



A REVIEW ON THE THERAPEUTIC EFFECTIVENESS OF MILAGAI THAILAM IN CEPHALGIA BASED ON PATHARTHA GUNA VILAKAM

Pushpalatha A¹, Meena R², Sathish Kumar S³, Ganesan G⁴, Sujatha S⁵

¹PG Scholar, Department of Pura Maruthuvam, Govt siddha medical college and Hospital, Palayamkottai, Tirunelveli, Tamilnadu, India.

²PG Scholar, Department of Pura Maruthuvam, Govt siddha medical college and Hospital, Palayamkottai, Tirunelveli, Tamilnadu, India.

³PG Scholar, Department of Siddhar Yoga Maruthuvam, Govt siddha medical college and Hospital, Palayamkottai, Tirunelveli, Tamilnadu, India.

⁴Lecturer, Department of Pura Maruthuvam, Govt siddha medical college and Hospital, Palayamkottai, Tirunelveli, Tamilnadu, India

⁵Professor and HOD, Department of Pura Maruthuvam, Govt siddha medical college and Hospital, Palayamkottai, Tirunelveli Tamilnadu, India.



***Corresponding Author: Pushpalatha A.**

PG Scholar, Department of Pura Maruthuvam, Govt Siddha Medical College and Hospital, Palayamkottai, Tirunelveli, Tamilnadu, India.

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ABSTRACT

Milagai Thailam is a classical Siddha medicated oil described in Pathartha Guna Vilakam (Moola Vargam) by C. Kannusamy Pillai. Primarily indicated for the management of all types of headaches (Thalaivali), This review examines the synergistic relationship between its primary ingredients: Capsicum annum, Piper nigrum, Cow milk, and Sesame oil. By analyzing the phytochemical constituents-specifically capsaicin and piperine and their pharmacological actions, this article elucidates how the oil bath procedure facilitates pain relief by improving cranial circulation through the traditional practice of a weekly oil bath.

KEYWORDS: Milagai thailam, cephalgia, pharmacological action, oilbath, Therapeutic effectiveness.

INTRODUCTION

Cephalgia (headache) is categorized in Siddha medicine under various manifestations of Vatha and Kapha imbalances. The text Pathartha Guna Vilakam serves as a definitive guide to the medicinal properties of raw materials. In this text, C. Kannusamy Pillai details Milagai Thailam as a potent remedy for "all types of headaches."

The formulation is unique because it employs highly thermogenic (Ushnam) drugs to treat conditions often

caused by Seethalam (cold) factors, such as Neerkovai (sinus congestion). This review provides a structured analysis of the pharmacological mechanisms that justify its traditional use. Kannusamy Moola Vargam, a foundational text on medicinal substances, prescribes Milagai Thailam specifically for external application. Unlike general cooling oils, this formulation utilizes potent pungent herbs. The objective of this review is to explore the therapeutic effectiveness of Milagai Thailam as an oil bath and to detail the phytochemical basis for its clinical indications.

MATERIALS AND METHODS

INGREDIENTS

INGREDIENT	QUANTITY	MESAURMENT
Water	2 Padi	2.6 to 3 liters
Dry Chillies (Milagai)	5 Balam	175 grams
Peppers(Milagu)	2.5 Balam	87.5 grams

Sesame Oil (Nalla Ennai)	¼ Padi	325–375 ml
Cow's Milk (Pasunpal)	¼ Padi	325–375 ml

Method of Preparation

- Decoction Stage:** Pour 2 *Padi* of water into an earthen pot. Coarsely crush the 5 *Balam* of dry chillies and 2.5 *Balam* of black pepper and add them to the water.
- Boiling:** Place the pot on the stove and boil the mixture over a low flame until the water reduces to 1/2 *Padi* (one-fourth of the original volume).
- Filtering:** Once reduced, remove from heat, let it cool slightly, squeeze the residue well, and filter the decoction.
- Oil Processing:** Pour this filtered decoction into a clean vessel used for making oils. Add 1/4 *Padi* of sesame oil and 1/4 *Padi* of cow's milk.
- Final Boiling:** Boil this mixture until it reaches the correct **Thailam consistency** (*Patham*—where the moisture has completely evaporated from the oil).
- Storage:** Filter the final oil and store it for use.
- Application:** The text prescribes a weekly oil bath (*Vaaram oru murai snanam*) specifically for the head.

