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THERAPEUTIC EFFICACY OF ASHTABHAIRAVA MATHIRAI IN FEVER MANAGEMENT: A REVIEW

Raghavi M¹, Abarna B¹, Sathish Adithya R², Madhavan R^{3*} ¹ PG Scholar, Department of Nanju Maruthuvam, National Institute of Siddha, Tambaram Sanatorium,

Chennai, Tamil Nadu, India

² Assistant Professor, Department of Nanju Maruthuvam, National Institute of Siddha, Tambaram Sanatorium,

Chennai, Tamil Nadu, India

³ Associate Professor & HOD, Department of Nanju Maruthuvam, National Institute of Siddha, Tambaram Sanatorium, Chennai, Tamil Nadu, India

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*Corresponding author E-mail: drmadhavanji@gmail.com

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ABSTRACT

Ashtabhairava mathirai is an herbomineral formulation used in the Siddha system. Its application in treating fever has been described in the Siddha Vaidhiya Thirattu textbook, Hence, a review of the ingredients is essential. This review aims to critically assess the available literature on the indication of Ashtabhairava mathirai in treating fever, its therapeutic potential, and its mechanism of action. A comprehensive literature search was conducted across multiple databases, including Siddha literature. The ingredients of Ashtabhairava mathirai exhibit various pharmacological activities, such, as antipyretic, anti-inflammatory, antimicrobial, and antioxidant activity. The study concluded that the multiple actions of ingredients of Ashtabhairava mathirai which is used to treat the condition, fever. These findings support the traditional therapeutic value of Ashtabhairava mathirai in treating 64 types of fever.

Keywords: Ashtabhairava mathirai, Siddha, Antipyretic activity, Fever, Suram, Herbomineral

INTRODUCTION

The Siddha system of medicine is one of the oldest traditional medical systems, originating in south India and attributed to the ancient sages known as Siddhars. This holistic system emphasizes the balance of the three fundamental humors Vaatham (principle of movement), Pitham (principle of transformation), and Kabam (principle of structure), which are believed to govern the physiological and psychological functions of the body.^{1,2} In modern science, fever is a complex physiological response to infection or inflammation, characterized by an elevation in body temperature above the normal range of 36-37°C.³

As per Siddha text Maruthuvam Podhu, Suram, or fever, is treated as a distinct disease and is classified into 64 types according to humors. The main cause of fever, Theraiyar, states "Aamam" or "Seetham," which indicates a disruption in the normal function of the gastrointestinal tract. Other causes include wrong behavior, habitats, unhealthy food, constipation, and controlling 14 natural urges.⁴ The treatment of Suram (fever) in Siddha employs a unique and systematic approach. Initially, one of three cleansing methods is chosen based on the patient's vitiated humors: fasting, vomiting, or purgation. These methods help detoxify the body and restore balance. Following this initial detoxification, various herbal and Herbomineral formulations are prescribed, tailored to the specific type of fever as described in the Siddha texts. These formulations are designed to target the particular characteristics and underlying causes of each type of fever, ensuring a holistic and individualized treatment plan.⁵ The Siddha literature has many formulations for treating fever. Ashtabhairava mathirai (ABM) is one of the recommended formulations in the Siddha Vaidhiya Thirattu textbook indicated for 64 various types of fever.⁶

According to the Siddha system of medicine, Herbomineral formulations allow elemental metals to be transformed into metallic salt complexes that are both assimilable and excretable. Herbomineral preparation offers stability, lower dosage requirements, easy storage, sustained availability, and reprocessing advantages over plant and animal-based drugs. It converts less bioavailable metals and minerals into more biocompatible forms through purification and preparatory procedures.⁷

This review discusses the ingredients of the formulation and their pharmacological actions. The primary goal is to evaluate the pharmacological activity and therapeutic efficacy of ABM in treating fever.

Preparation: Nervalam, 20.5 g, along with the remaining 2 to 13 ingredients, each 4.2 g, should be purified and powdered separately, powdered ingredients should be ground with breast milk, and lemon juice for 6 hours respectively, then again triturate with Poduthalai juice, Karisalai juice, Navalpattai juice each for 3 hours, respectively, and made into a pepper-sized pill and dried.

