



ISSN (E): 2320-3862

ISSN (P): 2394-0530

NAAS Rating: 3.53

www.plantsjournal.com

JMPS 2020; 8(3): 06-09

© 2020 JMPS

Received: 06-03-2020

Accepted: 08-04-2020

Abdul Nasir

Assistant Professor, Department of Ain, Uzn Anaf wa Halaq (Eye and ENT), School of Unani Medical Education and Research, Jamia Hamdard (Deemed to be University), New Delhi, India

Gazala Fatma

PG Scholar, Department of Tahaffuzi WA Samaji Tibb (Preventive and Social Medicine), School of Unani Medical Education & Research, Jamia Hamdard (Deemed to be University), New Delhi, India

Naziya Neshat

PG Scholar, Department of Pharmaceutical Chemistry, School of Pharmaceutical Education & Research, Jamia Hamdard (Deemed to be University), New Delhi, India

M Aftab Ahmad

Professor and Head, Department of Ilmul Saidla (Unani Pharmacy), School of Unani Medical Education & Research, Jamia Hamdard (Deemed to be University), New Delhi, India

Corresponding Author:

Abdul Nasir

Assistant Professor, Department of Ain, Uzn Anaf wa Halaq (Eye and ENT), School of Unani Medical Education and Research, Jamia Hamdard (Deemed to be University), New Delhi, India

Pharmacological and therapeutic attributes of garlic (*Allium sativum* Linn.) with special reference to Unani medicine-A review

Abdul Nasir, Gazala Fatma, Naziya Neshat and M Aftab Ahmad

Abstract

Garlic, (*Allium sativum*) Linn. is a member of the family Liliaceae. It is known as *Seer* (Persian) and *Saum* (Arabic) in unani medicine, similarly in Sanskrit, garlic is commonly known as *lahsuna* or *rasona*. Garlic plays important role in daily diet and also helps in maintaining good health that's why it is widely used as diet and medicine. The effects of garlic (*Seer*) have been largely attributed as Muhallil, Mulattif, Jali Musakhkhin, Mufatteh urooq, Mudirr-e- Baul (Diuretic), Muqatte-Akhlate ghaleeza, Muraqqiqe dam, antihyperlipidemic, antihypertensive, antibacterial, antifungal, antidiabetic, anticarcinogenic, hepatoprotective activities. Garlic has many health benefits and has been traditionally used worldwide. The wealth of scientific literature supports the significant effects in Hummiyat kuhna (Intermittent fevers), Nazla muzmin (chronic catarrhs), Shaheeqa (whooping coughs), Sara'a (epilepsy), Dama (asthma), Deafness, Retention of urine, Zaheer (amoebic dysentery), Haiza (cholera), Zaghtuddam Qawi (hypertension), Ziyabetus (diabetes), Warne Meda (gastritis), Dafa-e-Ta'affun (anti-infective), Falij (paralysis), Hysteria, Asthma, Niqras (gout), Irqunnisa (sciatica), Jarab (scabies), Bars (Leucoderma) and very effective in scorpion bite. The essential chemical components of Garlic are helpful in daily routine for making physic fit which mainly from its main ingredient, allicine and others are diallyl disulfide, diallyl trisulfide, 1-propenyl allyl thiosulfonate, allyl methyl thiosulfonate etc.

This drug is used in traditional medicine since long time and reference goes to Hippocrates and Avicena, so, this article briefly reviews the pharmacological and various therapeutic aspect of garlic which is mentioned in conventional medicine as well as Unani system of medicine.

Keywords: Garlic, *Allium sativum*, seer, saum, lahsuna

Introduction

Garlic (*Allium sativum* Linn.) has been used throughout different traditions as a prophylactic as well as therapeutic medicinal plant for the treatment of a wide variety of conditions. Garlic has played important dietary and medicinal roles throughout the history. Some of the earliest references to this medicinal plant were found in approximately 5000 years ago while Chinese have been using it for at least 3000 years. The Codex Ebers an Egyptian medical papyrus dating to about 1550BC mentions garlic as an effective in a variety of ailments ^[1-3]. Avesta, a collection of Zoroastrian holy writings that was probably compiled during the sixth century BC has also described the benefits of garlic ^[4].

Hippocrates, Aristotle and Pliny cited numerous therapeutic uses of garlic. In the medieval period, garlic was also played an important role in the treatment of different diseases ^[5]. In his well-known book, Al Qanoon-fil-Tib (The Canon of Medicine), recommended garlic as a useful compound in treatment of arthritis, toothache, chronic cough, diarrhea, dysentery, hypertension, hysteria, constipation, parasitic infestation, snake and insect bites, gynecologic diseases, as well as in infectious diseases. This great bulb has a lot of benefits, because no other plant has been held out for so long as a cure for so many human ailments. That's why garlic has been considered as the "Wonder Drug".