Usage and Benefits

- Procedure:** This oil should be used for a **weekly oil bath** (*Vaaram oru murai snanam*). Apply the oil to the head/scalp and bathe.
- Indication:** This practice will cure **all types of headaches** (*Sakala vidhamana thalaivaligalum gunamagum*).

Clinical Indications & Contraindications

As per the text by C. Kannusamy Pillai, the clinical application is specific:

- Primary Indication:** All types of headaches (*Sakala vidhamana thalaivaligalum*).
- Administration:** External application via a **Weekly Oil Bath** (*Vaaram oru murai snanam*).
- Strict Contraindications:**
 - * **Moolarogigal:** Individuals suffering from Piles/Hemorrhoids (due to the extreme systemic "heat" or *Pitta* aggravation).
 - **Ushna Dhegam:** Individuals with a naturally high-heat body constitution.

4. RESULTS

4.1 Pharmacological Profile of Milagai Thailam Ingredients

Tamil Name	English Name	Botanical Name	Parts Used	Key Phytochemistry	Pharmacological Action	Medicinal Uses in Thailam
Milagai	Chili Pepper	Capsicum annum	Dried Fruit	Capsaicin, Dihydrocapsaicin, Carotenoids, Vitamin C	Analgesic, Rubefacient, Counter-irritant	Depletes Substance P to block headache pain; stimulates local blood flow.
Milagu	Black Pepper	Piper nigrum	Dried Peppercorns	Piperine, Piperonal, Chavicine, Limonene	Bio-enhancer, Thermogenic, Anti-inflammatory	Increases absorption of Capsaicin; clears sinus congestion (<i>Neerkovai</i>).
Nalla Ennai	Sesame Oil	Sesamum indicum	Seed Oil	Sesamin, Sesamolin, Linoleic acid, Vit E	Emollient, Penetrative (<i>Sookshma</i>), Antioxidant	Acts as the lipid vehicle to carry alkaloids deep into the scalp and nerves.
Pasunpal	Cow Milk	Lac vaccinum	Fresh Milk	Casein, Lactose, Lipids, Vitamins	Nutritive, Buffering agent, Pitta-pacifier	Prevents skin irritation from peppers; stabilizes the oil-water emulsion.
Salam	Water	Aqua	Purified Water	Hydrogen & Oxygen (H ₂ O)	Solvent, Extraction medium	Used to create the initial concentrated herbal decoction (<i>Kudineer</i>)

4.2 Ingredients role in the formulation of Milagai thailam

Ingredient	Active Phytochemicals	Role in Formulation
Milagai (C. annum)	Capsaicin, Dihydrocapsaicin	Analgesic & Rubefacient
Milagu (P. nigrum)	Piperine, Piperidine	Bio-enhancer & Thermogenic
Pasunpal (Cow Milk)	Casein, Lactose, Lipids	Emollient & Pitta-pacifier
Nalla Ennai (Sesame Oil)	Sesamin, Sesamolin	Lipid vehicle & Antioxidant

4.3 Milagai thailam ingredients action in headache

Drug	Siddha Property	Main Constituent	Action in Headache
Milagai	Ushnam (Heat)	Capsaicin	Blocks pain signals (Substance P)
Milagu	Katu (Pungent)	Piperine	Enhances absorption & clears mucus
Cow Milk	Seetham (Cold)	Casein/Lipids	Protects skin from excessive heat
Sesame Oil	Theetchanam (Sharp)	Sesamin	Deep tissue penetration

4.4 phytochemical profile of Milagai thailam

Phytochemical Profile

The therapeutic efficacy is driven by the interaction of specific secondary metabolites.

- **Capsaicin (*C. annuum*):** A vanilloid alkaloid that serves as the primary analgesic.
- **Piperine (*P. nigrum*):** An alkaloid that acts as a bio-enhancer and thermogenic catalyst.
- **Sesamin/Sesamol (Sesame Oil):** Lignans that provide antioxidant stability and high skin permeability

1. Capsicum annuum (Dry Chillies / Milagai)

The primary therapeutic action of Milagai Thailam is derived from the vanilloid alkaloids, specifically **Capsaicin**.

