Review Article

A Drug Review on Siddha External Medicine Arkathy Thailam

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Received: 06-07-2025; **Revised:** 18-10-2025; **Accepted:** 25-10-2025; **Published online:** 20-11-2025.

ABSTRACT

The oldest traditional healthcare system, Siddha medicine, has its roots in ancient Tamilnadu in southern India. There are thirty-two types of external and internal medications in the Siddha system of medicine. Thailam or Ennai are therapeutic oils that are categorized as internal medicines that possess a one-year shelf life. Arkathy Thailam is one of the Siddha medication formulations. The components of Arkathy Thailam were described in this review along with their medicinal usage, action, pharmacological activity in the Siddha system, distinctive features, organoleptic character, and relevant research data.

Keywords: Arkathy thailam, Drug review, Siddha external medicine.

INTRODUCTION

The oldest traditional healthcare system, *Siddha* medicine, has its roots in ancient Tamilnadu , in southern India. There are 96 *thathuvas* that serve as the core of *siddha* medicine. The *Siddha* medical system emphasizes that lifestyle and diet are important factors in both preventing and treating illness.

In *Siddha* medicine, thirty-two types of external and internal medications are used. According to *Siddha* literature, *Thailam* or *Ennai* are therapeutic oils that are categorized as internal medicines that possess a one-year shelf life. Medicated oils are often applied locally to treat injuries like sprains and fractures and muscle pain.

Certain oils have both internal and external uses. Thailam formulations use a variety of crude medicines, herbal juice extracts, decoctions, and oils as a base for educe the active compounds. Any oil, such as gingily oil, castor oil, neem oil, etc., can be used as the base material, depending on the illness.[1]

Arkathy Thailam is one of the siddha medication formulations. It is cited in the Siddha literature *Sarabendra vaithya muraigal-vaatharoga sigichai*. This study's objective is to assess the siddha external formulation, *Arkathy Thailam*. The components of *Arkathy thailam* were described in this review along with their medicinal usage, action, pharmacological activity in the Siddha system, distinctive features, organoleptic character and relevant research data.

PREPARATION OF ARKATHY THAILAM

Ingredients

- *Ammaiyar koonthal (Cuscuta reflexa)*
- *Yerandam (Ricinus communis)*
- *Kumaragam (Crateva magna)*
- *Arukkan (Calotropis procera)*
- *Nithil (Vitex nigundo)*
- *Sathurakalli (Euphorbia antiquorum)*
- *Ilaikalli (Euphorbia ligularia)*
- *Veliparuthi(Pergularia daemia)*
- *Thakkari(Clerodendrum phlomidis)*
- *Amukara (Withania somnifera)*
- *Vaasai (Justicia adathoda)*
- *Poorsatham(Phyla nodiflora)*

Preparation:

The required fresh plants leaves for the trial were collected from fields and authenticated by the authority from Medicinal Botany. After that, the trial drugs is prepared in the Gunapadam laboratory of the National Institute of Siddha.

The forementioned ingredients were grounded their juices were extracted and blended with gingely oil. The resulting mixture is heated till the sediments achieve mezhugu patham. Oil is stored after being filtered.

Indications:

Vatha Diseases , Cut wounds, fractures**.**

Reference:

Sarabendra vaithya muraigal – Vaatharoga sigichai.

Table 1: Scientific & Selected Vernacular Names, Families of the Herbal Ingredients [1]