Table 1: Drug profile

Drug Name	Botanical Name	Taste	Potency	Division
Nervalam	Croton tiglium Linn	Bitter	Hot	Pungent ⁸
Rasam	Mercury	Sweet	Cold/ Hot	Depends upon
		Sour		adjuvant 9
		Salty		
		Bitter		
		Pungent		
		Astringent		
Gandhagam	Sulphur	Bitter	-	-
		Astringent ⁸		
Lingam	Red sulphide	No taste	Hot ⁹	-
Pooram	Calomel	Salty,	Hot	Pungent 9
		Pungent		
Veeram	Mercuric chloride	Pungent,	Hot	Pungent ⁹
		Salty		
Naabhi	Aconitum ferox Linn	Bitter	Hot	Pungent ⁸
Chukku	Zingiber officinale Roscoe	Pungent	Hot	Pungent ⁸
Milagu	Piper nigrum Linn	Bitter	Hot	Pungent ⁸
		Pungent		
Thippili	Piper longum Linn	Sweet	Hot	Sweet ⁸
Sathikkai	Myristica fragrans Houtt	Astringent	Hot	Pungent ⁸
		Pungent		
Sathipathiri	Myristica fragrans Houtt	Pungent	Hot	Pungent ⁸
		Astringent		
Lavangam	Syzygium aromaticum Linn	Pungent	Hot	Pungent ⁸
Poduthalai	Phyla nodiflora Linn	Bitter	Hot	Pungent ⁸
		Astringent		
Manjalkarisalai	Eclipta prostrata Linn	Bitter	Hot	Pungent ⁸
Naaval	Syzygium cumini Linn	Astringent	Hot	Pungent ⁸
Elumichai	Citrus limon Linn	Sour	Hot	Pungent ⁸

Table 2: Scientific review of Herbal ingredients of ABM

Botanical Name	Phyto Constituents	Pharmacological Activity
Croton tiglium Linn	Croton oil, Tiglic acid, Crotonic acid, Palmitic, Myristic	Antinociceptive effect
	acid, Crotonol, Lauric acids, Glycerides of stearic ¹⁰	Gastrointestinal activity
		Haemagglutinating activity ¹⁰
Aconitum ferox Linn	Pseudo-aconitine, Aconitine, Picroaconine, Aconine,	Antipyretic activity ¹⁰
-	Benzoyalaconine, Homo-napelline ¹⁰	
Zingiber officinale Roscoe	Gingerol, Shogaol, Zingerone,	Antioxidant activity
	Gingerine, Gingiberol ¹¹	Anti-inflammatory activity
		Antimicrobial activity
		Anticancer activity
		Antiemetic activity ¹¹
Piper nigrum Linn	Piperine, Piperamide. Pipercide, Sarmentosine,	Anti pyretic activity
	Sarmentine, Trichostachine ¹²	Anti-inflammatory activity
		Antidiarrheal effect
		Carminative activity
		Immunomodulatory
		Anticancer activity
		Antioxidant activity
		Antimicrobial activity ¹²
Piper longum Linn	Piperine, Piperlonguminine, Pipercide, Pellitorene,	Antibacterial activity
	Pipernonaline, Asarinine, Bisabolene, Pentadecane ¹³	Antimicrobial activity
		Antiamoebic activity
		Antiplatelet activity
		Immunomodulatory activity
		Antiasthmatic activity
		Antitumor activity
		Neuroprotective activity
		Anthelmintic activity ¹³
Myristica fragrans Houtt	Myristicin, Eugenol, Elemicin, and Safrole ¹⁴	Antibacterial activity
		Antifungal activity
		Antioxidant activity ¹⁴
Syzygium aromaticum Linn	Oleanolic acid, Kaempferol, Eugenol, Quercetin, Gallic	Antiproliferative effect in liver cirrhosis,
	acid, Crategolic acid, Beta-Caryophyllene, Stigmasterol	Antioxidant activity
	Bicornin, Eugenitin, Gallic acid ¹⁵	Anticancer activity
		Anti-inflammatory activity
		Antimicrobial activity
		Antiprotozoal activity
		Antithrombotic activity
		Antiulcer activity ¹⁵

