind and spreads it more than every food, and it prevents the growth of wind colic.

Thus, the Companion ate the garlic beyond the Hadith due to his illness, and Prophet Muhammad had consented to allow him to enter the mosque. The situation could be linked with other selected Hadith about eating garlic soup to relieve chest pain. The story depicts a Companion's father consuming soup with garlic if his chest was in pain, relieving the ache (Ibn Abi Shaybah 1989). Prophet Muhammad PBUH has also taught this type of food preparation if someone falls sick, as narrated by Aisyah RA:

قَالَتْ كَانَ رَسُولُ اللَّهِ صَلَّى اللَّهُ عَلَيْهِ وَسَلَّمَ إِذَا أَحَدَ أَهْلَهُ الْوَعَكُ أَمَرَ بِالْحَسَاءِ فَصُنِعَ ثُمَّ أَمَرَهُمْ فَحَسَسُوا مِنْهُ وَكَانَ يَقُولُ " إِنَّهُ لَيَرْتُو
فُوَادَ الْحَزِينِ وَيَبْشُرُو عَنْ فُوَادِ السَّقِيمِ كَمَا تَسْرُو إِخْدَاكَنَّ الْوَسَخَ بِالْمَاءِ عَنْ وَجْهَيْهَا

Translation: "Whenever one of the wives of the Messenger of Allah (PBUH) became (feverishly) ill, he would order that some broth be prepared. Then he would tell them to take some of the broth. And he would say: 'It forms the heart of the grieved, and it rids the worries from the heart of the ill just

as one of you removes dirt from her face with water." (*Jami' al-Tirmidhi*. Book of Medicine. Chapter: What Has Been Related About What to Feed the Sick Person. No. Hadith 2018).

Many studies have been conducted on the behaviour and consumption of garlic. For instance, a study performed by Rolantová and Vacková (2015) on the health status of immigrants was associated with their unsuitable work environment. They found that 13 out of 19 respondents had consumed garlic soup to relieve problems with their cardiovascular system, such as chest pain and high blood pressure. Another study by Tewari *et al.* (2020) summarised the immune-boosting therapeutic diet against coronavirus, particularly for symptoms such as high fever, dry cough, and chest pain. They proposed that consuming soup with garlic slices every mid-morning (11 am to 11.30 am) could help maintain the patient's immunity. Therefore, they approved the idea that using garlic in soup preparation could alleviate chest pain.

(c) Cooking garlic and onion to dispel the odour and the pre-cooking technique

There is a Hadith mentioning Prophet Muhammad PBUH, who asked whoever wanted to eat garlic and onion before going to the mosque to cook them first (Al-Nasā'ī 1986). However, it is permissible to eat it raw if one is not going to the mosque. The main reason for this action is to dispel the odour, which could distract others and the congregation. Based on the odour characteristic mentioned in the Hadith, both plants must have undergone the process of damaging the tissue either through slicing, chopping, or smashing. This is because, if they were not being sliced, chopped, or smashed, they would still remain odourless until their parts of tissue were destroyed (Jones *et al.* 2004).

The primary compound responsible for their odour is allicin. Cooking these plants would help dismiss, eliminate, or reduce the odour emitted by this compound, as taught by Prophet Muhammad PBUH. Ironically, cooking these plants would reduce the smell and retain their health benefits, which are not less than eating them raw. Crushing or chopping the garlic before cooking releases an enzyme, alliinase, which catalyses allicin formation, which then breaks down to form various healthful organosulfur compounds (American Chemical Society 2007). Among those compounds are ajoene, vinylthiols, DAS (diallyl disulfide), DADS (diallyl disulfide), and DATS (diallyl trisulfide), which are present during cooking processes (Locatelli *et al.* 2015).

A study conducted by Locatelli *et al.* (2015) tested a few types of pre-cooking (chopped, sliced, or uncrushed) and cooking treatments (raw, simmering, rolling boil, or stir-frying) on garlic with their organosulfur compound. They found that chopping the garlic and leaving it for 10 minutes in order to promote allicin formation, followed by a simmering process for 15 minutes, would produce a beneficial amount of allicin, ajoene, vinylthiols, DAS, DADS, and DATS compared to other types of pre-cooking and cooking treatments. Thus, in comparison to raw garlic, the odour is reduced by reducing the level of allicin. However, the added value is that other compounds are present during the cooking process, which raw garlic does not have. These compounds have a variety of beneficial effects, including acting as anticancer agents and antioxidants, lowering cholesterol levels effectively, and controlling blood sugar.

To conclude, cooking garlic and onion is also one of the best ways to consume those plants, although eating them raw is also possible. Despite these vegetables having an unpleasant odour, Prophet Muhammad did not prohibit his followers from eating them; rather, he advised anyone who wished to consume them to cook them first. This is because heating the garlic during cooking will reduce the amount of allicin and promote the formation of other beneficial compounds that are not present if eaten raw. Therefore, this shows that there are more reasons and wisdom (*al-hikmah*) behind the necessity of cooking in order to dispel the odour, as commanded by Prophet Muhammad. The pre-cooking technique or treatment also influences the effectiveness of compounds produced by smashing or chopping.

