Review

URF PUBLISHERS
connect with research world

Archives of Biotechnology and Pharmaceutical Research

https://urfpublishers.com/journal/biotech-pharma-research

Vol: 1 & Iss: 1

Hydro-Maceration and Decoction of Clove Seed as an Aphrodisiac: A Structured Literature Review

Oloche Israel Adama*

Lizzle Pharmacy limited, Abuja, Nigeria

Citation: Adama OI. Hydro-Maceration and Decoction of Clove Seed as an Aphrodisiac: A Structured Literature Review. *Arch Biotech Pharma Res*, 2025;1(1):13-15.

Received: 02 June, 2025; **Accepted:** 13 June, 2025; **Published:** 16 June, 2025

***Corresponding author:** Oloche Israel Adama, Lizzle Pharmacy limited, Abuja, Nigeria, Email: israeloloche@gmail.com

ABSTRACT

Clove seeds are the aromatic dried flower buds of Syzygium aromaticum L. belonging to the family Myrtaceae. Pharmacologically, clove seeds have been found to possess antimicrobial activities, anti-inflammatory properties, anti-diabetic and antioxidant activities, anti-platelets properties and anaesthetic properties. Phytochemically, clove seed extract contains volatile and non-volatile liquids. The volatile oil is majorly eugenol, eugenyl acetate and beta-caryophyllene. It also consists of tannins, sterols, tri-terpenes and flavonoids as bioactive constituents.

Traditionally, the uses of clove bud seed as aphrodisiac are mainly preparations from the hydro-maceration and decoction of the clove seed at some temperature higher than that of a room temperature for some hours. This research title aims at exploring the available scientific evidence on the use of hydro-maceration and decoction of clove seed as an aphrodisiac, evaluate the published research articles on the topic and provide recommendations on the speculation of using clove seed to enhance male sexual performance.

A structured literature review was conducted using relevant databases such as PubMed, Scopus and Google Scholar. This review has shown that there are scientific justifications for the use of clove seed aqueous extract (hydro-maceration and decoction) in enhancing sexual performance in men.

Keywords: Clove seeds, Aphrodisiac, Hydro-Maceration, Decoction, Sex enhancer

1. Introduction

There has been a growing interest in sexual health in the recent time, especially in the management of erectile dysfunction. Sexual health and sexual satisfaction are said to be integral components of health and well-being. [1]Documented the positive connection between sexual relationships with life satisfaction and happiness. Erectile dysfunction is an inability to achieve and maintain an erection sufficient for mutually satisfactory intercourse with a partner[2]. This condition, which has serious medical and social symptoms that occur in men, has shifted the positive relationships between sexual relationships and happiness. This has necessitated the use of substances including orthodox and herbal preparations to improve sexual prowess in favour of this relationship. Increasing sexual behaviour may improve relationships and self-esteem in humans[3]. The term "Aphrodisiac" is coined from the Greek work "Aphrodite," which is the Greek goddess of love[4]. [3]Defined an Aphrodisiac as an agent (food or drug) that arouses sexual desire.

The use of plants in the management of sexual dysfunction has gained global recognition and its use in erectile dysfunction

is increasing on a daily basis[2]. Many natural resources have been employed historically across Africa and Europe as Aphrodisiacs[3]. Many plants have been used for Aphrodisiacs by man from time immemorial. Some of these plants have been investigated and recorded for their Aphrodisiac properties. [5]Documented that the Aphrodisiac activities of plants may be as the result of the bioactive compounds present in them.

Clove seeds are the aromatic dried flower buds of Syzygium aromaticum L. belonging to the family Myrtaceae[6]. Pharmacologically, it has been found to possess antimicrobial activities, anti-inflammatory properties, antidiabetic and antioxidant activities, antiplatelets properties and anaesthetic properties[6,7]. Phytochemically, clove seed extract contains volatile and non-volatile liquids. The volatile oil is majorly eugenol, eugenyl acetate and beta-carophyllene. It also consists of tannins, sterols, tri-terpenes and flavonoids as bioactive constituents[8,9].

Much research has been conducted on clove, its phytochemicals and its pharmacological activities on biological systems, including its Aphrodisiac effect. These investigations majorly employ the use of hydro-ethanolic, methanolic and other related organic solvents. However, the use of clove bud seed as aphrodisiac are mainly preparations from the hydro-maceration and decoction of the clove seed at some temperature higher than that of a room temperature for some hours. This research reviews literature, which has been conducted on clove seed to make inferences on the use of hydro-maceration and decoction as an aphrodisiac agent.