	•	•
Citrus limon Linn	Flavanones: Eriodictyol, Hesperidin, Hesperetin,	Anti-inflammatory activity
	Naringin, Eriocitrin, Neoeriocitrin, Neohesperidin	Antibacterial activity
	Flavones—apigenin, Diosmin, Diosmetin, Homoorientin,	Antioxidant activity
	Luteolin, Orientin, Vitexin	Anticancer activity ¹⁶
	Flavonols—Quercetin, Isoramnethin, Limocitrin,	
	Rutoside, Spinacetin ¹⁶	
Phyla nodiflora Linn	Piperolein B (2E,4E)-N-isobutyl-2,4-decadienamide,	Anti-inflammatory activity
	Piperine, Piperamine, Piperamide, Pipericide, Piperonal,	Antidiarrheal activity
	Sarmentosine ¹⁷	Antimicrobial activity 17
Eclipta prostrata Linn	Wedelolactone, Demethylwedelolactone,	Hepatoprotective activity
	Demethylwedelolactone glucoside ¹⁸	Analgesic activity
		Anti-inflammatory activity
		Antioxidant activity
		Immunomodulatory
		Antimicrobial activity
		Antimalarial activity
		Anticancer activity
		Anti-ulcer activity ^{18,19}
Syzygium cumini Linn	Oleanolic acid, Myricyl alcohol, β-sitosterol, Ellagic acid	Diuretic activity
	Eugenia-triterpenoid-A, Myricetin,	Anti-inflammatory activity
	Eugenia-triterpenoid-B,	
	Pentacyclic triterpenoid-	
	Betulinic acid, Pentacyclic triterpenoid-Friedelin ²⁰	

Table 3: Scientific review of mineral ingredients in ABM

Previous Scientific studies	
Anti-Microbial activity ²¹	
Antipyretic activity	
Anti-inflammatory	
Analgesic activity ²²	
Neuroprotective activity ²³	
Antipyretic activity	
Anti-inflammatory activity 7	
Antibacterial effect ²⁴	

DISCUSSION

Based on existing research publications, the ingredients of ABM support its traditional use in treating fever. Previous studies have demonstrated that ABM exhibits potent antimicrobial activity.25 Alkaloids present in Aconitum ferox Linn such as pseudo aconitine and aconitine possess antipyretic, analgesic, and antiinflammatory activity. These compounds may act on the central nervous system to regulate body temperature and relieve pain.^{26,27} Piperine is an alkaloid present in Piper nigrum Linn, Piper longum Linn, and Phyla nodiflora Linn, demonstrating antipyretic and anti-inflammatory properties. It enhances the bioavailability of other compounds.²⁸ Citrus limon Linn and Syzygium aromaticum Linn are rich in flavonoids like hesperidin, quercetin, and kaempferol. Flavonoids are well known for their anti-inflammatory and antioxidant activities, which help reduce fever and alleviate associated symptoms.²⁹ Tannins and phenols are abundant in the Piper nigrum Linn and the Eclipta prostrata Tannins have astringent properties that reduce Linn inflammation, while phenolic compounds contribute to the overall antioxidant, antiviral, antimicrobial, and hepatoprotective properties aiding in the reduction of oxidative stress associated with fever.³⁰ Moreover, essential oils such as gingerol and shogaol have notable anti-inflammatory and antimicrobial effects, supporting the immune response and helping to lower the fever.^{31,32}. The pharmacological activities of metal and mineral drugs, such as Calomel and Cinnabar exhibit antipyretic and antiinflammatory activity. Sulphur provides a broad spectrum of antimicrobial effects.³³ These ingredients help in managing infection, a common cause of fever, by inhibiting the growth of bacteria, fungi, and viruses. The Cinnabar possesses analgesic properties that alleviate pain. The review of ABM underscores the intricate blend of phytochemicals and their synergistic effects. Alkaloids, flavonoids, tannins, phenols, and essential oils in the formulation offer a holistic approach to fever treatment by

combining antipyretic, anti-inflammatory, antimicrobial, analgesic, and antioxidant properties.



