



Drug Review of “Swasakudori Mathirai”- A Siddha Herbal Preparation

Packiyalekshmi.K.R^{1*}, Madhavan.R², Meenakumari.R³

¹PG scholar, Department of Nanju Maruthuvam, National Institute of Siddha,
Tambaram sanatorium, Chennai-600047, Tamil Nadu, India.

²Head of the Department, Department of Nanju Maruthuvam, National Institute of Siddha,
Tambaram Sanatorium, Chennai-600047, Tamil Nadu, India.

³Director, Head of the Department, Department of Gunapadam, National Institute of Siddha,
Tambaram Sanatorium, Chennai-600047, Tamil Nadu, India.

***Corresponding author: Packiyalekshmi.K.R**

E-mail: krpackiyalekshmi@gmail.com

Abstract

Siddha system of medicine is one of the ancient system of medicine practiced mainly in southern part of India. The treatment modalities lies in the correction of three humors(Vatham, Pitham, Kabam). Traditional system of medicines has grabbed a global concern due to its contribution in pandemic and many more disease outbreaks such as Dengue, Chikungunya. Swasakudori mathirai is a classic Siddha herbal formulation which is used in the treatment of various kinds of respiratory diseases. This review describes the phytoconstituents, pharmacological action of the ingredients of the swasakudori mathirai from Siddha literatures and published articles in journals. In conclusion, results of this review revealed that the Swasakudori mathirai is a potent therapeutic agent against the respiratory diseases.

Keywords: Siddha, Herbal formulation, *Swasakudori Mathirai*, pharmacological activity.

Introduction

One of the older systems of medicine is the Siddha System. The name "Siddha" derives from the word "Siddhi," which means "an object to be attained" or "perfection" or "heavenly bliss"; people who have attained or achieved the Siddhi are known as Siddhars. The Siddha system of medicine is exceptional in that it has been helping people stay healthy physically, mentally, and

morally for more than 5000 years. As it appears, the Siddha system resembles a huge pharmacopoeia that contains substances of plant, metal, mineral, and animal origin. ⁽¹⁾ Siddha medicine is divided into 32 categories of internal medicines and 32 types of exterior medications. Mathirai is one among the 32 internal medicines and it has 1 year shelf life. ⁽²⁾ Swasakudori mathirai is one of the Siddha herbal formulation

consists of Vellai erukkan poo (*Calotropis procera*) and Milagu (*Piper nigrum*), which is widely used to treat many diseases in Siddha system of medicine. Swasakudori mathirai has specific indication to treat respiratory disease Swasakasam (cough with breathlessness) with adjuvant thalisapathiri kudineer. This article reveals the detailed review of the Siddha herbal formulation *Swasakudori Mathirai*, which is quoted in the Siddha classical text *Siddha vaithiyathirattu*.⁽³⁾ The main goal of this study is to provide evidence for Swasakudori mathirai therapeutic efficacy, its pharmacological effects, medicinal uses, and scientific review for the management and prevention of the above-mentioned disease.

Materials and Methods:

Scientific evidence on pharmacological activities of Swasakudori mathirai was reviewed by searching related research articles and Siddha texts. Information about herbals in Swasakudori mathirai were retrieved from classical Siddha texts in National Institute of Siddha library, Chennai.

Ingredients of Swasakudori mathirai:⁽³⁾

- I. Vellai erukkan poo (*Calotropis procera*)
- II. Milagu(*Piper nigrum*)

Preparation: Grind the vellai erukkan poo and pepper in kalvam until it gets fine paste with the help of water and make kuntrimani size(130mg) tablets. After that dry them in the shade.

Dose: 1-2 Tablets, twice a day

Adjuvant: Thalispapathiri kudineer

Evaluation of the drug:

I. Vellai Erukkan poo

Botanical Name: *Calotropis procera*

Synonym: Arukkan

Vernacular Names: ⁽⁴⁾

English: Dead Sea Apple, Milkweed

Telugu : Illeduchettu
Hindi : Ak, Akan, Akond
Malayalam : Erukka
Kannada : Yakkedagida
Sanskrit : Arka

Taxonomic Classification:

Kingdom : Plantae
Class : Magnoliopsida
Order : Gentianales
Family : Asclepiadaceae
Genus : *Calotropis*
Species : *Procera*

Botanical Description:

It is a shrub or small tree, ten to twenty feet high. The stem is covered with a hairy pubescence. Flowers are borne on terminal panicle; petals are white on the upper side, silvery on the lower side; juice extremely acrid.⁽⁵⁾

Part used: Flower, root and latex.

