WORLD JOURNAL OF PHARMACY AND PHARMACEUTICAL SCIENCES
ISSN 2278 – 4357 Impact Factor 8.485
Volume 15, Issue 6, 324-334 Review Article Coden USA: WJPPAJ

A LITERATURE REVIEW ON *MOOTHANDA THAILAM*: HIGHLIGHTING ITS THERAPEUTIC EFFECTIVENESS IN MANAGING *PEENISAM* (SINUSITIS)

Selva Priya S.[1*], Mahadevan M. V.[2], Periyasami D.[3]

[1*]PG Scholar, Department of Pura Maruthuvam, National Institute of Siddha, Chennai-47.

[2]Head of the Department, Department of Pura Maruthuvam, National Institute of Siddha, Chennai-47.

[3]Head of the Department, Department of Varma Maruthuvam, National Institute of Siddha, Chennai-47.

Article Received on 05 May 2026,
Article Revised on 25 May 2026,
Article Published on 01 June 2026,

https://doi.org/10.5281/zenodo.20444123

***Corresponding Author**

Selva Priya S.

PG Scholar, Department of Pura Maruthuvam, National Institute of Siddha, Chennai-47.

How To Cite This Article: Selva Priya S[1*], Mahadevan M. V.[2], Periyasami D.[3]. (2026). A Literature Review on Moothanda Thailam: Highlighting Its Therapeutic Effectiveness In Managing Peenisam (Sinusitis). World Journal of Pharmacy and Pharmaceutical Sciences, 15(6), 323–334.

This work is licensed under Creative Commons Attribution 4.0 International license.

ABSTRACT

The Siddha system of medicine utilises a variety of herbal and herbo-mineral formulations for disease management, emphasising patient-centred comprehensive care. *Moothanda thailam* is a classical Siddha preparation indicated for *Peenisam*, which can be correlated with Sinusitis in modern medicine. This review aims to critically analyse the traditional indications, phytochemical profile, and pharmacological activities of the ingredients present in *Moothanda thailam*. A structured literature review was conducted using standard databases to gather scientific evidence supporting its therapeutic role. The formulation contains ingredients such as *Cynodon dactylon*, *Piper nigrum*, *Cyperus rotundus*, sesame oil, and cow ghee, all of which exhibit significant anti-inflammatory, antimicrobial, and mucolytic properties. The synergistic interaction of these components, along with the nasal route of administration *(Nasiyam)*, enhances its therapeutic effectiveness. This review highlights the potential of *Moothanda thailam* as an alternative approach in managing Sinusitis and emphasises the need for further clinical validation.

KEYWORDS: Siddha, *Moothanda thailam*, *Peenisam*, Sinusitis, Phytochemicals, *Nasiyam.*

INTRODUCTION

Traditional systems of medicine continue to contribute significantly to healthcare worldwide, especially in the management of chronic and recurrent diseases. Among these, Siddha Medicine is one of the oldest traditional medical systems being practised in South India, deeply rooted in ancient Tamil literature and culture. Siddha medicine considers health as a state of balance among the three vital humors—*Vali, Azhal, and Iyyam*—which regulate the normal physiological functions of the body. Any imbalance in these humors is believed to result in disease. The Siddha system mainly focuses on restoring this equilibrium through internal medicines, dietary practices, lifestyle modifications, and therapeutic procedures.

Peenisam is a disease condition described in Siddha literature, characterised by symptoms such as nasal obstruction, nasal discharge, headache, and heaviness of the head. These clinical manifestations are comparable to Sinusitis in modern medicine, which is defined as inflammation of the paranasal sinuses. Sinusitis is a common disorder that affects the quality of life of affected individuals and is often associated with recurrence and persistent symptoms. Although conventional treatment modalities such as antibiotics, antihistamines, and corticosteroids provide symptomatic relief, prolonged use may lead to adverse effects and the development of antibiotic resistance. This has emphasised the need for exploring safe and effective traditional therapeutic alternatives.

Moothanda Thailam is a classical Siddha formulation mentioned in the text *Sarabenthirar Vaidhiya Muraigal* and has been indicated for the treatment of *Peenisam*. The formulation is believed to possess therapeutic properties that help in relieving nasal symptoms and associated discomfort. Therefore, this review aims to evaluate the traditional significance and possible scientific basis of *Moothanda Thailam* in the management of *Peenisam* (Sinusitis).

