INTERNATIONAL JOURNAL OF PHARMACEUTICAL SCIENCES
[ISSN: 0975-4725; CODEN(USA):IJPS00]
Journal Homepage: https://www.ijpsjournal.com

Review Article

Allium Sativum (Garlic) In Indian Traditional Medicine: A Comprehensive Review Of Its Medicinal Uses And Scientific Validation

Pankaj Sharma[1],Vivekanand A. Kashid[2]

[1]*Research Scholar, Bhagwant University, Ajmer*
[2]*Research Guide, Bhagwant University, Ajmer*

ARTICLE INFO

Received: 13 Feb 2024
Accepted: 17 Feb 2024
Published: 19 Feb 2024

Keywords:
Allium sativum, traditional medicine, bioactive compounds, antioxidant, anti-inflammatory, S-allyl cysteine

DOI:
10.5281/zenodo.10677716

ABSTRACT

Allium sativum, commonly known as garlic, occupies a unique and revered place in the sphere of traditional Indian medicine. With a history stretching back thousands of years, garlic has been celebrated for its culinary and therapeutic virtues, offering a treasure trove of remedies for various health ailments. In this review, we will be uncovering the multifaceted role of Allium sativum in India's traditional medicine systems, including Ayurveda, Siddha, and Unani. This review will also be shedding light on the historical context, tracing garlic's origins and cultural significance in India. We delve into the ancient texts and practices that have bestowed upon garlic its status as a medicinal gem, finding mention in the revered Charaka Samhita and Sushruta Samhita, among others. From its use in digestive disorders to respiratory ailments and immune support, garlic's traditional applications span a wide spectrum of health concerns. Further in the paper the phytochemical composition of garlic is explained, revealing the intricate web of bioactive compounds that underpin its therapeutic potential. Allicin, alliin, and S-allyl cysteine are just a few of the constituents that contribute to garlic's remarkable properties, from antioxidant effects to antimicrobial activities. In traditional medicine garlic's role is found in cardiovascular health, gastrointestinal wellness, respiratory care, and immune enhancement. Contemporary research has illuminated many of the traditional claims regarding garlic's health benefits. Studies confirm its efficacy in lowering blood pressure, combating infections, reducing inflammation, and potentially preventing cancer. This review serves as a comprehensive exploration of the traditional medicinal use of Allium sativum in India, bridging the gap between ancient wisdom and modern science. Garlic's enduring legacy as a medicinal herb continues to thrive, offering hope and healing to generations past, present, and future.

INTRODUCTION

***Corresponding Author:** Pankaj Sharma
Address: *Research Scholar, Bhagwant University, Ajmer*
Email : pankajpharm1987@gmail.com

Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Allium sativum(garlic), has a unique relevance in the rich tapestry of traditional Indian medicine for millennia. Garlic is celebrated not only for its culinary delights but also for its profound therapeutic properties, has woven itself into the fabric of Indian culture and healthcare practices. In this paper, we embark on a journey through time and tradition, delving into the enduring legacy of Allium sativum in the landscape of India's traditional medicine systems. Garlic's historical significance in India is profound, with its roots extending back to the ancient texts and practices of Ayurveda, Siddha, and Unani medicine. These ancient traditions have long recognized garlic as a potent medicinal herb, documenting its use in treating a wide array of health conditions and ailments. From digestive disorders to respiratory ailments and cardiovascular concerns, garlic has been a versatile and trusted plant in the pursuit of well-being. Historically garlic has been used in medicine for ages in India. Ancient Indian systems of medicine like Ayurveda mentions garlic as a potent antioxidant and anti-inflammatory agent. Through modern biochemical researches scientist have found the intricate phytochemical composition of garlic. These phytochemicals are the bioactive compounds that underpin Allium sativum's therapeutic potential. From allicin to S-allylcysteine, these compounds not only give garlic its distinctive flavour but also harbour a plethora of health benefits. In traditional medicines of India Allium sativum is known to have a role in treatment of cardiovascular problems like high blood pressure and atherosclerosis, gastrointestinal issues, respiratory ailments, and it also helps build stronger immune system. These age-old practices continue to thrive, guided by centuries of wisdom and experience. However, our exploration does not end in the past. In the modern era, scientific research has cast a brilliant light on garlic's traditional virtues. Recent studies have validated many of the traditional claims regarding garlic's health benefits, from its ability to lower blood pressure and combat infections to its potential role in cancer prevention and immune enhancement. The future prospects of Allium sativum in India's healthcare landscape look very promising. With advanced research, precision medicine, and sustainable cultivation practices on the horizon, garlic's potential as a valuable resource for modern medicine is brighter than ever. The synthesis of ancient wisdom and contemporary science promises to unlock new dimensions of garlic's therapeutic potential, benefiting not only the people of India but also the wider world.