Taste: Bitter, Acrid, Sweet;

Character: Hot;

Division: Acrid

Actions: Expectorant, Stomachic, Digestive, Tonic.

Chemical constituents:

Latex is source of various biologically active compounds, including glucosides, tannins and many proteins. The cardiac glycosides calotropin, calactin, uscharidin, uscharin, calotoxin and voruscharin have been isolated from the latex. A new cardenolide, proceragenin has been isolated from the latex.⁽⁵⁾

Ethnomedicinal uses of *Calotropis procera*:

The bark is used as a local remedy in India for elephantiasis, leprosy and chronic eczema. The traditional medicinal properties of the plant are similar to those of *Calotropis gigantea*. Hindus

consider as sacred shrub and the milky juice (latex) has been used as a blistering agent. The local effect of the latex on the conjunctiva is congestion, epiphora and local anaesthesia. The patal combines with pepper used in the case of asthma, allergic digestive and tonic properties. The flowers are used as a milk drink to treat a variety of complaints including coughs and catarrh, asthma and indigestion, as well as cholera.⁽⁵⁾

Pharmacological actions:

1. Anthelmintic activity:

Through in vitro and in vivo investigations, the anthelmintic activity of *Calotropis procera* flowers in contrast to levamisole was assessed. *Calotropis procera* flower crude aqueous and crude methanolic extracts had anthelmintic effects on live *Haemonchus contortus*, as shown by their mortality or temporary paralysis, according to in vitro tests. The anthelmintic activity of *Calotropis procera* flowers against nematodes was found to be good, however it was less potent than that of levamisole (97.8-100%)⁽⁶⁾

2. Hepatoprotective activity:

Rats were given a paracetamol-induced hepatitis to treat, and a 70% hydro-ethanolic extract of the flowers from *Calotropis procera* was examined for its ability to protect the liver. In a dose-dependent manner, treatment with *C. procera* flower hydro-ethanolic extract at doses of 200 mg/kg and 400 mg/kg restored abnormal biochemical marker levels to levels that were close to normal.⁽⁷⁾

3. Anti – oxidant activity:

Calotropis procera flower methanolic extract contains polyphenols. The statistical analysis method employed was a two-way ANOVA. With the lowest IC₅₀ of 100 g/ml, the methanol extract of *C. procera* demonstrated higher scavenging performance in the ferric thiocyanate technique (83.63%), followed by hydrogen peroxide, hydroxyl radical scavenging, and DPPH assay (50.82%). On Hep2 cell lines, the extract showed

a 100% cytotoxic effect. More flavonoids than phenols were discovered. Because of their high polyphenol content, it has been suggested that the flowers of *C. procera* have cytotoxic, antioxidant, and other therapeutically significant in vitro properties.⁽⁸⁾

4. Analgesic activity:

Calotropis gigantea flower alcohol extract has been administered orally and tested for analgesic efficacy in mice using chemical and thermal models. At dosages of 250 and 500 mg/kg, respectively, in the acetic acid-induced writhing test, an inhibition of 20.97% and 43.0% in the number of writhes was seen. The paw licking process took longer with the hot plate method. The analgesic effect began to manifest 30 minutes after the dose was administered and peaked 90 minutes later.⁽⁹⁾

5. Antipyretic Activity:

Animal models revealed strong antipyretic action from the ethanolic extract of the aerial parts, aqueous extract of the flower, and aqueous solution of the dry latex of *C. procera* that was comparable to aspirin.⁽¹⁰⁾

6. Antiasthmatic Activity:

Flower of *C. procera* have been evaluated for its usefulness in the treatment of asthma. A clinical study on human beings showed the good recovery from the symptoms of asthma.⁽¹¹⁾

II. Milagu

Botanical Name: *Piper nigrum*

Synonyms: Kalinai, Malayali, Sarumabandham, Kari, Kaayam, Kolagam, Thirangal, Miriyal, Vallisam, Maasam, Kurumilagu.⁽⁴⁾

Vernacular Names⁽⁴⁾

English	: Black pepper
Sanskrit	: Maricha
Telugu	: Miriyalu
Malayalam	: Kurumulaku