The contribution of garlic and onion to humankind

Various benefits of garlic and onion have been delved into in accordance with *dalil* from the Qur'an, Hadith, and Sunnah. It is undeniable that these plants possess potential and value in medicine due to their remarkable phytochemical properties (Table 1 & Table 2). The previously presented results on the benefits and uses of garlic and onion have been scientifically proven. However, the scientific evidence did not isolate the relationship from the Islamic perspective. Therefore, this section discusses the significance of garlic and onion to humanity by merging the benefits and applications examined with the revelation.

Table 1. Pharmacological activities of *Allium sativum* (garlic) and its bioactive compound

Activities	Bioactive compound	References
Antioxidant	Allicin	Locatelli <i>et al.</i> (2015), Wilson and Demmig Adams (2007)
	Alliin	Chen <i>et al.</i> (2016)
Anti-inflammatory	Catechin	Recinella <i>et al.</i> (2022)
Antibacterial	Allicin	Yunus and Suwondo (2021)
Antifungal	DADS, DATS	Kuda <i>et al.</i> (2004)
Anticancer	Allicin, alliin, DADS, DATS	Mondal <i>et al.</i> (2022)
Antiviral	Allyl alcohol and diallyl disulfide	Shoji <i>et al.</i> (1993)
	Allicin	Mösbauer <i>et al.</i> (2021)
Antidiabetic	S-allyl cysteine	Saravanan <i>et al.</i> (2009)

Table 2. Pharmacological activities of *Allium cepa* (onion) and its bioactive compound

Activities	Bioactive compound	References
Antidiabetic	S-methyl cysteine sulfoxide and S-allylcysteine sulfoxide	Akash <i>et al.</i> (2014)
Anti-inflammatory	Thiosulfinates	Wilson and Demmig-Adams (2007)
Antimicrobial	Quercetin, kaempferol, <i>p</i> -coumaric, ferulic, protocatechuic acids and catechol	Teshika <i>et al.</i> (2019)
Antibacterial	Quercetin	Nguyen and Bhattacharya (2022)
Antifungal	Ceposides A and C	Lanzotti <i>et al.</i> (2012)
Antiviral	Kaempferol	Periferakis <i>et al.</i> (2023)
Antioxidant	Quercetin and its derivatives,	Sagar <i>et al.</i> (2022)
Antitumor	Quercetin	Kianian <i>et al.</i> (2021)
	Kaempferol	Sagar <i>et al.</i> (2022)

Garlic and onion as a choice to avoid harm and affliction

Avoiding harm and affliction has been emphasised in Islam as mentioned in Surah Al-Baqarah verse 195:

وَأَنْفِقُوا فِي سَبِيلِ اللَّهِ وَلَا تُلْقُوا بِأَيْدِيكُمْ إِلَى التَّهْلُكَةِ وَأَحْسِنُوا إِنَّ اللَّهَ يُحِبُّ الْمُحْسِنِينَ ١٩٥

Surah Al-Baqarah 2:195

Translation: And spend in the way of Allah and do not throw [yourselves] with your [own] hands into destruction [by refraining]. And do good; indeed, Allah loves the doers of good (195)

Although this verse was revealed in relation to spending *infāq fī sabīlillāh*, the generality of this verse encompasses all forms of deeds that lead to destruction (Mufti of Federal Territory 2015). Nowadays, almost all products, including drugs, foods, and skin care, to name a few, contain chemicals as their substance. Although many chemicals in those products might pose little risk, exposure to some has been linked to severe health problems, especially cancer. The use of garlic and onion to avoid such circumstances can be seen as an alternative, especially as a natural product to replace chemical substances. Even though there are no specific *dalīl* addressing garlic and onion in such a way, many Qur'anic verses and Sunnah can act as *isyārat* that leads us to understand the contribution of these plants as part of the better choice.

In the context of medicine, drugs such as phenformin are used as antidiabetic drugs to treat diabetes by lowering the blood sugar level. Despite that, the consumption of this drug could lead to lactic acidosis, characterised by muscle aches, burning, rapid breathing, nausea, and stomach pain. However, the risk can be avoided with garlic and onion as a replacement for lowering the blood sugar level due to their antidiabetic properties. Food and health are interconnected in other aspects, as consuming good food provides good health. Therefore, consuming an innutritious and unhealthy diet will undoubtedly affect our well-being.