METHODOLOGY OF REVIEW

A structured narrative review was undertaken to evaluate the pharmacological and therapeutic relevance of the ingredients present in *Moothanda thailam*. A comprehensive literature search was performed using classical Siddha texts and electronic databases, including PubMed, Google Scholar, and ScienceDirect, to identify relevant studies.

Studies selected for inclusion comprised peer-reviewed original research articles and review papers reporting the phytochemical composition and biological activities of the individual ingredients. Classical Siddha literature was also referred to for the traditional indications,

properties, and therapeutic uses of the formulation and its ingredients. Only articles published in English were considered. Studies lacking sufficient methodological clarity or scientific validation were excluded from the review.

The collected data were critically analysed and synthesised to establish a scientific basis for the traditional use of *Moothanda thailam* in the management of *Peenisam* (Sinusitis).

DRUG PROFILE[1]

Name: *Moothanda Thailam*

Ingredients

1. *Arugam ver (*Root of *Cynodon dactylon)*
2. *Milagu* (Dried unripe fruit of *Piper nigrum)*
3. *Koraikilangu (*Tuber of *Cyperus rotundus)*
4. *Nallennai* (Sesame oil)
5. *Pasu Nei* (Cow ghee)

Table 1: Botanical description of the ingredients.[2]

S No	Tamil name	Botanical name	English name	Family	Parts used
1	*Arugu*	*Cynodon dactylon*	Bermuda grass	Poaceae	Root
2	*Milagu*	*Piper nigrum*	Black pepper	Piperaceae	Dried unripe fruit
3	*Korai*	*Cyperus rotundus*	Nutgrass	Cyperaceae	Tuber
4	*Ell*	*Sesamum indicum*	Sesame seeds	Pedaliaceae	Seed oil

Method of Preparation

The powdered herbal ingredients are mixed with sesame oil and ghee and placed in sunlight (*Suriya Pudam*) for seven days, followed by filtration.

Mode of Administration

- *Nasiyam* (Nasal instillation)

Table 2: Taste, Action, and Therapeutic uses of ingredients as described in Siddha literature.[2]

S No	Name	Taste	Potency	Bio availability	Actions	Therapeutic uses

1	*Arugu*	Sweet	Cold	Sweet	Emollient, Astringent, Diuretic, Styptic	Thirithoda diseases, Bleeding disorders, common cold, Eye diseases, Head diseases
2	*Milagu*	Bitter, Pungent	Hot	Pungent	Acrid, Carminative, Antiperiodic, Stimulant, Antidote, Anti Vadha	Thirithoda diseases, Common cold, Expectoration, Fever, Delirium, Ear pain, Ageusia
3	*Korai*	Pungent	Hot	Pungent	Astringent, Stimulant, Tonic, Diaphoretic, Demulcent, Vermifuge	Fever, cough, expectoration, Kaba diseases, Diarrhoea
4	*Nallenai*	Sweet	Hot	Sweet	Demulcent, Laxative, Nutritive, Emollient	Eye diseases, Ear diseases, Skin diseases, Cough.

PHYTOCHEMICAL OVERVIEW

Moothanda thailam comprises a diverse array of bioactive phytoconstituents derived from its ingredients, which collectively contribute to its therapeutic efficacy. The major classes of phytochemicals identified in the constituent drugs include alkaloids, flavonoids, terpenoids, phenolic compounds, glycosides, and sterols.

Table 3: Important phytochemical constituents of major ingredients.[4-16]