Historical Context:

The historical context of Allium sativum, commonly known as garlic, is rich and diverse, with a long and storied history that spans several millennia. Following is an overview of the historical significance of garlic:

Ancient Use:

Garlic has been cultivated and used by humans for over 5,000 years. It is believed to have originated in central Asia and was later spread to different parts of the world through trade and exploration.Ancient civilizations, including the Egyptians, Greeks, Romans, and Chinese, valued garlic for its culinary and medicinal properties. In ancient Egypt, garlic was highly regarded and used as a dietary staple by the laborers who built the pyramids. It was also considered sacred and used as an offering to deities.The ancient Greeks and Romans used garlic both for flavouring food and for its medicinal benefits. It was believed to provide strength and endurance to athletes and soldiers.

Medicinal Uses in Traditional Systems:

Garlic has a prominent place in various traditional medicine systems worldwide. In India, garlic has been used in Ayurveda, Siddha, and Unani systems of medicine for thousands of years.The Charaka Samhita and Sushruta Samhita, ancient

Indian texts dating back to around 600 BCE, mention garlic as a medicinal herb. It was used to treat a wide range of ailments, including digestive disorders, respiratory conditions, and infections.In Traditional Chinese Medicine (TCM), garlic was used to warm the body, dispel cold, and promote circulation. It was considered effective in treating colds, coughs, and digestive issues.

Culinary Importance:

Garlic has been a fundamental ingredient in many world cuisines, imparting its distinctive aroma and flavour to countless dishes.It is a key component in Mediterranean, Asian, and Indian cuisines, and its culinary versatility has made it a staple in kitchens worldwide.

Modern Scientific Discoveries:

The 20th century witnessed a surge in scientific interest in garlic's health benefits. Research has confirmed many of its traditional uses and identified its active compounds, such as allicin and S-allylcysteine. These compounds have been studied for its potential cardiovascular benefits, including its ability to regulate blood pressure and reduce cholesterol levels. It is also recognized for its antimicrobial, antioxidant, and anti-inflammatory properties.

Phytochemical Composition of Allium sativum:

The phytochemical composition of Allium sativum (garlic) includes a wide range of bioactive compounds, many of which contribute to its various health benefits. Following are some of the key phytochemicals found in garlic:

- Allicin: Allicin is one of the most well-known and potent phytochemicals in garlic. It is responsible for garlic's characteristicodour and has been associated with numerous health benefits, including antimicrobial, antioxidant, and anti-inflammatory properties. Allicin is formed when garlic is crushed or chopped, as it is produced from the precursor compound alliin when it comes into contact with the enzyme alliinase.
- Alliin: Alliin is a sulphur-containing amino acid derivative found in raw garlic. When garlic is crushed or chopped, alliin interacts with alliinase to produce allicin, which is responsible for many of garlic's therapeutic effects.
- Diallyl Sulphides: These sulphur compounds include diallyl sulphide (DAS), diallyl disulfide (DADS), and diallyl trisulfide (DATS). They contribute to the pungent aroma and flavour of garlic and possess various health benefits, such as antioxidant and antimicrobial properties.
- S-allylcysteine (SAC): S-allylcysteine is a water-soluble compound found in aged garlic extracts. It is known for its potential cardiovascular benefits, including lowering blood pressure and improving lipid profiles.
- Ajoene: Ajoene is a sulphur-containing compound formed from allicin and has been studied for its antithrombotic (anti-blood clotting) properties.
- Saponins: Garlic contains various saponins, including alliinase-activated saponins, which may contribute to its anti-inflammatory and immunomodulatory effects.
- Phenolic Compounds: Garlic contains phenolic compounds, such as quercetin, which have antioxidant properties and contribute to garlic's ability to combat oxidative stress.
- Vitamins and Minerals: Garlic is a good source of vitamins like vitamin C and B6, and minerals like selenium, which have various roles in maintaining health.
- Organosulfur Compounds: These compounds, including thiosulfates and dithiins, are responsible for many of garlic's biological activities, such as its antimicrobial and anticancer effects.