Figure 1: Pathophysiology of fever

The ingredients found in ABM possess pharmacological properties that directly target the mechanism of fever therefore, it may reduce the fever. *Aconitum ferox* Linn and *Piper nigrum* Linn, Calomel, and Cinnabar have antipyretic properties, possibly by inhibiting cyclooxygenase (COX) enzymes and reducing levels of prostaglandin E2 (PGE2), which can effectively lower body temperature and alleviate fever. Furthermore, antiinflammatory ingredients such as *Zingiber officinale* Roscoe, *Piper nigrum* Linn, *Syzygium aromaticum* Linn, *Citrus limon* Linn, *Eclipta prostrata* Linn, *Syzygium cumini* Linn, Cinnabar, and Calomel may help to reduce the production and activity of pro-inflammatory cytokines like TNF, IL-1, and IL-6, alleviating symptoms associated with fever and inflammation. In addition, the antimicrobial, antiviral, and antibacterial properties of *Piper nigrum* Linn and Eclipta prostrata Linn can hinder the growth and reproduction of pathogens, addressing the underlying cause of the fever and aiding in resolving infections. Lastly, the immunomodulatory effects of *Piper nigrum*, Linn, and *Eclipta prostrata* Linn in ABM may help regulate the immune response, boosting the body's ability to fight infections while preventing excessive inflammatory reactions, thus ensuring effective defense against pathogens without unnecessarily prolonging or intensifying fever.³⁴

In Siddha philosophy, the concepts of taste, potency, and division are crucial for maintaining balance among the three humors: vaatham, Pittham, and Kabam. According to the principles outlined in Table 1, major ingredients exhibit pungent, astringent, and bitter tastes, along with hot potency and pungent division. The dominant taste of the formulation significantly influences its overall nature and therapeutic effects. Siddha's taste philosophy emphasises that the pungent taste and hot potency are particularly effective in balancing the vitiated humors, specifically Vaatham and Kabam. Pungent taste, characterised by its sharp and spicy nature, stimulates digestion and circulation, while hot potency enhances metabolic activities. This combined effect helps to restore equilibrium in the humoral system of the body, promoting overall health and well-being. Thus, ABM might lower the body temperature, address the underlying cause of fever, and restore the natural equilibrium of humors.35

CONCLUSION

As per the Siddha literature and a comprehensive review of its ingredients from various diverse sources, it is clear that ABM is effectively used to manage fever and its underlying causes. However, further preclinical evaluation is required to elucidate the specific mechanism through which ABM exerts its therapeutic effects, and clinical trials are necessary to confirm the therapeutic potential and ensure its safety.

REFERENCES

- Muthiah K, Ganesan K, Ponnaiah M, Parameswaran S. Concepts of body constitution in traditional Siddha texts: A literature review. J Ayurveda Integr Med. 2019;10(2):131-4. DOI: 10.1016/j.jaim.2019.04.002.
- Subathra T, Gomathi R, Shanmugapriya P, Ramamurthy M, Meenakumari R. A review on chithiramoola kuligai – therapeutic approach for cervical cancer in accordance with Siddha principles. J Popul Ther Clin Pharmacol. 2022;29(04):3919–26. Available from: https://doi.org/ 10.53555/jptcp.v29i04.6366
- Balli S, Shumway KR, Sharan S. Physiology, Fever. [Updated 2023 Sep 4]. In: Stat Pearls [Internet]. Treasure Island (FL): Stat Pearls Publishing; 2024-. Available from: https://www. ncbi.nlm.nih.gov/books/NBK562334/
- Thileeban T, Prasad VM. Literature review of Suram (fever) in Siddha medicine. J Res Tradit Med. 2018;4(1):21-5. DOI: 10.5455/JRTM.2018/298118.
- Kuppusamymudhaliyar KN. Siddha Maruthuvam Pothu. Department of Indian and Homeopathy Medicine, Chennai, Tamil Nadu. 2004. p. 65.
- Kuppusamymudhaliyar KN, Uthamarayan KS. Siddha Vaidhiya Thirattu. Department of Indian and Homeopathy Medicine, Chennai, Tamil Nadu. 2009. p. 2.
- 7. P S, Gladys J, T S, B N, M R, M M, S T. Role of Santha Santhrothaya Mathirai (SSM), A Siddha Herbo-Mineral

Formulation in the Management of Hepatic Disorders – A Review Study.IJAM [Internet]. 2022 Jul. 8 [cited 2024 Aug. 13];13(2):328-33. Available from: https://ijam.co.in/ index.php/ijam/article/view/2574