Phytochemical class	***Cynodon dactylon***	***Piper nigrum***	***Cyperus rotundus***	***Sesamum indicum***
Alkaloids	Ergone-type alkaloids, Indone diterpenes	Piperine, Pellitorine, Piperolein B, Piperettine,	Rotundines A, B, C	Caffeine
Flavonoids	Apigenin, Luteolin, Orientin, Vitexin	Catechin, Quercetin, Myricetin	Luteolin, Rutin, Biochanin A	Procyanidins, Catechins, Epicatechins
Glycosides	-	Phenolic acid glycosides	Rotundusides, Cyperusides	-
Sterols	β-Sitosterol, Stigmasterol, Campesterol	β-Sitosterol, Stigmastanol	Sitosterol	β-Sitosterol, Campesterol, Stigmasterol
Monoterpenes	Limonene, α-Pinene, Sabinene	Camphene, β-Pinene, p-Cymene	-	-
Sesquiterpenes	β-Caryophyllene, α-Humulene, Germacrene D	Caryophyllene, Gurjunene, Elemol	Cyperene, Cyperol, Cyperone, Rotundone	α-, β-Rotunol
Fatty acids	Palmitic acid, Stearic acid, Oleic	Hexadecenoic acid, Octadecanoic acid	Linoleic acid, Oleic acid	Linoleic acid, Oleic acid, Palmitic acid

	acid			
Phenolic compounds	-	-	Furochromones	Sesamol, Sesaminol, Ferulic acid, Gallic acid
Vitamins	Tocopherols	Phytol	-	Tocopherols, Tocotrienols

PHARMACOLOGICAL ACTIVITIES

The therapeutic efficacy of *Moothanda thailam* can be attributed to the diverse pharmacological properties exhibited by its constituent ingredients. These activities are primarily mediated by the presence of bioactive phytochemicals, which act through multiple biological pathways to produce synergistic effects.

1. Anti-Inflammatory Activity

Inflammation plays a central role in the pathogenesis of Sinusitis, characterised by mucosal oedema, obstruction of sinus ostia, and impaired mucociliary clearance. Experimental studies have demonstrated that the individual components of the formulation possess significant anti-inflammatory potential. Bioactive compounds such as flavonoids, terpenoids, and alkaloids are known to inhibit key inflammatory mediators, including prostaglandins, histamine, and cytokines. This leads to a reduction in vascular permeability and tissue swelling, thereby facilitating sinus drainage and alleviating nasal obstruction.[17,21]

2. Antimicrobial Activity

Microbial infection is a major contributing factor in both acute and chronic Sinusitis. The ingredients of *Moothanda thailam* exhibit broad-spectrum antimicrobial activity against a range of bacterial pathogens commonly implicated in upper respiratory tract infections. Phytoconstituents such as piperine, essential oils, and phenolic compounds disrupt microbial cell membranes, inhibit enzymatic activity, and interfere with microbial proliferation. This antimicrobial action helps in controlling infection and preventing disease progression.[22,26]

3. Analgesic Activity

Pain and facial discomfort are common clinical manifestations of Sinusitis. The formulation demonstrates notable analgesic properties, which may be attributed to its ability to modulate nociceptive pathways. Certain phytochemicals present in the ingredients act on both peripheral and central mechanisms of pain perception, reducing the intensity of pain and improving patient comfort.[18,19,21,27]

4. Antiallergic Activity

Allergic reactions contribute significantly to the development and recurrence of Sinusitis. Components of the formulation have been shown to exhibit antiallergic effects by inhibiting the release of histamine and other mediators involved in hypersensitivity reactions. This helps in reducing mucosal irritation, sneezing, and excessive nasal discharge.[28]

THERAPEUTIC SIGNIFICANCE OF *NASIYAM*

Nasiyam, one among the 32 external therapies described in Siddha Medicine, involves the intranasal administration of medicated substances. It is particularly indicated for the management of diseases affecting the head and neck region. It is considered highly effective in conditions associated with derangement of *Kabam*, such as *Sanni*, *Mayakkam*, *Peenisam* (Sinusitis).[29]

From a therapeutic perspective, the nasal route offers several advantages. The nasal mucosa is highly vascularized, allowing for rapid absorption of administered drugs and prompt onset of action. This route also facilitates direct delivery of the formulation to the site of pathology, thereby enhancing local therapeutic efficacy while minimising systemic exposure.

In the context of Sinusitis, *Nasiyam* aids in reducing mucosal inflammation, liquefying and expelling accumulated secretions, and restoring normal mucociliary clearance. The lipid-based nature of formulations like *Moothanda thailam* further enhances mucosal penetration and retention, enabling sustained therapeutic action. Additionally, intranasal administration bypasses hepatic first-pass metabolism, resulting in improved bioavailability of active phytoconstituents. It also contributes to hydration and protection of the nasal mucosa, reducing irritation and promoting tissue healing.