- Polysaccharides: Garlic contains various polysaccharides that may contribute to its immunomodulatory effects.

It's important to note that the phytochemical composition of garlic can vary depending on factors such as the variety of garlic, growing conditions, and processing methods. Additionally, some of garlic's beneficial compounds are more prominent in fresh garlic, while others, like S-allylcysteine, are found in higher concentrations in aged garlic extracts.The combination of these phytochemicals makes garlic a versatile and valuable plant with a wide range of potential health benefits. Research continues to uncover new aspects of garlic's phytochemical profile and its impact on human health.

Traditional Medicinal Uses of Garlic:

Garlic (Allium sativum) has a long history of traditional medicinal use in various cultures around the world, including India. In Indian traditional medicine systems like Ayurveda, Siddha, and Unani, garlic has been employed for its therapeutic properties. Following are some of the traditional medicinal uses of garlic in India:

Cardiovascular Health:

Garlic has been traditionally used to promote cardiovascular health. It is believed to help lower blood pressure, reduce cholesterol levels, and prevent atherosclerosis (hardening of the arteries).

Digestive Disorders:Garlic is used to alleviate various digestive issues, including indigestion, flatulence, and intestinal worms. It is considered a carminative, helping to relieve gas and bloating.

Respiratory Conditions:In traditional Indian medicine, garlic is employed as a remedy for respiratory ailments such as asthma, bronchitis, and common colds. Its antimicrobial and anti-inflammatory properties are thought to be beneficial for the respiratory system.

Immune Support:

Garlic is believed to boost the immune system and help the body fight infections. It has been used as a general tonic to enhance overall health and resistance to illnesses.

Anti-diabetic Effects:

Some traditional practices incorporate garlic into diabetic management due to its potential to regulate blood sugar levels. Garlic is believed to improve insulin sensitivity.

Skin and Hair Care:

Garlic paste is applied topically to treat various skin conditions, including acne and fungal infections. It is also believed to promote hair growth and address scalp issues.

Pain Relief:

Garlic has been used traditionally as an analgesic to alleviate pain, especially in conditions like arthritis and joint pain.

Anti-parasitic Properties:

Garlic has been employed to expel intestinal parasites and worms from the digestive system.

Aphrodisiac:

In some traditional contexts, garlic is considered an aphrodisiac and is used to enhance sexual vitality.

Wound Healing:

Garlic paste or oil has been applied to wounds and injuries to promote healing and prevent infection.

Detoxification:

Garlic is believed to aid in the detoxification of the body by promoting the elimination of toxins.

Anti-inflammatoryEffects:

Garlic's anti-inflammatory properties have been utilized in traditional medicine to alleviate various inflammatory conditions. It's important to note that while garlic has a long history of traditional use, modern scientific research has provided evidence supporting many of these traditional claims. Studies have confirmed garlic's potential cardiovascular benefits, antimicrobial properties, and antioxidant effects, among others.

Recent Scientific Validation:

Recent scientific research has provided substantial validation for many of the traditional medicinal

uses of Allium sativum (garlic). Following are some key areas where garlic's therapeutic properties have been scientifically validated in contemporary studies:

Cardiovascular Health:

Numerous studies have confirmed that garlic can help lower blood pressure and reduce cholesterol levels. Garlic's sulphur compounds, including allicin, have vasodilatory effects, which can lead to improved blood flow and reduced blood pressure. Garlic supplementation has been associated with a modest but significant decrease in both systolic and diastolic blood pressure in individuals with hypertension.

Antimicrobial Properties:

Garlic has demonstrated strong antimicrobial activity against various bacteria, fungi, and viruses. Allicin, one of garlic's key compounds, has been found to inhibit the growth of pathogens. Garlic's antimicrobial properties have been studied in the context of respiratory infections, foodborne pathogens, and skin infections.