Tamil Name	Botanical Name	English Name	Sanskrit Name	Family
Ammaiyar koonthal	*Cuscuta reflexa*	Sita's thread	Peasarini	*Convolvulaceae*.
Yerandam	*Ricinus communis*	Castoroil plant	Yeranda vrikshaha	Euphorbiaceae
Kumaragam	*Crateva magna*	Three leaved caper	pashungandha	Capparaceae
Arukkan	*Calotropis procera*	Mudar	Arka	*Apocynaceae*
Nithil	*Vitex nigundo*	Five leaved chase tree	Nirgundi	*Lamiaceae*
Sathurakalli	*Euphorbia antiquorum*	Quadrangular spurge	Vajratundi	Euphorbiaceae
Ilaikalli	*Euphorbia ligularia*	Common milk hedge	Snuhi	Euphorbiaceae
Veliparuthi	*Pergularia daemia*	Dog's bane whitelow plant	Phalaantaka	Apocynaceae.
Thakkari	*Clerodendrum phlomidis*	Wind killer	Vata ghni	Lamiaceae.
Amukara	*Withania somnifera*	Winter cherry	Aswagandha	Solanaceae
Poorsatham	*Phyla nodiflora*	Purple lippia	Toyavallari	Verbenaceae
Vaasai	*Justicia adathoda*	Malabar nut	Vasaka	Acanthaceae

Table 2: Morphology, Parts Used & Organoleptic Characters of the Herbal Ingredients [1]

Botanical name	Growth habit	Parts Used	Taste	Potency	Division
Cuscuta reflexa	Holoparasite	Whole plant	Bitter	Cold	Pungent
Ricinus communis	Shrub	Leaf	Bitter	Hot	Pungent
Crateva magna	Tree	Leaf	Bitter	Hot	Pungent
Calotropis procera	Shrub	Leaf	Bitter, Pungent, sweet	Hot	Pungent
Vitex nigundo	Shrub	Leaf	Astringent, Bitter, Pungent	Hot	Pungent
Euphorbia antiquorum	Succulent shrub	Leaf Latex	Pungent	Hot	Pungent
Euphorbia ligularia	Succulent shrub	Leaf Latex	Bitter	Hot	Pungent
Pergularia daemia	Perennial twining herb	Leaf Latex	Bitter	Hot	Pungent
Clerodendrum phlomidis	Shrub	Leaf	Bitter, Astringent	Hot	Pungent
Withania somnifera	Shrub	Leaf	Bitter	Hot	Pungent
Justicia adathoda	Shrub	Leaf	Bitter	Hot	Pungent
Phyla nodiflora	Creeper	Leaf	Bitter, Astringent	Hot	Pungent

Table 3: Actions, Phyto Chemistry and Medicinal Uses in Siddha

Botanical Name [1]	Actions	Phyto Chemistry [2-12]	Medicinal Uses in Siddha[1]
Cuscuta reflexa	Anti inflammatory, Stomachic, Alterative,	Quercetin, Apigenin, Leuteolin, Kaempferol and Myricetin	Cough, Analpain, loss of appetite.
Ricinus communis	Anti vatha, Antinociceptive	Gallic Acid, Quercetin and Ellagic Acid	Jointpain, Swelling, Abdomen pain.
Crateva magna	Antinociceptive Stomachic, Anti inflammatory	L-Stachydrine, Rutin, Quercetin and Kaempferol-o-α-d-Glucoside	Vathadisease, Reduces joint swelling, Indigestion.
Calotropis procera	Alterative, Stimulant, Analgesic.	Quercetin Derivatives, Kaempferol, Isorhamnetin, Rutin	Joint swelling, Heel pain, Snake bite, Rat bite.
Vitex nigundo	Alterative, Analgesic, Anti inflammatory	Vitexin, Isovitexin, Orientin,Apigenin	Jointpain, Sprain, Hepatomegaly, Regulates vatham.
Euphorbia antiquorum	Anti inflammatory, Wound healing activities.	Quercetin, Myricetin, Kaempferol.	Reduces pain, Tooth ache, Joint swelling.