- Thiyagarajan R. Gunapadam Thadhu Jeeva Vaguppu. Department of Indian and Homeopathy Medicine, Chennai, Tamil Nadu .2016. p. 229, 270, 282, 291, 302.
- 9. Kuppusamymudhaliyar KN. Gunapadam Mooligai Vaguppu. Department of Indian and Homeopathy Medicine, Chennai, Tamil Nadu 2016. p. 625, 470, 760, 430, 432, 111, 712, 229, 370, 159.
- Muralidass SD, Shree-Devi MS. "Agathiyar kuzhambu"- not only a purgative- an overview. Int J Pharm Sci Res. 2019;10(5):2156-63. DOI: 10.13040/IJPSR.0975-8232.10(5).2156-63.
- Mao QQ, Xu XY, Cao SY, Gan RY, Corke H, Beta T, et al. Bioactive Compounds and Bioactivities of Ginger (*Zingiber officinale* Roscoe). Foods. 2019 May 30;8(6):185. DOI: 10.3390/foods8060185. PMID: 31151279; PMCID: PMC6616534.
- 12. Saleem A, Naureen I, Naeem M, Tasleem G, Ahmed H, Farooq U. Therapeutic Role of *Piper nigrum* L (Black Pepper) and Pharmacological Activities. Sch Int J Biochem. 2022;5(1):15-21.
- Grover M. *Piper longum* (Pippalimool): A Systematic Review on the Traditional and Pharmacological Properties of the Plant. World J Pharm Med Res. 2021;7(7):172-80. Available from: https://www.wjpmr.com/admin/assets/ article_issue/84062021/1625483753
- 14. Al-Qahtani WH, Dinakarkumar Y, Arokiyaraj S, Saravanakumar V, Rajabathar JR, Arjun K, et al. Phytochemical and biological activity of *Myristica fragrans*, an Ayurvedic medicinal plant in Southern India, and its ingredient analysis. Saudi J Biol Sci. 2022 May;29(5):3815-21. DOI: 10.1016/j.sjbs.2022.02.043. Epub 2022 Mar 14. PMID: 35844361; PMCID: PMC9280313.
- Batiha GE, Alkazmi LM, Wasef LG, Beshbishy AM, Nadwa EH, Rashwan EK. Syzygium aromaticum L. (Myrtaceae): Traditional Uses, Bioactive Chemical Constituents, Pharmacological and Toxicological Activities. Biomolecules. 2020 Jan 30;10(2):202. DOI: 10.3390/biom10020202. PMID: 32019140; PMCID: PMC7072209.
- Klimek-Szczykutowicz M, Szopa A, Ekiert H. Citrus limon (Lemon) Phenomenon-A Review of the Chemistry, Pharmacological Properties, Applications in the Modern Pharmaceutical, Food, and Cosmetics Industries, and Biotechnological Studies. Plants (Basel). 2020 Jan 17;9(1):119. DOI: 10.3390/plants9010119. PMID: 31963590; PMCID: PMC7020168.
- 17. Santhi S, Amala Hazel AM, Meenakshi Sundaram M, Meenakumari R. Literature Review on Siddha Medicine for the Management of Neerkana Maantham with Utthamani Kudineer- A Drug Review. Int J Ayurveda Pharm Res. 2021;9(Suppl 1):46-52.
- Timalsina D, Devkota HP. *Eclipta prostrata* (L.) L. (Asteraceae): Ethnomedicinal Uses, Chemical Constituents, and Biological Activities. Biomolecules. 2021 Nov 22;11(11):1738. DOI: 10.3390/biom11111738. PMID: 34827736; PMCID: PMC8615741.
- Silalahi M. *Eclipta prostrata* (L.) L. (uses and bioactivities). GSC Biol Pharm Sci. 2022;18(01):001-07. DOI:10.30574/ gscbps.2022.18.1.0371.
- 20. Agarwala P, Gaur PK, Tyagi N, Puri D, Kumar N, Kumar SS. An overview of phytochemical, therapeutic, pharmacological, and traditional importance of *Syzygium cumini*. Asian J Pharmacogn. 2019;3(1):5-17.
- 21. Ponnappan S, Christian G, Vajrai R, Pemaiah B, Elansekaran S, Murugesan M, *et al*. Antimicrobial Efficacy of Gandhagam

(Raw Sulphur), Purified Gandhagam, and Gandhaga Mezhugu - A Traditional Siddha Formulation. J Pure Appl Microbiol. 2012.