2. Methodology

A structured literature review was conducted using relevant databases such as PubMed, Scopus and Google Scholar. During the review, keywords such as “clove seed”, “hydro-maceration”, “decoction”, “aphrodisiac” and “male sexual performance” were used to search for relevant articles. The selected articles were then organised and evaluated using a thematic analysis approach.

2.1. Articles inclusion criteria

Published research articles in English, focusing on the use of clove seed as an aphrodisiac and available in full-text with relevant citations and mostly current publication issues. Exclusion criteria include articles not focusing on clove seed, not available in full-text or published in languages other than English.

3. Result/Discussion

Maceration is one of the traditional and most straightforward extraction procedures used in the extraction of cloves[10]. One of the commonest methods of extracting volatile oil from plant materials is hydro-distillation[11]. Both decoction as a conventional extraction method and hydro-distillation method use water as solvent[12]. These methods are suitable for thermostable bioactive compounds presented in the plant materials.

When clove seeds are hydro-macerated and decocted in closed vessels, the volatile oils components of this plant material condensed and fall back into the mixture when the temperature of the mixture cools down. Batiha, et al, documented that eugenol possesses a reversible[13], dose-dependent vasodilating property, which leads to increased blood circulation. Pavithra, recorded that the topical application of eugenol to the male genital inhibits premature ejaculation[14]. Anifowose, et al, reviewed the effectiveness of eugenol in preventing premature ejaculation[15]. Olounabadi ARS, et al, investigated the efficacy of a topical formulation of clove oil in premature ejaculation patients and the result shows that the use of clove gel significantly improved premature ejaculation[16].

The phytochemical screening of hydro-maceration extracts of cloves confirms the presence of alkaloids, tannins, saponin, flavonoid, phenol, glycosides and terpenoids[17]. Lone and Jain conducted a phytochemical analysis of clove dried flower buds extract and its therapeutic importance. The result of this analysis indicates the presence of alkaloids, tannins and sterols in the aqueous extract[18]. Adaramola & Onigbinde, carried out research that demonstrated the effect of extraction solvents on phenolic content, flavonoid contents and antioxidant capacity of clove buds[19]. The outcome confirms the presence of phenols and flavonoids with the percentage yield of 15.1 +/- 0.32.

Yanuarty, et al, investigated the aphrodisiac activity of clove leaves and concluded that the presence of steroidal compounds could be responsible for their aphrodisiac activity[20]. These compounds though are insoluble in water except at high degree of temperature[21,22].

4. Conclusions and Recommendations

This review has shown that there are scientific justifications for the use of clove seed aqueous extract (hydro-maceration and decoction) in enhancing sexual performance in men. Although the effect produced from these extraction methods as commonly employed by individuals may not give the highest effect of clove seed extract on sexual performance. The available evidence pointed at eugenol (a volatile oil component) as the most important bioactive chemical responsible for this effect. As it has been shown that volatile oil from clove seed have pronounced effect as aphrodisiac, it is therefore recommended that the aqueous extraction of clove seed for sexual activities should be done in closed vessels rather than opened ones. If done in an enclosed medium, the volatile oil condenses and falls back into the aqueous extract, thereby retaining the volatile components of the plant extracts in the extraction medium.

It is therefore recommended that more work should be done in this area while using water as the extraction solvent.

5. Declarations

5.1. Ethical approval and consent to participate

Not Applicable.

5.2. Consent for publication

Not applicable.

5.3. Availability of data materials

This is a review and the materials used (publications) are duly referenced and hyperlinked.

5.4. Competing interests

The Author declares that there are no competing interests.

5.5. Funding

This review did not receive any financial funding directly or indirectly.

5.6. Author's contributions

All components of this review were carried out by one author; the corresponding author.

5.7. Acknowledgements

Not applicable.