Euphorbia ligularia	Rubefactant , Expectorant , Purgative, Anti inflammatory	Quercetin, Myricetin, Kaempferol.	Ear pain, Asthma, Vatha disease, Jaundice.
Pergularia daemia	Anthelmentic, Expectorant, Analgesic, Anti-inflammatory.	Quercetin, Formononetin, Taxifolin, Chrysoeriol, Naringenin.	Joint pain, Reduces joint swelling, Vatha disease.
Clerodendrum phlomidis	Alterative, Antispasmodic, Antiinflammatory	Pectolinaringenin, Hispidulin, apigenin.	80 types of vatha diseases, Pain, Sprain.
Withania somnifera	Alterative, Aphrodisiac, Tonic, Sedative, Anti-inflammatory, Deobstruent	Catechin, Quercetin, Kaempferol, Withanolide	Regulates, Reduces swelling, Appetizer.
Phyla nodiflora	Diuretic Deobstruent Astringent Tonic, Expectorant	Hispidulin, Nodifloretin, Eupafolin.	Internal hemorrhoids, Vathadisease, Diarhoea, Dandruff .
Justicia adathoda	Diuretic , Expectorant, Antispasmodic, Anti inflammatory	Kaempferol, Quercetin, Luteolin, Apigenin, Astragalin.	Regulates Vatha-Kabha derangement, Asthma, Pain, Cough, Fever.

PHARMACOLOGICAL ACTIVITIES

RICINIS COMMUNIS [13]

Wound healing activity

The Ricinus communis possess wound healing activity due to the active constituent of castor oil which produce antioxidant activity and inhibit lipid per oxidation. Those agents whose inhibits lipid per oxidation is believed to increase the viability of collagen fibrils by increasing the strength of collagen fibres, increasing the circulation, preventing the cell damage and by promoting the DNA synthesis. The study of wound healing activity of castor oil was in terms of scar area, % closure of scar area and epithelization in excision wound model. Due to the astringent and antimicrobial property the tannins, flavonoids, triterpenoids and sesquiterpenes promotes the wound healing process, which are responsible for wound contraction and increased rate of epithelialisation. The study resulted that the Castor oil showed wound healing activity by reducing the scar area and also the epithelization time in excision wound model. The comparison study of two different concentrations (5%w/w and 10%w/w) of castor oil was resulted that the 10 % w/w Castor oil ointment possesses better wound-healing property.

Anti-inflammatory activity

Anti-inflammatory activities of the leaves and root extract were studied in Wistar albino rats in acute and chronic inflammatory models. The study indicated that the paw edema formation due to sub plantar administration of carragennan, characterizing the cellular events of acute inflammation. The 250 and 500 mg/kg dose of R. communis methanolic leaves extract possess protective effect in prevention of cellular events during edema formation and in all the stages of acute inflammation. The anti-inflammatory activity of R. communis methanolic extract was due to the presence of flavonoids because the flavonoids have the protective effect against carragennan-induced paw edema in rats.

Antinociceptive activity

The methanolic leaves extract of extract of R. communis possesses significant against acetic acid induced writhing test, formalin induced paw licking and formalin induced paw licking and tail immersion methods in mice. The antinociceptive activity showed due to the presence preliminary Phytoconstituents like saponins, steroids and alkaloids.

CUSCUTA REFLEXA [14,15]

Spasmolytic and Relaxant Activity:

Aqueous and alcoholic extracts of C. reflexa produced smooth muscle relaxation in isolated tissues of guinea pigs and rabbits, suggesting antispasmodic activity. Some effects resembled those of acetylcholine (Prasad et al., 1965).

Cuscuta reflexa Roxburg has anti-inflammatory and anti-arthritic activities. When the albino rats are treated with test 2 (400mg/kg) there is a significant effect compared with test 1 (200mg/kg) and the paw volume (table 1, Figure 1) was decreased parallelly with the standard (prednisolone). Due to decrease in paw volume, paw thickness (table 2, figure 2) and body weight (table 3, figure 3) are also decreased simultaneously. Based on the above results, we

conclude that Cuscuta reflexa roxburg has anti-inflammatory and anti - arthritic activity.