DISCUSSION

The present review provides a comprehensive analysis of *Moothanda thailam* by integrating traditional Siddha concepts with contemporary pharmacological evidence. The findings suggest that the formulation possesses a multifaceted therapeutic profile, which aligns closely with the pathophysiological mechanisms involved in Sinusitis.

Sinusitis is primarily characterised by inflammation of the nasal mucosa, obstruction of sinus ostia, microbial colonisation, and impaired mucociliary clearance. The ingredients of *Moothanda thailam* collectively address these pathological processes through their anti-

inflammatory, antimicrobial, antioxidant, and mucolytic properties. Bioactive constituents such as flavonoids, alkaloids, and terpenoids play a crucial role in modulating inflammatory pathways by inhibiting the release of pro-inflammatory mediators, thereby reducing mucosal oedema and facilitating sinus drainage.

An important aspect of the formulation is the use of sesame oil and cow ghee as lipid-based carriers. These substances not only possess inherent therapeutic properties but also enhance the solubility, stability, and bioavailability of active phytochemicals. Their lipophilic nature facilitates deeper penetration into biological membranes, particularly the nasal mucosa, thereby improving the overall efficacy of the formulation. Furthermore, they contribute to mucosal lubrication and protection, which is essential in inflamed and irritated nasal passages.

The method of preparation, *Suriya Pudam* (solar infusion), represents a unique traditional technique that enables gradual extraction of active constituents without exposure to excessive heat. This process likely preserves thermolabile compounds and enhances the therapeutic integrity of the formulation.

From the Siddha Medicine perspective, *Peenisam* is associated with the derangement of *Kabam* and *Pitham*, leading to obstruction and inflammation of the sinus passages. The ingredients of the formulation, which are predominantly pungent and hot in nature, help in pacifying *Kabam* and are traditionally indicated for the management of *Kabam* diseases and *Thirithoda* disorders owing to their humoral balancing properties. Furthermore, the mode of administration, *Nasiyam*, enhances the therapeutic effect by directly targeting the affected region and facilitating the expulsion of vitiated humors.

Despite these promising attributes, the current evidence is largely derived from preclinical and in vitro studies. There is a lack of well-designed clinical trials evaluating the efficacy and safety of *Moothanda thailam*. Overall, the formulation demonstrates a rational therapeutic basis supported by both traditional knowledge and modern scientific findings. Its multi-targeted mode of action makes it a potentially valuable alternative or complementary approach in the management of Sinusitis.

CONCLUSION

Moothanda thailam demonstrates promising therapeutic potential in the management of *Peenisam* (Sinusitis) through its anti-inflammatory, antimicrobial, analgesic, and antiallergic

properties. The integration of traditional Siddha concepts with modern pharmacological evidence supports its relevance in contemporary healthcare. However, further experimental and clinical studies are necessary to validate its safety, efficacy, and standardisation for wider clinical application.

REFERENCES

1. Venkatesan. K, Vaasudeva sasthri. S, Sarabenthira vaidhya muraigal-siroroga sigichaigal, 3rd edition, Thamarai noolagam publications; July 2003.
2. Murugesa mudhaliar. K. S. Gunapadam (porutpanbu nool). 2nd edition, Department of Indian Medicine and Homeopathy, Chennai; 2006.
3. Thiyagarajan. R, Gunapadam thathu-seeva vaguppu, 1st edition, Department of Indian Medicine and Homeopathy; 1953.
4. Shweta Parihar, Devendar sharma. Cyanodon dactylon: A review of Pharmacological activities. Scholars academic journal of pharmacy, 2021; 10(11): 183-189.
5. Ali ismail al-snafi. Chemical constituents and pharmacological activities of Cynodon dactylon- A review. IOSR journal of pharmacy, 2016; 6(7): 17-31.
6. Ashokkumar, Kaliyaperumal, Selvaraj, Kumarakurubaran, Muthukrishnan, Saradha. Review Cynodon dactylon (L.) Pers: An updated review of its phytochemistry and pharmacology. Journal of medicinal plant research, 2013; 7: 3477-3483.
7. Uhlig, S., Botha, C. J., Vralstad, T., Rolén, E., & Miles, C. O. Indole-diterpenes and ergot alkaloids in Cynodon dactylon (Bermuda grass) infected with Claviceps cynodontis from an outbreak of tremors in cattle. Journal of agricultural and food chemistry, 2019; 57(23): 11112–11119. https://doi.org/10.1021/jf902208w
8. Pankaj H. Chaudhary, Dipti B. Ruikar and Tejaswini S. Bayaska. Cynodon dactylon – a systemic review of pharmacognosy, phytochemistry and pharmacology. International journal of pharmacognosy, 2023; 10(4): 260-64. DOI: 10.13040/IJPSR.0975-8232.IJP.
9. Heerasingh takoore, Muhammad Z aumeeruddy, Kannan R. R. rengasamy. A systemic review on black pepper (Piper nigrum L): from folk uses to pharmacological applications. Critical reviews in food science and nutrition, 2019. DOI: 10.1080/10408398.2019.1565489.
10. Aleksandra N Milenkovic, Ljiljana P stanojevic. Black pepper chemical composition and biological activities. Advanced technologies, 2021; 10(2): 40-50. DOI 10.5937/savteh2102040M.