- **TRPV1 Agonism:** Capsaicin binds to the Transient Receptor Potential Vanilloid 1 (TRPV1) receptors located on the sensory nerve endings of the scalp.
- **Substance P Depletion:** Upon initial application, capsaicin triggers a release of **Substance P**, a neuropeptide that mediates pain signals. Continuous or repetitive application (as in a weekly oil bath) leads to the exhaustion of these neurotransmitter stores. This results in "desensitization," effectively blocking the transmission of pain to the brain.
- **Rubefacient Activity:** It acts as a local irritant that induces vasodilation. This increase in blood flow helps in relieving tension-type headaches and promotes the clearance of metabolic waste from the cranial tissues.

2. Piper nigrum (Black Pepper / Milagu)

Piper nigrum acts as the "Yogavahi" (catalyst) in Siddha pharmacology, primarily through its active alkaloid, **Piperine**.

- **Bio-enhancement:** Piperine is a documented bioavailability enhancer. It inhibits enzymes like *CYP3A4* and *P-glycoprotein* in the skin and local tissues, preventing the rapid degradation of capsaicin. This allows the active drugs to remain therapeutic for a longer duration.
- **Thermogenesis:** It stimulates the thermoreceptors, generating localized heat. In Siddha medicine, this "Ushna" property is vital for liquefying stagnant *Kapha* (mucus) in the sinuses, which is a leading cause of frontal headaches (*Neerkovai*).
- **Anti-inflammatory:** Piperine inhibits the expression of inflammatory mediators like IL-6 and MMP-13, reducing the neuro-inflammation associated with migraines.

3. Sesame Oil (Nalla Ennai)

Sesame oil is not merely a base; it is a highly bioactive vehicle.

- **Transdermal Penetration:** Due to its high content of linoleic acid and small molecular structure, it possesses **Sookshma** (subtle/penetrative) properties. It acts as a solvent for the lipid-soluble alkaloids

(capsaicin and piperine), carrying them through the stratum corneum and hair follicles.

- **Antioxidant Protection:** Rich in **Sesamin** and **Sesamol**, it prevents the oxidation of the herbal constituents, ensuring the thailam maintains its potency over time.
- **Nerve Tonic:** In Siddha and Ayurveda, sesame oil is considered the premier oil for *Vatha* disorders (neurological issues) due to its nourishing effect on the myelin sheath and peripheral nerves.

4. Cow's Milk (Pasunpal)

The inclusion of milk in a pungent oil preparation is a sophisticated pharmacological buffering strategy.

- **Attenuation of Irritation:** Milk contains **Casein**, a lipophilic protein that binds to capsaicin. This prevents the "lead" drug from over-stimulating the TRPV1 receptors to the point of pain or chemical burns, making the high concentration of chillies tolerable for scalp application.
- **Emulsification:** Milk acts as a natural emulsifier between the water-based decoction and the sesame oil. This ensures that both water-soluble and fat-soluble phytochemicals are uniformly distributed in the final *Thailam*.
- **Pitta-Shamana:** It provides a cooling (*Seethala*) counter-balance to the extreme heat of the peppers, protecting the "brain's heat" (*Pitta*) during the oil bath.

5. Water (Salam/Jalam)

In the preparation of Milagai Thailam, water serves as the primary **Extraction Medium**.

- **Solvent Action:** During the initial boiling of chillies and pepper in 2 *Padi* of water, it extracts the water-soluble vitamins, minerals, and a portion of the alkaloids.
- **Decoction Concentration:** Reducing the water to 1/2 *Padi* (a 4:1 reduction) creates a highly concentrated aqueous extract. This ensures that when the oil is finally boiled, the "essence" of the herbs is intensely infused into the lipid base.

4.5 Pharmacological Mechanism of Action

The therapeutic effectiveness of Milagai Thailam in treating headaches is attributed to **Selective Sensory Desensitization**.