Antioxidant Effects:

Garlic contains antioxidants that help combat oxidative stress and reduce the risk of chronic diseases. These antioxidants can neutralize harmful free radicals in the body. Garlic has been shown to enhance the body's natural antioxidant defences.

Anti-inflammatory Effects:

Research has indicated that garlic possesses anti-inflammatory properties. These properties may contribute to its efficacy in conditions involving inflammation, such as arthritis and respiratory disorders. Garlic extracts have been studied for their potential to reduce markers of inflammation in clinical settings.

Immune System Support:

Garlic has been found to stimulate and enhance the activity of immune cells, potentially improving the body's ability to fight infections. Studies have explored the immunomodulatory effects of garlic and its potential role in strengthening the immune system.

Anticancer Potential:

Garlic has been investigated for its potential role in cancer prevention and treatment. Some studies suggest that garlic compounds may inhibit the growth of cancer cells and promote apoptosis (cell death) in cancerous cells. Garlic's sulphur compounds have been of particular interest in cancer research.

Diabetes Management:

Research has shown that garlic may help regulate blood sugar levels in individuals with diabetes or prediabetes. It can improve insulin sensitivity and reduce fasting blood glucose levels. Garlic's potential in diabetes management is an area of ongoing investigation.

Gastrointestinal Health:

Garlic has been studied for its potential to support gastrointestinal health. It may aid in protecting the digestive tract from infections and promoting a healthy gut microbiome. Garlic supplements have been examined for their impact on gastrointestinal disorders. The scientific studies have provided substantial evidence for garlic's medicinal properties, the efficacy of garlic supplements may vary depending on factors such as the form of garlic used (raw, aged, extract), dosage, and individual health conditions.

FUTURE PROSPECTS:

The future prospects of Allium sativum (garlic) in both traditional and modern medicine are promising, as ongoing research continues to uncover its potential health benefits and applications. Following are some future prospects for garlic:

Advanced Research and Clinical Trials:

Continued scientific investigation will likely reveal additional therapeutic properties of garlic and its bioactive compounds. Clinical trials will help establish optimal dosages and treatment protocols for specific health conditions.

Precision Medicine:

Garlic's diverse phytochemical composition may have varying effects on individuals based on their genetics and health profiles. Future research may lead to personalized recommendations for the use of garlic in preventive and therapeutic contexts.

Cardiovascular Health:

Garlic's role in cardiovascular health will remain a prominent area of research. Further studies may refine its use in managing hypertension, reducing the risk of atherosclerosis, and preventing heart disease.

Diabetes Management:

Garlic's potential as an adjunct therapy for diabetes management is an evolving field. Future research may explore its mechanisms of action and its role in combination with conventional diabetes treatments.

Cancer Prevention and Treatment:

Garlic's anticancer properties will continue to be a subject of interest. Research may lead to the development of garlic-based interventions or complementary treatments for various types of cancer.

Antimicrobial Applications:

Given the increasing concern over antibiotic resistance, garlic's natural antimicrobial properties may gain more attention. Research may focus on using garlic-derived compounds to develop alternative antimicrobial agents.

Immune Modulation:

Garlic's ability to modulate the immune system may be explored further. It could potentially be used to enhance immune responses in specific contexts, such as in the prevention of recurrent infections.

Neurological Health:

Emerging research suggests that garlic may have neuroprotective properties and could play a role in mitigating neurodegenerative diseases. Future studies may delve deeper into this potential.

Metabolic Disorders:

Garlic's impact on metabolic disorders beyond diabetes, such as obesity and metabolic syndrome, may be investigated to determine its efficacy in managing these conditions.

Nutraceuticals and Functional Foods:

Garlic extracts and garlic-based supplements may become more popular as nutraceuticals and functional foods. These products could be developed with standardized formulations for specific health purposes.

Integration with Traditional Medicine:

There is potential for further integration of garlic into traditional medicine systems worldwide, harnessing its traditional wisdom while incorporating modern scientific findings.