Kannada : Menasu
Hindi : Kali mirch.

pepper mixed with honey taken twice a day is beneficial in amnesia or dullness of intellect. ⁽⁵⁾

Taxonomic Classification:

Kingdom : Plantae
Class : Magnoliopsida
Subclass : Magnoliidae
Order : Piperales
Family : Piperaceae
Genus : Piper
Species : nigrum

Botanical Description: It is native to Malabar, a region in the Western Coast of South India. Stems are stout climbing and very flexible. Leaves are elliptical to orbicular-ovate, younger leaves are cordate and all are palmately veined with 5-7 veins. Flowers are small and borne on long pendulous spikes from each node. The flowers are not showy. The berries first turn green, then red, finally turning black. ⁽⁵⁾

Parts Used: Fruit

Taste: Bitter, Acrid, **Character:** Hot, **Division:** Acrid

Actions: Carminative, Antiperiodic, Rubefacient, Stimulant, Resolvent, Antivatha, Antidote

Ethnomedicinal uses of *piper nigrum*:

The fruit is an important spice and flavouring agent and has also been used in the treatment of cholera and dyspepsia, as well as a variety of gastric ailments and arthritic disorders (Jung and Shin, 1998). Black pepper oil can be used to help in the treatment of pain relief, rheumatism, chills, flu, cold, increase circulation, exhaustion, muscular ache, physical and emotional coldness, nerve tonic and fevers. According to Ayurveda, fruit is useful in treatment of asthma, chronic indigestion, colon toxins, obesity, sinus congestion, fever, intermittent fever, cold extremities, colic pain, piles, worms and sore throat. Externally, fruit paste extract can be applied to boils and other skin diseases. A pinch of pepper powder mixed with clove oil can be put in the caries to alleviate toothache. The finely ground

Pharmacological actions:

1. Anti-microbial activity:

In 2007, Khan and Siddiqui assessed the antibacterial efficacy of *Piper nigrum* aqueous decoction against various bacterial isolates from the oral cavity of 200 volunteers. At a concentration of 10 L/disc, black pepper's (aqueous decoction) highest antibacterial activity was comparable to that of *Laurus nobilis* and *Pimpinella anisum*. In a recent study, silver nanoparticles from *Piper nigrum*'s leaf and stem extract were produced, and their antibacterial efficacy was assessed against plant diseases that affect agricultural crops. When used against plant diseases, these silver nanoparticles demonstrated outstanding antibacterial action. The antibacterial properties of silver nanoparticles, according to authors, are a useful application in agricultural nanotechnology for crop protection and improvement. ⁽¹²⁾

2. Anti-inflammatory activity:

The anti-inflammatory, analgesic, and anti-arthritic properties of piperine were examined. While anti-arthritic, including analgesic, activities were examined on carrageenan induced acute paw model of pain and arthritis in rats, the in vitro anti-inflammatory activities were evaluated on interleukin 1 activated fibroblast like synoviocytes isolated from rheumatoid arthritis. Piperine greatly reduced the pain and arthritic symptoms in rats. In a rat arthritis model, it was found that piperine had anti-inflammatory, analgesic, anti-arthritic properties. ⁽¹³⁾

3. Antiviral Activities and Cytotoxicity Assay:

Priya N. C & P. Saravana Kumari studied antiviral assay of methanolic & chloroform extract from *Piper longum* and *Piper nigrum* seeds. These findings showed that *Piper longum* and *Piper nigrum* both exhibit potent antiviral and anticancer properties in HeLa cells. ⁽¹⁴⁾

4. Neuroprotective effect:

Lan Yu et al. studied neuroprotective effect of *Piper nigrum*. In 6-OHDA-induced SK-N-SH and SH-SY5Y cells, extracts from the fruits, pericarp, and leaves may increase cell viability. The outcomes demonstrated the properties of amide alkaloids from various *P. nigrum* sections and assessed their neuroprotective actions.⁽¹⁵⁾

5. Immuno-modulatory activity:

Piperine's immune-modulating and anticancer properties were assessed. According to reports, Ehrlich ascites carcinoma cells and Dalton's lymphoma ascites are both cytotoxic to piperine (250 g/mL). Mouse splenocytes treated with piperine showed an increase in the release of Th-1 cytokines (IFN- and IL-2), enhanced macrophage activation, and increased T and B cell proliferation. Due to their immuno-modulatory effects, piperine and rifampicin (1 mg/kg) have been shown to be effective in preventing *Mycobacterium tuberculosis*.⁽¹⁶⁾