But it is fact that garlic have occupied special place for their medicinal value for centuries in the Middle East and Southeast Asia, Europe and America. There is an attempt has been made in this review to cover the nutritional value (table 1) and pharmacological and therapeutic uses of garlic mentioned in Unani system of medicine and reported by the recent studies for garlic.

Table 1: Nutrition value of Garlic

S. No.	One clove of garlic (3 grams)	Quantity
1.	Carbohydrates	1 gram
2.	Sodium	1 mg
3.	Potassium	12 mgs
4.	Calcium	5 mgs
5.	Calories	4

Family- Liliaceae [6-7]

Latin name: *Allium sativum* Linn. [6-8]

Vernacular Names [9-13]

Eng. - Garlic.

Urdu- Lahsun

Arabic-Saum

Quraanic name: Fum

Persian-Seer

Greek: Aglidion, Skorodon

Hindi - Lahasuna.

Sanskrit Lashuna

Botanical description

Garlic is an important medicinal and dietary herb which is found commonly in Central Asia and cultivated all over India. It is grown in Uttar Pradesh, Bihar, Karnataka, Tamilnadu and Andhra Pradesh as an irrigated crop. It is cultivated in and Gujarat also on a large scale. It is a perennial herb, 60 cm in Height. The garlic bulb made up of individual cloves enclosed in a white sheath or skin (Fig 1).



Fig 1: Bulb and cloves of garlic (*Allium sativum*)

It is the bulb, either fresh or dehydrated is used as a spice or medicinal herb. Leaves long, flat, acute, sheathing the lower half of stem; scape slender, smooth, shining, spathes long, beaked, enclosing heads bearing solid bulbils. Flowers are small, white, prolonged into leafy points [14-16].

Chemical Constituents

Garlic contains: volatile oil 0.1 to 0.36%, composed of sulfur containing compounds like allicin, diallyl disulfide, diallyl trisulfide and others. These volatile oil are thought to be responsible for most of garlic's pharmacological properties. When garlic is chopped or crushed, allinase enzyme is activated and produce allicin from alliin (present in intact garlic). Other important compounds present in garlic homogenate are 1-propenyl allyl thiosulfonate, allyl methyl thiosulfonate, Minerals such as selenium, germanium as well as vitamins and enzymes (allinase, peroxidase and myrosinase) are present in garlic. Allicin is mainly responsible for the pungent odor of garlic and formed by the enzymatic action of allinase on alliin [2, 14-17].

Literature shows the daily recommended dose in human in

different forms of garlic are listed in table no.2

Table 2: Recommended daily doses in humans [18]

S. No.	Form of garlic	Doses (daily)
1.	Fresh garlic:	4g approx 1 clove (4–12 mg of alliin or 2– 5 mg of Allicin)
2.	Dehydrated garlic powder	600–1200 mg in divided doses
3.	Fresh air-dried bulb	2–5 g
4.	Tincture	(1:5 in 45% alcohols): 2–4 ml three times daily ³²
5.	Garlic oil	2–5 ml
6.	Dried bulb	2–4 g three times daily

Unani description of garlic (Seer/Saum)

Parts used

Bulb and oil [6, 7, 13, 19]

Temperament (Mizaj)

Haar (3°) Yabis (3°) [15, 20, 21, 22]

Therapeutic dosage (Miqdar-e-Khurak)

2-3 Masha (gram) [21-24]

Pharmacological actions (Af'aal) [15, 19-24]

- Muhallil (Resolvent)
- Jali (Detergent)
- Mulattif (Demulcent)
- Musakhkhin (Calorific)
- Mufatteh urooq
- Mudirr-e- Baul (Diuretic)
- Muqatte-Akhlate ghaleeza (Morbid humour remover)
- Muraqqiqe dam (Fibrinolytic)

Pharmacological activity on the basis of scientific report antihypertensive activity

Garlic has demonstrated hypotensive action in both experiments and humans [16-20]. It has been shown to decrease the systolic pressure by 20-30 mmHg and the diastolic by 10-10 mmHg in hypertensive [25, 26]. The mode of action of garlic as an antihypertensive appears to be related to its cholinomimetic and lipid lowering properties [27].

Anti-inflammatory activity

Garlic extract has demonstrated significant anti-inflammatory activity in experimental models of inflammation [3, 28].