Garlic and onion from Islamic and scientific perspectives

Plants such as garlic and onion, which have been talked about in the Qur'an, have a lot of fibers, electrolytes, vitamins, and phytonutrients or phytochemicals that have protective effects on atherosclerosis and cancer (Mahan & Escoot-Stump 2004, Ursell 2000). They have been cited in the Qur'an to denote popular nutritious plants. Both plants are mentioned as being used by the Children of Israel (Bani Israel) to consume a rich diet composed of edible birds and mushroom-like food (Khafagi *et al.* 2006). Although several Hadiths of Prophet Muhammad indicate the taste and smell of garlic and onion, as a matter of fact, both plants are beneficial medicinally (Ali Muhammad 2014). Garlic, according to Prophet Muhammad (PBUH), is a remedy for 70 ailments. According to a Hadith narrated by Ali RA in Ad-Dailami, "Eat garlic and use it as medicine because it can treat 70 kinds of diseases. If the angels had not come (and spoken) to me, I would have eaten them too." (Thayyarah 2014). Medical research has corroborated his claims about the healing benefits of several plants, such as garlic. The 14th century confirmed the correctness of these statements. Among the medicinal benefits are tooth decay, periodontal disease, pulpitis, and herpes labialis (Shooriabi 2021).

Besides, various studies have proven that garlic has attracted the attention of the medical sciences for centuries, as the Holy Qur'an has mentioned the beneficial and antioxidant properties of many foodstuffs. For instance, garlic can eradicate oxygen-active and nitrogen-active compounds and increase the antioxidant enzyme level as well as peroxidase enzymes like cyclooxygenase and NADPH oxidase (Ranjbar *et al.* 2013). Moreover, some studies evaluate the plant extracts cited in the Holy Qur'an against antibacterial activity and other bacterial species isolated from humans. It has been concluded that the extracts of garlic and onion showed a wide spectrum of activity on different antibiotic-resistant organisms. For example, onion methanolic extract and garlic inhibit the growth of *Escherichia coli* and *Klebsiella pneumoniae*, respectively (Qusti *et al.* 2018).

Further, an in-depth analysis of the Qur'an and Hadith has found that many herbs are mentioned in both texts, including garlic and onion. The use of garlic has been emphasised in medicine to treat several diseases in women's occupational health, such as liver disease, stomachache, and pre-menstrual dysphoric disorder, based on medical Malay manuscripts (Nurul Wahidah *et al.* 2018). On top of that, close examination reveals that the plants mentioned in the Qur'an, including garlic and onion, are not of Arabic origin, but the holy Prophet (PBUH) gave references that they are produced not just in Arab lands but also throughout the world. Both plants are extensively used as spices and condiments and have been held in high esteem for their health benefits throughout the centuries owing to their high contents of minerals and vitamins. Medicinally, garlic and onion are used as stimulants and antiseptics as well as for treating hypertension and gastritis (Sheikh & Dixit 2015).

In addition, the plants that have also been studied by Muslim scholars and their benefits and uses are recorded in their medicinal books, such as *Mukhtasar fi al-Tibb* written by Al-Qurtubi, *Al-Hāwi fi al-Tibb* written by Al-Razi, *Al-Tibb al-Nabawi* by Al-Zahabi and *Al-Tibb al-Nabawi* by Ibn Qayyim al-Jauziyyah. Among the benefits of onion listed are treating epiphora, and ear problems, medicating infections from dog bites, neutralising poisons, stimulating sexual desire, and treating waterborne diseases. The views expressed by scholars result from experience, observation, and their study of using onions for treating various diseases (Mohammad Amir *et al.* 2015). There is also a study on increasing men's fertility in Muslim narrative texts and comparing it with new knowledge in medicine. For instance, the benefits of onion recorded in the Muslim religious text include increasing semen, increasing the power of sexual intercourse, and increasing sexual desire. These effects have been proven through their properties, such as having antioxidant compounds, removing free radicals, and improving spermatogenesis (Bidgoli 2019).

Conclusion

Garlic and onion possess a wide range of benefits and uses, especially in medicine. Even though the benefits and uses of both plants have not been mentioned directly in Al-Qur'an and Hadith, the analysis of the *dalil* indicates that there is a correlation between the scientific findings of garlic and onion and the revelation that was revealed 1400 years ago before the emergence of science and technology. The previous discussion has elucidated the wisdom (*al-hikmah*) that existed beyond the selected Hadith that mentions garlic and onion, either directly or indirectly. However, not all scientific discoveries find their way into the Qur'an, as Allah Himself has commanded humans to explore the world and contemplate His greatness. Therefore, if the scientific findings had confirmed the veracity of the revelation found in the Qur'an and Hadith, it would have strengthened and validated the role of revelation in Islam. Therefore, we encourage researchers to delve more deeply into the subject matter, whether from an Islamic or scientific perspective, as we need to intensify our research on garlic and onions from both religious and scientific perspectives. Hence, the results of this effort will further affirm the truth of Islam.

Declarations

List of abbreviations: DAS (diallyl disulfide); DADS (diallyl disulfide); DATS (diallyl trisulfide); NADPH (Nicotinamide adenine dinucleotide phosphate)

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