6. Anti-depressant activity:

Piperine's potential mechanisms of action and antidepressant-like effects have been investigated in a mouse depression model produced by corticosterone. Animals treated with piperine greatly reduced the behavioral and physiological alterations caused by corticosterone. These findings demonstrated that piperine has an antidepressant-like effect in a mouse corticosterone-induced depression model.⁽¹⁷⁾

7. Anti-diarrheal activity:

Aqueous black pepper extract (ABPE) was tested for anti-diarrheal, anti-motility, and anti-secretory action in mice at doses of 75, 150, and 300 mg/kg. A strong and dose-dependent anti-diarrheal, antimotility, and anti-secretory action was demonstrated by ABPE. *Piper nigrum*'s anti-motility and anti-secretory properties may result from the presence of carbohydrates and alkaloids, while ABPE's anti-diarrheal properties may result

from its anti-motility and anti-secretory properties.⁽¹⁸⁾

8. Analgesic activity:

Piperine was tested for its in vivo analgesic effects in mice. The analgesic effect of piperine was assessed using the acetic acid-induced writhing and tail flick assay models in mice. When mice were pre-treated with naloxone at a dose of 5 mg/kg (i.p.) they showed a reversal of the analgesic effects of both piperine and morphine in the tail flick experiment. These findings demonstrated piperine's analgesic effect, which may have been mediated by the opioid pathway.⁽¹⁹⁾

Other pharmacological activities:

Black pepper, or the pure component "Piperine," has many more pharmacological effects, including anti-asthmatics, anti-anxiety, anti-metastatic, antimutagenic, antithyroids, antifungal, insecticidal, antispasmodic, anti-apoptotic, antiplatelet, antipyretic, antihypertensive.⁽²⁰⁻²⁴⁾

Conclusion

The ingredients of "Swasakudori mathirai" is a Siddha therapeutic medicine used to treat respiratory diseases. However the ingredients of Swasakudori Mathirai possess pharmacological actions such as antioxidant, analgesic, anti pyretic, anti asthmatic, anti microbial, anti inflammatory, anti viral, anti depressant, immunomodulatory, hepatoprotective, anti spasmodic, anti-apoptotic, antiplatelet, anti-anxiety, anti-metastatic activities. The presence of pharmacological effects and medicinal uses of Swasakudori mathirai is a effective siddha herbal preparation against respiratory diseases.

Conflict of Interest: Nil

References

1. N.Kandaswamy Pillai. History of siddha Medicine 2nd edition Department of Indian Medicine and homeopathy;1998.1. p
2. R.Thiyagarajan, Gunapadam Thathu Seevavaguppu, Indian medicine-

Homeopathy Department, Chennai
6000106, 7th edition. Page No:71

Plant Pathogens. Scientific World Journal:
829894.