Antibacterial activity

Studies have demonstrated that both garlic juice and allicin inhibited the growth of *Staphylococcus*, *Streptococcus*, *Bacillus*, *Brucella* at low concentrations [29, 30].

Antiviral activity

It's antibacterial effects have been demonstrated *in vivo* by its protection of mice from infection with intranasally inoculated influenza virus and by its enhancement of neutralizing antibody production when given with influenza vaccine [28].

Antifungal Activity

Studies revealed that significant antifungal activity in many *in vitro* and *in vivo* studies [31-34].

Anthelmintics effects

It's extracts have anthelmintics effects against common intestinal parasites like roundworm and hookworm [28,35].

Antiatherosclerotic activity

Garlic produces both antiatherosclerotic (therapeutic) and antiatherogenic (preventive) effects on atherosclerosis. It inhibits proliferation of atherosclerotic cells and other cell types as well as collagen synthesis and accumulation in the aorta thus, all the major manifestations of atherosclerosis (lipidosis, proliferation, and fibrosis) show a tendency toward a decrease and normalization under the action of garlic, which may account for the direct antiatherosclerotic effect [36-39].

Antihyperglycemic activity

Garlic also has the ability to inhibit enzymes involved in lipid synthesis, prevent lipid peroxidation of oxidized erythrocytes and LDL, increase antioxidant status, and inhibit the angiotension-converting enzyme. Garlic extract reduced cholesterol synthesis by up to 75% without evidence of cellular toxicity and inhibition is likely mediated at sterol 4-alpha-methyl oxidase [40].

Fibrinolytic activity

Fibrinolytic activity have found that garlic increased fibrinolytic activity in healthy individuals as well as in acute myocardial infarction patients [41].

Antitumor effect

Studies have suggested in many *in vitro* and *in vivo*, garlic has been found to contain a large number of potent bioactive compounds (largely allylsulfide derivatives) with anticancer properties [42].

Antidiabetic activity

The presence of allicin, garlic has significant hypoglycemic action and this effect is thought due to increased hepatic metabolism and/or increased release of insulin and insulin sparing effect [43]. Garlic was effective in reduction of blood glucose in streptozotocin- as well as alloxan-induced diabetes mellitus in rats and mice [44, 45].

Hepatoprotective activity

Several studies showed that garlic can protect the liver cells from some toxic agents. Dietary inclusion of garlic powder protects rats against gentamycin-induced hepatotoxicity, improves antioxidant status, and modulates oxidative stress [46].

Other effects

Diuretic, diaphoretic, emmenagogue, carminative, antispasmodic, digestant [2, 28, 47].

Therapeutic uses

Hummiyat kuhna (Intermittent fevers), Flatulence, Nazla muzmin (chronic catarrhs), Dropsy, Shaheeqa (whooping coughs), Sara'a (epilepsy), Dama (asthma), Infantile convulsions, Nervous affections, Deafness, Retention of urine, Zaheer (amoebic dysentery), Haiza (cholera), Rheumatism, Zaghtuddam Qawi (hypertension), Ziyabetus (diabetes), Qoolanj (colitis), Warne Meda (gastritis), Dafa-e-Ta'affun (anti-infective), Falij (paralysis), Hysteria, Asthma, Niqras (gout), Irqunnisa (sciatica), Jarab (scabies), Bars (Leucoderma) and very effective in scorpion bite [11, 12, 16, 21, 22, 48].

Muzir asraat (adverse effects)

On Vision, Pregnancy, People with Haar Mizaj [21, 22, 49].

Musleh (corrective)

Gulqand, Katira, Kishneez, Sikanjabeen, Rogan badam [21, 22, 49].

Badal (substitute)

Onion, Jadwar shirin, Lehsun jangali [22, 50].

Murakkabat (formulations)

Majoon Seer, Majoon Seer Alvi Khan, Roghane Seer, Arqe Hazoom ba Nuskha Kalan [21, 22, 49].

Contraindications and side effects [6]

- Contraindicated in hyperthyroidism
- It may potentiate the effect of antihypertensive and anticoagulant drugs.
- More than 5 cloves a day may induce gas and heartburn.
- Avoid concomitant use with NSAIDs, anticoagulants and drug that inhibits liver metabolism
- Topical application of garlic or garlic oil may cause local irritating effects.