CALOTRPIS PROCERA [17,18]

Wound healing activity

As a result of damage to the skin or other soft tissues, the body undergoes a repair process known as wound healing. When the skin is damaged, the underlying cells undergo an inflammatory response and ramp up collagen production. In time, new epithelial cells form. Once a day, for seven days, a sterile latex solution (20 µL each time) was applied topically. The wound size was reduced as a result of the latex's stimulation of collagen, DNA, and protein synthesis, and epithelization. Normal and dexamethasone-treated rats showed a statistically significant ($p < 0.001$) decrease in epithelialization time after administration of the extract. This cut down the time needed to complete the task from 28 days to between 17 and 18 days. The consumption of the same extract led to similar increases in breaking strength in dexamethasone-treated rats. After 7 days, the wounds were much smaller in the 50% latex in the honey and triamcinolone groups, and smaller still after 14 and 21 days. According to the plant's phytochemistry, it contains triterpenoids-amyrin, flavonoids, cardiac glycosides, cardenolide anthocyanins, mudarine, lupeol, sitosterol, flavanols, resin, potent bacteriolytic enzyme called calactin, a nontoxic proteolytic enzyme called calotropin, and a wax . Strength upon breaking was much improved by the extract. The rate of wound contraction was also greatly accelerated, and epithelialization occurred more quickly in extract-treated wounds.

Analgesic activity

All the extracts of leaves of C.procera i.e. CECP, EECP and MECP demonstrated noteworthy analgesic activity. The methanolic extract at a dose of 200 mg/kg revealed more potent activity (74.8% protection) than the aspirin (61.12 % protection) at dose of 100 mg/kg. Acetic acid is a sensitive agent for production of constriction of abdominal responses. It causes an increase in peritoneal fluid level of prostaglandins PGE2 and PGF2-α during the first 30 min after *acetic* acid injection, involving in inflammatory pain by inducing capillary permeability. Intra-peritoneal administration of acetic acid induces the release of prostaglandins and other sympathetic nervous system mediators. Therefore, extracts CECP, EECP and MECP may exert analgesic activity by inhibition of prostaglandin release or synthesis; as acetic acid-induced pain mainly involves cyclooxygenase pathway and prostaglandin biosynthesis.

VITEZ NEGUNDO [19]

Analgesic activity:

Analgesic activity of the crude extract and fractionated parts was confirmed using the model of acetic acid induced writhing in mice. The experimental laboratory mice were randomly divided in twelve groups each containing five mice. The first group, treated as control group, was administered orally with 1 % (*v*/v) Tween-80 in distilled water at the dose of 10 ml/kg body weight. The second group received standard diclofenac sodium (25mg/kg). Third group was treated with the crude extract at the doses of 250 and 500mg/kg body weight. Fourth to eleventh groups were treated with different fractions of crude extract the doses of 250 and 500mg/kg body weight. Test samples, standard drug and control vehicle were administered orally 30min before intraperitoneal administration of 0.7% acetic acid. After an interval of 5min, the number of writhes was counted for a period of 15min.

CRATEVA MAGNA [16]

Anti-inflammatory Activity

Both the crude ethanol extracts of the selected plant at a dose of 400mg/kg showed highly significant anti-inflammatory activity (P<0.01) as compared to control group at 60, 120 and 180 min respectively. The standard drug Indomethacin at a dose of 100mg/kg body weight inhibited the development of edema significantly from 120 min onwards

Antinociceptive Activity

Rats treated with ethanol extract of C. magna plant parts showed significant (***p<0.001) and dose dependent analgesic activity in thermal stimulated pain (hot plate test) in rats[20]. The reaction time at a dose of 400mg/kg (higher dose) was found to be 10.34 seconds after 90 minutes of drug treatment, whereas the standard drug diclofenac showed the tail flick latency 11.46 seconds.