- Jaganathan M. Scientific validation of Siddha Herbomineral formulation Linga Mathirai. World J Pharm Res. 2019;8(13):746-57. DOI: 10.20959/wjpr201913-16216.
- Guan H, Xu Y, Ma C, Zhao D. Pharmacology, Toxicology, and Rational Application of Cinnabar, Realgar, and Their Formulations. Evid Based Complement Alternat Med. 2022 Sep 27; 2022:6369150. DOI: 10.1155/2022/6369150. PMID: 36204126; PMCID: PMC9532072.
- 24. Das MP, Rebecca LJ, Sharmila S, Chatterje S. Study on the effect of mercury (II) chloride as a disinfectant on mixed culture. J Chem Pharm Res. 2012;4(12):4975-8.
- Vanitha A, Praveena R, Seethalakshmi G, Muthukumar NJ, Banumathi V. *In vitro* antibacterial activity of Ashta Bairava Mathirai. Int J Comp. 2018. DOI: 10.22192/ijcrbs. 2018.05.08.002
- 26. Li S, Yu L, Shi Q, Liu Y, Zhang Y, Wang S, Lai X. An insight into current advances on pharmacology, pharmacokinetics, toxicity and detoxification of aconitine. Biomed Pharmacother. 2022; 151:113115. DOI: 10.1016/j.biopha. 2022.113115.
- Ikram M, Khattak SG, Gilani SN. Antipyretic studies on some indigenous Pakistani medicinal plants: II. J Ethnopharmacol. 1987;19(2):185-92. DOI: 10.1016/0378-8741(87)90040-7.
- Dhargawe N, Mahakala S, Mohod B, Raj JP. Evaluation of analgesic, anti-inflammatory, and antipyretic activity of piperine: An experimental study. Phcog Res. 2020; 12:176-80.
- Maleki SJ, Crespo JF, Cabanillas B. Anti-inflammatory effects of flavonoids. Food Chem. 2019;299:125124. DOI: 10.1016/j.foodchem.2019.125124.
- Muniyandi K, George E, Sathyanarayanan S, George BP, Abrahamse H, Thamburaj S, Thangaraj P. Phenolics, tannins,

flavonoids, and anthocyanins contents influenced antioxidant and anticancer activities of Rubus fruits from Western Ghats, India. Food Sci Hum Wellness. 2019;8(1):73-81. DOI: 10.1016/j.fshw.2019.03.005.

- 31. Sharma S, Shukla MK, Sharma KC. Revisiting the therapeutic potential of gingerols against different pharmacological activities. Naunyn Schmiedebergs Arch Pharmacol. 2023;396:633-647. DOI: 10.1007/s00210-022-02372-7.
- Bischoff-Kont I, Fürst R. Benefits of Ginger and Its Constituent 6-Shogaol in Inhibiting Inflammatory Processes. Pharmaceuticals (Basel). 2021;14(6):571. DOI: 10.3390/ph14060571. PMID: 34203813; PMCID: PMC8232759.
- 33. Hashem NM, Hosny AEMS, Abdelrahman AA, Zakeer S. Antimicrobial activities encountered by sulfur nanoparticles combating Staphylococcal species harboring scemecA recovered from acne vulgaris. AIMS Microbiol. 2021;7(4):481-98. DOI: 10.3934/microbiol.2021029. PMID: 35071944; PMCID: PMC8712535.
- El-Radhi AS. Pathogenesis of Fever. Clin Man Fever Child. 2019:53-68. DOI: 10.1007/978-3-319-92336-9_3. PMCID: PMC7122269.
- 35. Sanmugarajah V, Gowreeshan M. A Literature Review of the Poly Herbo-Mineral Formulation (Vellai Venkaiyah Kulikai) that Is Commonly Used in Siddha Medical System of the Sri Lanka. J Pharm Care. 2021;9(3):153-60.

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