Conclusion

The use of herbal drugs is increasing day by day. Garlic/Seer/Saum (*Allium sativum* Linn) is one of them which is widely used in diet and for medicinal purposes. During this review we have found that a number of studies have been carried out on efficacy of garlic as antihyperlipidemic, antihypertensive, antibacterial, antifungal, antidiabetic, anticarcinogenic, hepatoprotective activities. In unani medicine garlic (Seer) in a single form as well as compound formulations such as Majoon Seer, Majoon Seer, Alvi Khan, Roghane Seer are used in the treatment of Zaghtuddam Qawi (hypertension), Falij (paralysis), Hysteria, Asthma, Niqras (gout), Irqunnisa (sciatica) etc.

So, this paper may be helpful to know the pharmacological actions and uses of garlic (*Allium sativum*) which is mentioned in Unani system of medicine. With above fact still there is scientific study needed to explore further activities of garlic/seer.

Acknowledgement

We are very thankful to our colleague and library staff for their cooperation and help in the presentation of this article.

Conflict of Interest

There is no conflict of interest

References

1. Block E. The chemistry of garlic and onions, Scientific American, 1985, 14-18.
2. Leung A. Encyclopedia of Common Natural Ingredients used in Food, Drugs and Cosmetics, John Willey & Sons, New York, 1980, 176-178.
3. Raj KP, Parmar RM. Garlic-condiment and medicine, Ind. Drugs. 1977; (15):205-210.
4. Dannesteter J. Avesta: Vendidad: Fargard 20, The origins of medicine, Translated from Sacred Books of the East, American Edition, New York, The Christian Literature Company, 2003. Available at www.avesta.org
5. Avicenna A. In: Al Qanoon Fil Tib, Sharafkandi S, translator. IV. Tehran, Iran, Soroosh Press, 1988, 122-178.
6. Behl PN, Srivastava G. Herbs Useful in Dermatological Therapy, 2nd Edition, New Delhi, CBS Publishers & Distributors, 2002, 20-22.