EUPHORBIA ANTIQUORUM [20]

Anti-inflammatory and anti-arthritic activities

The anti-inflammatory and anti-arthritic potential has been associated with aqueous (AEA) and alcoholic (EEA) extracts of EA. The effect of the extracts was evaluated against acute inflammation using carrageenan induced rat paw edema and chronic inflammation using cotton pellet induced granuloma in rats and complete Freund's adjuvant (CFA) induced arthritis in rats. In acute oral toxicity study, EEA and AEA did not show any toxicity and mortality up to the dose of 2g/kg. AEA and EEA at 200 and 400mg/kg, po produced significant inhibition of carrageenan induced rat paw edema. AEA and EEA at 400mg/kg, po showed significant inhibition of cotton pellet induced granuloma formation in rats. AEA 400mg/kg, po effectively prevented the primary lesions and EEA 400mg/kg, po effectively prevented both primary and secondary lesions of CFA induced arthritis in rats. The results revealed that the Triterpenoids present in both the extracts of EA might be responsible for anti-inflammatory and anti-arthritic effects**.**

PERGULARIA DAEMIA [21]

Anti-inflammatory Analgesic

Crude ethanol extract of Pergularia daemia leaves was successfully fractionated with petroleum ether, solvent ether, ethyl acetate, butanol and butanone. The ethanol

extract and various fractions were investigated for anti-inflammatory activity in rats at a dose of 100 mg/kg via intraperitonially. Ethanol extract and its butanol fraction exhibited significant anti-inflammatory activity compared with respective controls and comparable with that of standard drug Aspirin. The anti-inflammatory activity of Pergularia daemia extract could be attributed due to the presence of steroids. Analgesic effect of aqueous and ethanol extract of pergularia daemia was demonstrated in the experimental models using Eddy's hot plate and heat conduction method using thermal stimuli. Both extracts showed the analgesic activity when compared with control and analysed statistically by Tukey Kramer Multiple comparison test.

CLERODENDRUM PHLOMIDIS [22]

Analgesic activity

Analgesic is a very common term, which includes pain, inflammation, fever etc. and creates many complications in day-to-day life of human beings. Many species of Clerodendrum have been reported for analgesic activity. Petroleum ether, ethyl acetate, and methanolic extract of aerial parts of Clerodendrum phlomidis showed analgesic activity in mice.

Anti-inflammatory activity

Inflammation is the complex biological disorder caused by physical pain, poisonous chemical or different microbial agents. Many species of the genus have showed potent anti-inflammatory activity. In 1988, Study showed that C. phlomoidis significantly reduced paw oedema induced by carrageenan in rats at a dose of 1 g/kg. The aqueous extract of root bark of C. phlomidis showed anti-inflammatory activity against carrageenan induced rat paw oedema and acetic acid induced peritonitis in mice.

WITHANIA SOMNIFERA [23]

Anti-nociceptive and anti-inflammatory activity.

In conclusion, 85 % methanolic extract of WS exhibits antinociceptive effect at the lower dose and anti-inflammatory activity in carrageenan induced paw inflammation at the lower dose. Moreover, the anti-inflammatory activity exhibited by extract is nearer to that of standard drug Indomethacin.

PHYLA NODIFLORA [24]

Anti-inflammatory

The methanolic extract of the plant and the isolated compound cyclo-pentano phenanthrenol (CPP) exhibited significant anti-inflammatory activity through multiple mechanisms in various in vitro models.

JUSTICIA ADHATODA [25]

Anti-ulcer activity

Justicia adhatoda L. has enormous potential as an anti-ulcer agent of pronounced therapeutic application. The investigation was carried out to explore the anti-ulcer activity of Justicia adhatoda L. leaves using two ulcer models viz., Ethanol induced and Pylorus ligation plus aspirin-induced rat models. Acute gastric ulcers were induced in both the experimental animals. Justicia adhatoda L. leaf powder displayed substantial degree of anti-ulcer activity in the experimental rats with comparison to control. The highest degree of anti-ulcer activity (80 %) was witnessed in the ethanol-induced ulceration model.