11. Ashokkumar, K., Murugan, M., Dhanya, M.K. et al. Phytochemistry and therapeutic potential of black pepper [Piper nigrum (L.)] essential oil and piperine: a review. Clinical Phytoscience, 2021; 7(52). https://doi.org/10.1186/s40816-021-00292-2.
12. Sri Ranjan Sivapalan. Medicinal uses and pharmacological activities of Cyperus rotundus Linn- a review. International journal of scientific and research publications, 2013; 3(5).
13. Bian-xian xue, Ru-shang he, Jia-xin lai. Phytochemistry, data mining, pharmacology, toxicology and analytical methods of Cyperus rotundus L. (cyperaceae): a comprehensive review. Phytochemistry reviews. 2023. https://doi.org/10.1007/s11101-023-09870-3.
14. Minhao Li, Jiani Luo, Malik Adil Nawaz, Regine Stockmann, Roman Buckow, Colin Barrow, Frank Dunshea & Hafiz Ansar Rasul Suleria. Phytochemistry, Bioaccessibility, and Bioactivities of Sesame Seeds: An Overview, Food Reviews International. 2024; 40: 1, 309-335, DOI: 10.1080/87559129.2023.2168280: https://doi.org/10.1080/87559129.
15. Wei, P.; Zhao, F.; Wang, Z.; Wang, Q.; Chai, X.; Hou, G.; Meng, Q. Sesame (Sesamum indicum L.): A Comprehensive Review of Nutritional Value, Phytochemical Composition, Health Benefits, Development of Food, and Industrial Applications. Nutrients. 2022; 14: 4079. https://doi.org/10.3390/ nu14194079.
16. Gagan Rani, Savita Rani and M Khabiruddin. Phytochemical study of Sesame (Sesamum indium) seed oil and defatted seed cake. International journal of chemical studies, 2017; 5(4): 1187-1192.
17. Vipin Kumar Garg, Sarvesh Kumar Paliwal, Anti-Inflammatory Activity of Aqueous Extract of Cynodon dactylon, International Journal of Pharmacology, 2011; 7(3): 370-375.
18. Furhatun-Noor, Md Abdullah Hil Baky Rupak, Md Mustafiz Chowdhury, Farhana Sharmin Shurovi, Md Rafat Tahsin, et al., An Evaluation of Analgesic and Anti-Inflammatory Activity of Ethanolic Extract of Cynodon Dactylon on Stressed Rodent Model. Biomed Journal of Sci & Tech Research. 2022; 42(3).
19. S. Abdullah, J. Gobilik and K. P. Chong, In Vitro Antimicrobial Activity of Cynodon dactylon (L.) Pers. (bermuda) Against Selected Pathogens. Asian Pacific Journal of Tropical Medicine. 2013. Doi: 10.1016/$19957645(14)602753
20. Vipin Kumar Garg, R. L. Khosa, Analgesic and Anti-Pyretic Activity of Aqueous Extract of Cynodon Dactylon; Pharmacology online, 2008; 3: 12-18.
21. Alves FS, Cruz IN, de Fariar Ramo IN, do Nascimento Brandã. D, Queiroz KN, da Silva GV, Dolabela MF. Evaluation of Antimicrobial Activity and Cytotoxicity Effects of