3. Dr. Kuppusamy mudaliyar, Dr. Uthamarayan, H.P.I.M, Siddha vaithiyathirattu, Indian medicine-Homeopathy Department, Chennai 6000106, 6th edition, Page No: 61
4. K.S.Murugeshamudhaliyar, Guanapadam Mooligai (part-1), Chennai: Chennai: Department of Indian Medicine and Homeopathy. (9th edition) page no-152,154,760.
5. S.Sankaranarayanan, Medical Taxonomy of Angiosperms:Recent Trends in Medicinal Uses and Chemical Constituents, 1st edition October,2009. Page No554,555,721,722.
6. Iqbal Z, Lateef M, Jabbar A, Muhammad G, Khan MN. Anthelmintic activity of *Calotropis procera* (Ait.) Ait. F. flowers in sheep. Journal of ethnopharmacology. 2005 Nov 14;102(2):256-61
7. Setty SR, Quereshi AA, Swamy AV, Patil T, Prakash T, Prabhu K, Gouda AV. Hepatoprotective activity of *Calotropis procera* flowers against paracetamol-induced hepatic injury in rats. Fitoterapia. 2007 Dec 1;78(7-8):451-4.
8. Prabha MR, Vasantha K. Antioxidant, cytotoxicity and polyphenolic content of *Calotropis procera* (Ait.) R. Br. Flowers. Journal of Applied Pharmaceutical Science. 2011 Sep 30(Issue):136-40.
9. Pathak AK, Argal A. Analgesic activity of *Calotropis gigantea* flower. Fitoterapia. 2007 Jan 1;78(1):40-2.
10. Dewan S., Kumar, S and kumar, V. L. Antipyretic effect of latex of *Calotropis procera*. Ind Jour. Pharmacol. 2000; 32, 252-253.
11. Upadhyay, V.P. Preliminary studies on the therapeutic effects of flower of *Calotropis procera*, Ark pushpa, on asthma. Jour. Sci. Res. Plant Med. 1979; 1(1), 52-55.
12. Kumar KP, Gnanajobitha G, Vanaja M, Kumar SR, Malarkodi C, Pandian K, et al.(2014) *Piper nigrum* Leaf and Stem Assisted Green Synthesis of Silver Nanoparticles and Evaluation of its Antibacterial Activity against Agricultural
13. Bang JS, Oh da H, Choi HM, Sur BJ, Lim SJ, et al. (2009) Anti-inflammatory and antiarthritic effects of piperine in human interleukin 1beta-stimulated fibroblast-like synoviocytes and in rat arthritis models. See comment in PubMed Commons below Arthritis Res Ther 11: R49
14. Priya NC, Kumari PS. Antiviral activities and cytotoxicity assay of seed extracts of *Piper longum* and *Piper nigrum* on human cell lines. International Journal of Pharmaceutical Sciences Review and Research. 2017 May;44(1):197-202.
15. Yu L, Hu X, Xu R, Ba Y, Chen X, Wang X, Cao B, Wu X. Amide alkaloids characterization and neuroprotective properties of *Piper nigrum* L.: A comparative study with fruits, pericarp, stalks and leaves. Food chemistry. 2022 Jan 30;368:130832.
16. Sharma S, Kalia NP1, Suden P2, Chauhan PS2, Kumar M1, et al. (2014) Protective efficacy of piperine against *Mycobacterium tuberculosis*. See comment in PubMed Commons below Tuberculosis (Edinb) 94: 389-396.
17. Mao QQ, Huang Z2, Zhong XM2, Xian YF3, Ip SP4 (2014) Piperine reverses the effects of corticosterone on behavior and hippocampal BDNF expression in mice. See comment in PubMed Commons below Neurochem Int 74: 36-41
18. Shamkuwar PB, Shahi SR, Jadhav ST (2012) Evaluation of antidiarrhoeal effect of Black pepper (*Piper nigrum* L). Asian Journal of Plant Science and Research 2:48-53
19. Bukhari IA, Pivac N, Alhumayyd MS, Mahesar AL, Gilani AH (2013) The analgesic and anticonvulsant effects of piperine in mice. See comment in PubMed Commons below J PhysiolPharmacol 64: 789-794.
20. Ahmad N, Fazal H, Abbasi BH, Farooq S, Ali M, et al. (2012) Biological role of *Piper nigrum* L. (Black pepper): A review. Asian Pacific J Trop Biomed: S1945-S1953

21. Acharya SG, Momin AH and Gajjar AV (2012) Review of Piperine as A BioEnhancer. Am J Pharm Tech Res 2:32-44
22. Taqvi SI, Shah AJ, Gilani AH (2008) Blood pressure lowering and vasomodulator effects of piperine. See comment in PubMed Commons below J CardiovascPharmacol 52: 452-458.
23. Manoharan S, Balakrishnan S, Menon V, Alias L, Reena A (2009) Chemopreventive efficacy of curcumin and piperine during 7,12-dimethylbenz[a] anthracene-induced hamster buccal pouch carcinogenesis. Singapore Med J 50:139-46.
24. Parganiha R, Verma S, Chandrakar S, Pal S, Sawarkar HA, Kashyap P (2011) In vitro anti- asthmatic activity of fruit extract of *Piper nigrum* (Piperaceae). Inter J Herbal Drug Res 1:15-18.

Access this Article in Online	
	Website: www.ijcrims.com
	Subject: Siddha Medicine
Quick Response Code	

How to cite this article:

Packiyalekshmi.K.R, Madhavan.R, Meenakumari.R. (2023). Drug Review of “Swasakudori Mathirai”- A Siddha Herbal Preparation. Int. J. Curr. Res. Med. Sci. 9(9): 36-42.

DOI: <http://dx.doi.org/10.22192/ijcrms.2023.09.09.005>