Culinary and Culinary Medicine:

Garlic's role in culinary medicine, where food is used as medicine, may gain traction. Health-conscious culinary practices and functional foods may incorporate garlic for its health benefits.

Sustainable Cultivation and Conservation:

Sustainable farming practices and conservation efforts may be promoted to ensure the availability of high-quality garlic and protect biodiversity.

Safety and Quality Control:

Ensuring the safety and quality of garlic-based products will remain essential. Regulatory agencies and the industry may establish standards for garlic supplements and extracts. As research continues to unveil the potential of garlic and its bioactive compounds, the integration of garlic into modern healthcare approaches may become more widespread. Nevertheless, it's important for individuals to consult healthcare professionals and follow evidence-based guidelines when using garlic for specific health concerns, as its effects can vary based on factors like dosage, form, and individual health conditions.

CONCLUSION

In conclusion, Allium sativum, also known as garlic, holds a significant place in both traditional and modern medicine, thanks to its diverse and

promising medicinal properties. Throughout history, garlic has been revered for its culinary and therapeutic contributions, and its traditional uses have been validated by scientific research in recent years. The future prospects of garlic in healthcare are promising, with ongoing investigations revealing its potential in various health domains. Garlic's phytochemical composition, including allicin, alliin, diallyl sulfides, and S-allylcysteine, contributes to its wide range of benefits, such as cardiovascular support, antimicrobial properties, antioxidant effects, and anti-inflammatory actions. Its traditional uses in India and other cultures include addressing cardiovascular issues, digestive disorders, respiratory conditions, and immune support, among others. Recent scientific validation has provided substantial evidence for garlic's therapeutic potential, making it a subject of interest for researchers and healthcare practitioners. This validation includes its role in cardiovascular health, diabetes management, cancer prevention, and immune modulation, among other areas. Looking ahead, garlic's future prospects involve advanced research, clinical trials, and personalized approaches to healthcare. It may play a crucial role in precision medicine, where individual genetic and health profiles guide its usage. The potential applications of garlic in addressing antibiotic resistance, neurodegenerative diseases, metabolic disorders, and culinary medicine are exciting areas of exploration. Sustainable cultivation and quality control measures will also be vital to ensure the availability and safety of garlic-based products. As garlic continues to bridge the gap between traditional and modern medicine, it is essential to approach its use with informed guidance from healthcare professionals and adhere to evidence-based practices. In doing so, we can fully harness the remarkable potential of Allium sativum to promote health and well-being in the years to come.

REFERENCES

1. J. Parekh and S. Chanda, “In vitro antimicrobial activity of Trapa natans L fruit rind extracted in different solvents,” African Journal of Biotechnology, vol. 6, no. 6, 2007.
2. L. Bayan, P. H. Koulivand, and A. Gorji, “Garlic: a review of potential therapeutic effects,” Avicenna journal of phytomedicine, vol. 4, no. 1, pp. 1–14, 2014.
3. G. A. Benavides, G. L. Squadrito, R. W. Mills et al., “Hydrogen sulfide mediates the vasoactivity of garlic,” Proceedings of the National Academy of Sciences, vol. 104, no. 46, pp. 17977–17982, 2007.
4. R. A. Onyeagba, O. C. Ugbogu, C. U. Okeke, and O. Iroakasi, “Studies on the antimicrobial effects of garlic (Allium sativum Linn), ginger (Zingiber officinale Roscoe) and lime (Citrus aurantifolia Linn),” African Journal of Biotechnology, vol. 3, no. 10, pp. 552–554, 2004.
5. K. Alare, T. Alare, and N. Luviano, “Medicinal importance of garlic and onions on autonomic nervous system,” Clinical Pharmacology & Biopharmaceutics, vol. 9, no. 204, p. 2, 2020.
6. J. Velíšek, R. Kubec, and J. Davídek, “Chemical composition and classification of culinary and pharmaceutical garlic-based products,” Zeitschrift für Lebensmittel-Untersuchung und -Forschung A, vol. 204, no. 2, pp. 161–164, 1997.
7. H. Amagase, “Clarifying the real bioactive constituents of garlic,” Journal of Nutrition, vol. 136, no. 3, pp. 716S–725S, 2006.
8. Tiwari, Dr & Talreja, Shreya. (2020). Importance of Cinnamomum Tamala in the Treatment of Various Diseases. Pharmacognosy Journal. 12. 1792-1796. 10.5530/pj.2020.12.241.
9. R. Singh and K. Singh, “Garlic: a spice with wide medicinal actions,” Journal of

Pharmacognosy and Phytochemistry, vol. 8, no. 1, pp. 1349–1355, 2019.