Extracts of Piper nigrum L. and Piperine. Seperations. 2023; 10(21): https://doi.org/10.3390/separations10010021

22. Farhana tasleem, Iqbal Azhar, syed nawazish ali, shaista perveen, zafar alam Mahmood. Analgesic and Anti-inflammatory activities of Piper nigrum L. Asian pacific journal of tropical medicine. 2014; 7(1): 461-468. doi: 10.1016/S1995-7645(14)60275-3.
23. Jin, J.H., Lee, DU., Kim, Y.S. et al. Antiallergic activity of sesquiterpenes from the rhizomes of Cyperus rotundus. Arch. Pharm. Res. 2011; 34: 223–228. https://doi.org/10.1007/s122720110207.
24. Manivannan Rajamarnickam, Aeganathan Rajamanickam. Analgesic and anti-inflammatory activity of the extracts from Cyperus rotundus Linn rhizomes; Journal of Applied Pharmaceutical Science. 2016; 6(09): 197-203. DOI: 10.7324/JAPS 2016.60929
25. Khalid Karzan, Bushra Shnawa, Shorish Gorony. Antimicrobial Activity of Cyperus rotundus Linn. Extracts and Phytochemical Screening. Eurasian Journal of Science & Engineering. 2017; 3(2): 82-89. doi: 10.23918/eajse.v3i2p82
26. Érika Maria Henriques Monteiro, Lucas Apolinário Chibli, Célia Hitomi Yamamoto, Mônica Cecília Santana Pereira, Fernanda Maria Pinto Vilela, Mírian Pereira Rodarte. Antinociceptive and Anti-Inflammatory Activities of the Sesame Oil and Sesamin. Nutrients. 2014; 6: 1931-1944. doi:10.3390/nu6051931
27. Mohammed Saleem. Anti-microbial activity of sesame oil. International journal of research in Phytochemistry and pharmacology. 2011; 1(1): 21-23.
28. Baba J, Haruna M.Z, Sani A.R, Usman A, Wartu J. R, Muhammad I. L, Dauda D, Majiya H M and Mohammed S.S.D. Antibacterial Activity of Cow Ghee ("Man Shanu") Against Some Food Borne Pathogens. Journal of microbial cell and biotechnology. 2020; 1(2).
29. Priya.B.K, Elansekaran.S, Ramamoorthy.M, A review in Siddha external therapy-Nasiyam(Nasal installation). International journal Of Ayurveda and pharma research, 2018; 6(10): 47-53.
30. Kuppusamymuthaliyar. K.N, Siddha maruthuvam (Pothu), 8th edition, Department of Indian Medicine and Homeopathy; 2016.
31. WHO international standard terminologies on Siddha medicine. Geneva: World Health Organization; 2022. Licence: CC BY-NC-SA3.0 IGO
32. Madhuri D Deshmukh, Moreshwar patil, Eknath D Ahire. Shatdhauta ghrita: A promising agent in the development of herbal creams. Journal of pharmaceutical negative results. 2022; 13(1): 11. DOI:10.47750/pnr.2022;13, S01.159.

33. Sunila E.S, Kuttan G, Immunomodulatory and Antitumour activity of Piper longum Linn. and piperine. Journal of ethnopharmacology. 2004; (90): 339-346.
34. Damanhouri ZA, Ahmad A. A Review on Therapeutic Potential of Piper nigrum L. (Black Pepper): The King of Spices. Medicinal Aromatic Plants. 2014; 3(3): 161. doi: 10.4172/2167-0412.1000161
35. Nzikou. J.M, Maltos. L, Bouanga kalou. G. Chemical composition of the seeds and oil of sesame (Sesame indicum L.) grown in Congo Brazzaville. Advanced journal of food science and technology. 2009; 1(1): 6-11.
36. Afroz M, Zihad SMNK, Uddin SJ, et al. A systematic review on antioxidant and antiinflammatory activity of Sesame (Sesamum indicum L.) oil and further confirmation of antiinflammatory activity by chemical profiling and molecular docking. Phytother Res. 2019; 33(10): 2585-2608. doi:10.1002/ptr.6428.