7. Kirtikar KR, Basu BD. Indian Medicinal Plants with Illustrations. 2nd Ed. Uttaranchal: Oriental Enterprises, 2003, 3470-72.
8. Ross IA. Medicinal Plants of the World. New Jersey: Human Press. 2003; 1(2):33-64.
9. Tribhuvan Pareek, Understanding Lasuna as Rasayana – A Critical Review, International Journal of Ayurveda and Pharma Research. 2016; 4(9):70-73.
10. Gupta AK, Tandon N. Medicinal Plants of India. New Delhi: Indian Council of Medical Research. 2004; 2:4-7.
11. Prajapati ND, Kumar U. Agro's Dictionary of Medicinal Plants, Jodhpur, Agrobios (India). 2003; 18:225.
12. Nadkarni KM. Indian Plants and Drugs, New Delhi, Srishti Book Distributors, 2005, 26-27.
13. Bently R, Trimen H. Medicinal Plants. New Delhi, Asiatic Publishing House. 2002; 4:280.
14. Anonymous. The wealth of India, A dictionary of Indian raw materials and industrial Products, Vol., New Delhi, National Institute of Science Communication, CSIR. 2001; 1A(13):181-185.
15. Anonymous. The Unani Pharmacopeia of India. Part-1. Delhi: Ministry of Health and Family Welfare, Govt. of India; 2007; 2(5):19-20.
16. Bhattacharjee SK. Handbook of Medicinal Plants, 4th Edition, Raj Pointer publishers Jaipur. 2004; 22:237.
17. Singh GK, Bhandari A. Textbook of Pharmacognosy. New Delhi: CBS Publishers & Distributors. 2008, 188-189.
18. Bathaei FS, Akhondzadeh S. Cardiovascular Effects of *Allium Sativum* (Garlic): An Evidence-Based Review. J Teh Univ Heart Ctr. 2008; 1:5-10.
19. Ibne Baitar. Al Jami-le-Mufradat-Al-Advia-Wal-Aghzia. (Urdu translation CCRUM). Vol.1,3, New Delhi, Ministry of Health and Family Welfare, Govt. of India. 1999; 185-187:377-382.
20. Ghani N. Khazainul Advia. New Delhi: Idara Kitabul Shifa. 2010; 390(391):1197-99.
21. Safiuddin AS. Unani Advia mufrada. 10th Ed. New Delhi: Qaumi Council Barae Farogh Urdu Zaban. 2004; 65:250-52.
22. Usmani MI. Tanqeehul Mufradat, 1st Edition, Famous Offset Press, Delhi, 2008, 222-223.
23. Abdul Hakeem HM. Bustanul Mufradat, New Delhi, Idara Kitabul shifa. 2002; 110(111):526-527.
24. Kabeeruddeen HM. Makhzanul Mufradat, New Delhi, Idara Kitabul Shifa, 2007; 96-97:370-371.
25. Norwell OY, Tarr RS. Garlic vampires and CHO, Osteopathic Annals. 1983, 11:546-549.
26. Foushee DB, Ruffin J, Banerjee U. Garlic as a natural agent for the treatment of Hypertension-A preliminary report, Cytobios. 1982; 34:145-162.
27. Petkov V. Plants with hypotensive annatheromatous and coronary dilating action, Am J Chin Med. 1979; 7:197-236
28. Vohra SB, Rizwan M *et al.* Medicinal uses of common Indian vegetables, Planta Med. 1973; 23:381-393.
29. Huddleson IF, Du Frain I, Barronns KC, Giefel M, Antibacterial substances in plants, J Am Vet Med Assoc. 1944; 105:394-397.
30. Cavallito CJ, Bailey JH, Allicin, the antibacterial principal of *Allium sativum* Linn, isolation physical properties and antibacterial action. J Am Chem Soc. 1944; 66:1950-1951.
31. Adetumbi MA, Lau BH, *Allium sativum* (garlic)-A natural antibiotic, Med Hypothesis. 1983; 12:227-237.
32. Moore GS, Atkins RD. The fungicidal and fungistatic effects of an aqueous garlic extract on medically important yeast like fungi, Mycologia. 1977; 69:341-348.
33. Prasad G, Sharma O, Efficacy of garlic (*Allium sativum*) treatment against experimental candidiasis in chicks, Br Vet J. 1980; 136:448-451.
34. Fromtling R, Bulmer G, *In vitro* effect of aqueous extract of garlic (*Allium sativum*) on the growth and viability of *Cryptococcus neoformans*, Mycologia. 1978; 70:397-405.
35. Bastidas GJ, Effect of ingested garlic on *Necator americanus* and *Ancylostoma canium*, Am J Trop Med Hyg. 1969; 18:920-923.
36. Rahman K. Historical Perspective on Garlic and Cardiovascular Disease. The journal of nutrition. 2001; 131:977-979.
37. Steiner M *et al.* Aged Garlic Extract, a Modulator of Cardiovascular Risk Factors: A Dose Finding Study on the Effects of AGE on Platelet Functions. The journal of nutrition. 2001; 131:980-984.
38. Thomson M, Al-Amin ZM *et al.* Anti-diabetic and hyperlipidemic properties of garlic (*Allium sativum*) in streptozotocin-induced diabetic rats. Int. J Diabetes & Metabolism. 2007; 15:108-115.
39. Ashraf MZ, Hussain ME, Fahim M *et al.* Antiatherosclerotic effects of dietary supplementations of garlic and turmeric: Restoration of endothelial function in rats. Life Sciences. 2005; 77:837-857.
40. Achenbach *et al.* Influence of lipid lowering therapy on the progression of coronary artery Calcification-a prospective evaluation, Circulation. 2002; 106:1077-1082.
41. Bordia A, Verma SK, Srivastava KC. Effect of garlic (*Allium sativum*) on blood lipids, blood sugar, fibrinogen and fibrinolytic activity in patients with coronary artery disease. Prostaglandins Leukot Essent Fatty Acids. 1989; 58:257-63.
42. Capasso A. Antioxidant action and therapeutic efficacy of *Allium sativum* L. Molecules. 2013; 18:690-700.
43. Bever BO, Zahnd GR. Plants with oral hypoglycemic action, Quart J Crude Drug Res. 1979; 17:139-196.
44. Sheela CG, Kumud K, Augusti KT. Anti-diabetic effect of onion and garlic sulfoxide amino acids in rats, Planta Medica. 1995; 61:356-7.
45. Ohaeri OC. Effect of garlic oil on the levels of various enzyme in the serum and tissue of streptozotocin diabetic rats, Biosci Rep. 2001; 21:19-24.
46. Ademiluyi AO, Oboh G, Owoloye TR, Agbebi OJ. Modulatory effects of dietary inclusion of garlic (*Allium sativum*) on gentamycin-induced hepatotoxicity and oxidative stress in rats. Asian Pac J Trop Biomed. 2013; 3:470-475.
47. Barowsky H, Boyd LJ. The use of garlic (*Allistan*) in gastrointestinal disturbances, Rev. Gastroenterol. 1944; 1:22-26.
48. Anonymous. Medicinal Plants in Folklores of Northern India. New Delhi: CCRUM, Ministry of Health and Family Welfare, Govt. of India, 2001, 63.
49. Hakeem N. Tajul Mufradat. New Delhi: Idara Kitabul Shifa. 2010; 116-117:657-660.
50. Azam Khan. Muheet Azam. Kanpur: Matba Nizami. 1313; 1(2):244-46.