10. A. Tesfaye and W. Mengesha, "Traditional uses, phytochemistry and pharmacological properties of garlic (Allium Sativum) and its biological active compounds," Int. J. Sci. Res. Eng. Technol, vol. 1, pp. 142–148, 2015.
11. J. Y.-Y. Chan, A. C.-Y. Yuen, R. Y.-K. Chan, and S.-W. Chan, "A review of the cardiovascular benefits and antioxidant properties of allicin," Phytotherapy Research, vol. 27, no. 5, pp. 637–646, 2013.
12. B. Houshmand, F. Mahjour, and O. Dianat, "Antibacterial effect of different concentrations of garlic (Allium sativum) extract on dental plaque bacteria," Indian Journal of Dental Research: Official Publication of Indian Society for Dental Research, vol. 24, no. 1, pp. 71–5, 2013.
13. D. Y. Yoo, W. Kim, S. M. Nam et al., "Neuroprotective effects of Z-ajoene, an organosulfur compound derived from oil-macerated garlic, in the gerbil hippocampal CA1 region after transient forebrain ischemia," Food and Chemical Toxicology, vol. 72, pp. 1–7, 2014.
14. M. Yoo, S. Lee, S. Kim, J.-B. Hwang, J. Choe, and D. Shin, "Composition of organosulfur compounds from cool- and warm-type garlic (Allium sativum L.) in Korea," Food Science and Biotechnology, vol. 23, no. 2, pp. 337–344, 2014.
15. S. M. B. Asdaq and M. N. Inamdar, "Pharmacodynamic and pharmacokinetic interactions of propranolol with garlic (Allium sativum) in rats," Evidence-based Complementary and Alternative Medicine, vol. 2011, 2011.
16. Y. Liu, J. Yan, X. Han, and W. Hu, "Garlic-derived compound S-allylmercaptocysteine (SAMC) is active against anaplastic thyroid cancer cell line 8305C (HPACC)," Technology and Health Care, vol. 23, no. s1, pp. S89–S93, 2015.
17. G. A. Souza, "N-acetylcysteine an allium plant compound improves high-sucrose diet-induced obesity and related effects," Evidence-based Complementary and Alternative Medicine, vol. 2011, 2011.
18. G. B. Tran, S. M. Dam, and N. T. Le, "Amelioration of single clove black garlic aqueous extract on dyslipidemia and hepatitis in chronic carbon tetrachloride intoxicated Swiss Albino mice," International Journal of Hepatology, vol. 2018, Article ID 9383950, 2018.
19. C. Torres-Palazzolo, D. Ramirez, D. Locatelli, W. Manucha, C. Castro, and A. Camargo, "Bioaccessibility and permeability of bioactive compounds in raw and cooked garlic," Journal of Food Composition and Analysis, vol. 70, pp. 49–53, 2018.
20. H. Xue-song, "Isolation and identification of garlic polysaccharide," Food Science, p. 09, 2005.
21. J. Velek, R. Kubec, and J. Davdek, "Chemical composition and classification of culinary and pharmaceutical garlic-based products," European Food Research and Technology, vol. 204, no. 2, pp. 161–164, 1997.
22. Tiwari, Dr & Talreja, Shreya. (2020). Insomnia: A Study on Sleeping Disorder with the Reference of Ayurvedic Herbs. Journal of Pharmaceutical Sciences and Research. 12. 1375-1379.
23. C. Borek, NewportBeach, CA, 1998, Recent Advances on the Nutritional Benefits Accompanying the Use of Garlic as a Supplement.
24. P. Mikaili, S. Maadirad, M. Moloudizargari, S. Aghajanshakeri, and S. Sarahroodi, "Therapeutic uses and pharmacological properties of garlic, shallot, and their biologically active compounds," Iranian

Journal of Basic Medical Sciences, vol. 16, no. 10, pp. 15–17, 2013.