6. References

1. Ueda P, Mercer CH, Ghaznavi C, et al. Trends in Frequency of Sexual Activity and Number of Sexual Partners Among Adults Aged 18 to 44 Years in the US, 2000-2018. JAMA Network Open, 2020;3(6): 203833.
2. Choudhury MRA, Basak M. Ethno Medicinal Plants used for Aphrodisiac Activity in North-East, India. Journal of Pharmaceutical Research International, 2021;33(38): 314-322.
3. Singh B, Gupta V, Bansal P, et al. Pharmacological Potential of Plants used as Aphrodisiacs. International Journal of Pharmaceutical Sciences Review and Research, 2010;5(1): 016.
4. Chuahan NS, Sharma V, Dixit VK, et al. A Review on Plants Used for Improvement of Sexual Performance and Virility. BioMedical Research International, 2014.
5. Enema OJ, Umoh UF, Umoh RA, et al. Chemistry and Pharmacology of Aphrodisiac Plants: A Review. Journal of Chemical and Pharmaceutical Research, 2018;10(7): 70-98.
6. Milind P, Deepa K. Clove: A Champion Spice. International Journal of Research in Ayurveda & Pharmacy, 2011;2(1): 47-54.
7. Sultana B, Anwar F, Mushtag M, et al. In vitro antimutagenic, antioxidant activities and total phenolics of clove (Syzygium aromaticum L.) seed extracts. Pakistan Journal of Pharmaceutical Science, 2014;27(4): 893-899.
8. Yadav S, Gupta SK, Bharti K, et al. Syzygium aromaticum (Clove): A review of various Phytochemical and Pharmacological activities in medicinal plant. World Journal of Pharmaceutical Research, 2020;9(11): 349-363.
9. Kanwal A, Irshad S, Akmal N, et al. Identification and Characterisation of active Ingredient eugenol from Syzygium aromaticum (clove oil) through HPLC and its Phytochemical Analysis. Journal of Bioresource Management, 2021;9(1): 22-30.
10. Aziz AHA, Rizkiyah DN, Qomariyah L, et al. Unlocking the Full Potential of Clove (Syzygium aromaticum) Spice: An Overview of Extraction Techniques, Bioactivity and Future Opportunities in the Food and Beverage Industry. Processes, 2023;11(8): 2453.
11. Ruyati SS, Ruyati SS. Evaluation of the Anti-diabetic Properties of Clove Essential Oil. An International Journal of Medical, Pharmaceutical, Life Sciences, 2024;4(2): 614-619.
12. Rasul MG. Conventional Extraction Methods Use in Medicinal Plants, their Advantages and Disadvantages. International Journal of Basic Sciences and Applied Computing, 2018;2(6).
13. Batiha GE, Alkazmi LM, Wasef LG, et al. Syzygium aromaticum L. (Myrtaceae): Traditional Uses, Bioactive Chemical Constituents, Pharmacological and Toxicological Activities. Biomolecules, 2020;10: 202.
14. Pavithra B. Eugenol- A Review. Journal of Pharmaceutical Sciences and Research, 2014;6(3): 153-154.
15. Anifowose OA, Adegbola RA, Raheem HA. Antipyrectic And Antinociceptive Activities of Ethanolic Extract of Eugenia Aromatica Baill Seeds. ISOR Journal of Pharmacy, 2016;6(6): 28-33.
16. Olounabadi ARS, Khayyamfar F, Kamalinejad M, et al. Effect of Topical Clove (Syzygium aromaticum (L.) Merr. & L.M.Perry) Gel on Premature Ejaculation: A Pilot Randomized Double-Blind Placebo-Controlled Clinical Trial. Traditional and Integrative Medicine, 2021;6(3): 236-248.
17. Madubuike P, Ezemoke D, Madubuike N. Phytochemical Screening of Eugenia Caryophyllata (Clove Leaves) and Characterization of Its Essential Oil. World Wide Journal of Multidisciplinary Research and Development, 2018;4(2): 163-167.
18. Lone ZA, Jain NK. Phytochemical Analysis of Clove (Syzygium aromaticum) Dried Flower Buds Extract and its Therapeutic Importance. Journal of Drug Delivery and Therapeutics, 2022;12(4): 87-92.
19. Adaramola B, Onigbinde A. Effect of Extraction Solvent on the Phenolic Content, Flavonoid Content and Antioxidant Capacity Of Clove Bud. IOSR Journal of Pharmacy and Biological Sciences, 2016;11(3): 33-38.
20. Yanuarty R, Tuldjanah M, Wulandari A. Aphrodisiac activity of clove leaves Syzygium aromaticum. L) ethanol extract and fractions in Wistar rats. Sciences of Phytochemistry, 2024;3(1): 54-59.
21. Singh R, Singh S, Jeyabalan G, et al. An Overview on Traditional Medicinal Plants as Aphrodisiac agents. Journal of Pharmacognosy and Phytochemistry, 201222;1(4): 43-55.
22. Tajuddin A, Ahmad S, Latif A, et al. Aphrodisiac activity of 50% ethanolic extracts of Myristica fragrans Houtt. (nutmeg) and Syzygium aromaticum (L) Merr. & Perry. (clove) in male mice: a comparative study. BMC Complementary and Alternative Medicine, 2003;3(6).