Anti-inflammatory

The methanolic extract of J. adhatoda was evaluated for anti-inflammatory activity by the modified hen's egg chrioallantoic membrane test. The alkaloid fraction showed potent activity at a dose of 50 µg/pellet (Chakrabarty and Brantner, 2001).

INGREDIENTS OF *ARKATHY THAILAM*

(Sathurakalli)

Euphorbia antiquorum

(Illaikalli)

Euphorbia ligularia

(Ammaiyarkoonthal)

Cuscuta reflexa

(Amukara)

Withania somnifera

(Thaluthaalai)

Clerodendrum phlomidis

(Poduthalai)

Phyla nodiflora

Gingelly oil

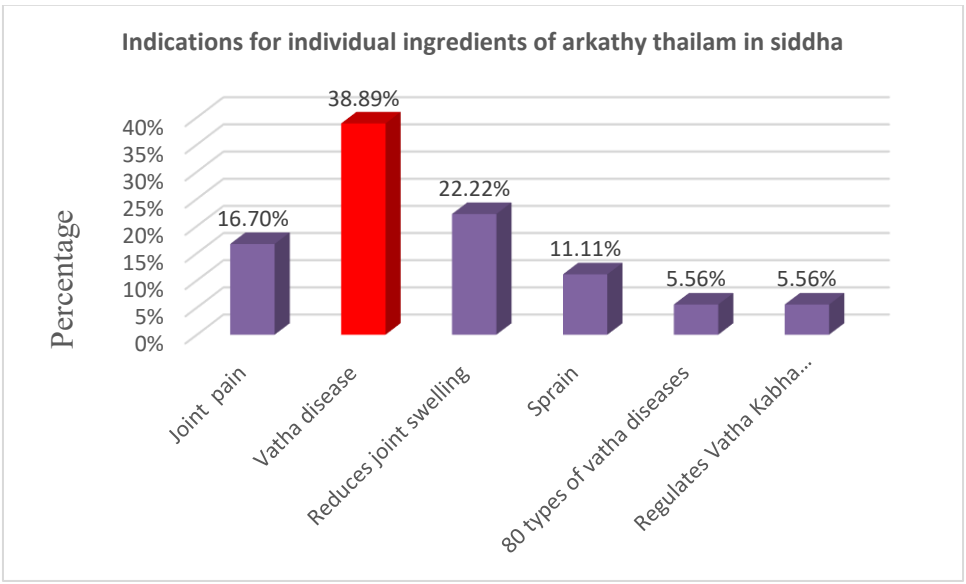

Chart 1: Indications for individual ingredients of *arkathy thailam* in *siddha*.

DISSCUSSION

The following elements were examined in this review each ingredient's pharmacological activities, morphological kinds, botanical families, parts used, and its medicinal value. Mostly leave extract were used for this medicine preparation, from the 12 ingredients 3 plants belong to euphorbiaceae family and 2 were apocyneceae. Most of the plants posses hot potency which will reduce vatham and they also have indications such as reducing joint pain, joint swelling and regulating *vatham* derangement in pharmacological aspect most plants have anti-inflammatory, antinociceptive, analgesic properties and wound healing activities.

CONCLUSION

The chemical composition and pharmacological properties of the ingredients in *Arkathy Thailam* closely match the Siddha classical literature descriptions of its medicinal purposes. The formulation has promise in the treatment of inflammatory diseases and *vatham* disorders. The intricacy

and breadth of Siddha pharmacognosy are likewise reflected in the variety of plant groups and parts utilized. These findings highlight the need for additional clinical research, standardization, and scientific validation of *Arkathy Thailam*.

Source of Support: The author(s) received no financial support for the research, authorship, and/or publication of this article

Conflict of Interest: The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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