25. M. K. Alam, M. O. Hoq, and M. S. Uddin, "Medicinal plant allium sativum–A review," Journal of Medicinal Plant Studies, vol. 4, no. 6, pp. 72–79, 2016.
26. S. Papu, "Medicinal values of garlic (Allium sativum L) in human life: an overview," Greener Journal of Agricultural Sciences, vol. 4, no. 6, pp. 265–280, 2014.
27. R. R. Cutler and P. Wilson, "Antibacterial activity of a new, stable, aqueous extract of allicin against methicillin-resistant Staphylococcus aureus," British Journal of Biomedical Science, vol. 61, no. 2, pp. 71–74, 2004.
28. A. Eidi, M. Eidi, and E. Esmaeili, "Antidiabetic effect of garlic (Allium sativum L.) in normal and streptozotocin-induced diabetic rats," Phytomedicine: International Journal of Phytotherapy and Phytopharmacology, vol. 13, no. 9-10, pp. 624–629, 2006.
29. F. T. Djankpa, "Effect of regular garlic ingestion on body weight and blood glucose: a case study in mice," International Journal of Pharmaceutical Sciences and Research, vol. 3, no. 5, Article ID 1364, 2012.
30. R. Padiya and S. K. Banerjee, "Garlic as an anti-diabetic agent: recent progress and patent reviews," Recent Patents on Food, Nutrition & Agriculture, vol. 5, no. 2, pp. 105–127, 2013.
31. A. Capasso, "Antioxidant action and therapeutic efficacy of allium sativum L," Molecules, vol. 18, no. 1, pp. 690–700, 2013.
32. G. O. Ajayi, T. T. Adeniyi, and D. O. Babayemi, "Hepatoprotective and some haematological effects of Allium sativum and vitamin C in lead-exposed wistar rats," International Journal of Medicine and Medical Sciences, vol. 1, no. 3, pp. 064–067, 2009.
33. G. Hodge, S. Hodge, and P. Han, "Allium sativum (garlic) suppresses leukocyte inflammatory cytokine production in vitro: potential therapeutic use in the treatment of inflammatory bowel disease," Cytometry, vol. 48, no. 4, pp. 209–215, 2002.
34. M. Balaha, S. Kandeel, and W. Elwan, "Garlic oil inhibits dextran sodium sulfate-induced ulcerative colitis in rats," Life Sciences, vol. 146, pp. 40–51, 2016.
35. Tiwari, Dr & Talreja, Shreya. (2020). A Pharmacological And Medicinal Study Of Areca Palm And Nuts: An Overview. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 11. 100-108. 10.33887/rjpbcs/2020.11.5.12.
36. C. Borek, "Garlic reduces dementia and heart-disease risk," Journal of Nutrition, vol. 136, no. 3, pp. 810S–812S, 2006.
37. B. H. S. Lau, "Suppression of LDL oxidation by garlic compounds is a possible mechanism of cardiovascular health benefit," Journal of Nutrition, vol. 136, no. 3, pp. 765S–768S, 2006.
38. S.-M. Tsao and M.-C. Yin, "In-vitro antimicrobial activity of four diallyl sulphides occurring naturally in garlic and Chinese leek oils," Journal of Medical Microbiology, vol. 50, no. 7, pp. 646–649, 2001.
39. S. T. Pai and M. W. Platt, "Antifungal effects of Allium sativum (garlic) extract against the Aspergillus species involved in otomycosis," Letters in Applied Microbiology, vol. 20, no. 1, pp. 14–18, 1995.
40. P. Sabitha, P. M. Adhikari, S. M. Shenoy et al., "Efficacy of garlic paste in oral candidiasis," Tropical Doctor, vol. 35, no. 2, p. 99, 2005.

HOW TO CITE: Pankaj Sharma ,Vivekanand Ankush Kashid, Allium Sativum (Garlic) In Indian Traditional Medicine: A Comprehensive Review Of Its Medicinal Uses And Scientific Validation, Int. J. of Pharm. Sci., 2024, Vol 2, Issue 2, 469-478. https://doi.org/10.5281/zenodo.10570770