- **Neuropeptide Modulation:** The lead phytochemical, **Capsaicin**, binds to TRPV1 receptors on the scalp's perivascular nerves. This causes an initial release of **Substance P** (the pain transmitter), followed by a prolonged period of "Sensory Neuron Blockade." This effectively shuts down the pain signaling pathway for chronic tension and migraine-type headaches.
- **Bio-Enhancement Synergy:** **Piperine** from the black pepper acts as a "natural thermogenic." It increases the local skin temperature and blood flow, which significantly boosts the transdermal absorption of capsaicin. Without piperine, the

capsaicin molecules would have a lower rate of penetration through the thick stratum corneum of the scalp.

- **Lipid-Base Attenuation:** The **Cow's Milk** and **Sesame Oil** create a lipophilic (fat-loving) environment. This is critical because capsaicin and piperine are poorly soluble in water but highly soluble in fats. The milk proteins (casein) also act as a chemical buffer to prevent the "burning" sensation on the skin, ensuring the "oil bath" remains a comfortable therapeutic procedure.

5. DISCUSSION

The effectiveness of Milagai Thailam lies in the **Siddha Principle of Antagonistic Potency**. The extreme heat (*Ushnam*) of the peppers is balanced by the cooling and nourishing properties of cow milk and sesame oil.

The Oil Bath (Thokkanam) Procedure

The indication for an "oil bath" is crucial. When applied to the scalp and massaged, the lipid-soluble alkaloids are absorbed through the hair follicles and sebaceous glands.

- **External Application Safety:** The presence of milk proteins acts as a buffer, preventing the "burning" sensation typically associated with pure capsaicin, making it safe for sensitive cranial application.
- **Cranial Nerve Modulation:** The oil bath doesn't just treat the skin; it modulates the peripheral nervous system, making it highly effective for chronic tension-type headaches and migraines. Milagai Thailam (Chilli Oil) Preparatio

The Rationale of the Oil Bath

The text specifically prescribes a **weekly oil bath** (*Vaaram oru murai snanam*). In Siddha physiology, the head is the seat of *Pitha*. Applying a highly heating oil like Milagai Thailam requires a stabilizing medium. The inclusion of **Cow's Milk** is a brilliant pharmacological strategy.

- **Mitigation of Heat:** The cooling nature of milk prevents the *Ushna* (heat) of the chillies from causing scalp inflammation or "burning" sensations.
- **Transdermal Delivery:** The milk-oil emulsion enhances the solubility of the pungent alkaloids, allowing them to penetrate the hair follicles and reach the peripheral nerve endings of the scalp.

Synergistic Effect in Headache

The "Milagai" (chilli) provides the lead analgesic effect. **Capsaicin** initially excites the nociceptors, followed by a long-term refractory period where the nerves become desensitized to pain. **Piperine** from "Milagu" acts as a thermogenic catalyst, ensuring the capsaicin is not metabolized too quickly at the site of application, thereby prolonging its analgesic effect.

The formulation reflects a sophisticated understanding of **Drug Balancing** in Siddha. The extreme "heat" of the chillies—which the text warns can be harmful to those

with Piles or a hot constitution—is mitigated by the inclusion of **Cow's Milk**.

6. CONCLUSION

In conclusion, **Milagai Thailam** represents a pinnacle of siddha external treatment for cephalalgia. By leveraging the **Substance P-depleting** properties of *Capsicum* and the **Bio-enhancing** properties of *Piperine*, it provides a non-invasive, topical solution for neurological pain. The rigorous preparation method—reducing a large volume of decoction into a concentrated oil base—ensures a high potency of active alkaloids, validating its long-standing use in traditional Siddha clinical practice. The **Milagai Thailam** mentioned in C. Kannusamy Pillai's *Pathartha Guna Vilakam* is a sophisticated example of Siddha pharmaceutical science. Its therapeutic effectiveness is not merely due to the individual drugs but the synergistic processing (*Bhavana*) of pungent alkaloids in a soothing lipid base. Modern pharmacology validates the use of capsaicin and piperine for pain management, supporting the traditional claim that this oil bath can effectively cure various forms of cephalalgia. This review confirms that traditional Siddha oil bath protocols align with modern pharmacological principles of neuropeptide modulation.

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