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SCIENTIFIC EVALUVATION OF SATHI LINGA NAABI MATHIRAI (SLNM)- A LITERATURE REVIEW

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ABSTRACT

Siddha system of medicine is the most primitive medical system in India. The drugs are categorized into three groups, namely herbal products, metal, mineral and animal products. Sathi Linga Naabi Mathirai(SLNM) is one of the Siddha Herbo Mineral preparation which consist of one Mineral and three Herbal ingredients. This drug is used to treat the Fever. This review is focused on scientific support of the therapeutic usage of SLNM. The Pharmacological activity of ingredients of SLNM have Antioxidant, Anti viral, Anti pyretic, Antimicrobial Activity.

KEYWORDS: Siddha, Fever, Pharmacological Activity, SLNM.

INTRODUCTION

Siddha system of medicine is the most primitive medical system in India. The fundamental principles of *Siddha* system include theories of Five Elements *(Aimpootham)*, and three Vital humor*(Mukkuttram)*. *"Health sustainment or decline is defined by the Normal or abnormal state of the Humors"*. The doshas within any person keep changing constantly due to lifestyle, foods and environment. The loss of balance among the humors causes energy disharmony and physical and mental disequilibrium which may appear at any time and become the cause of diseases. According to the *Siddhar Yugi muni"*, the diseases are widely classified into 4448 types. *Siddha* system insists that, the physician should enquire into the nature of the disease, its cause and its method of cure and treat it faithfully. This art of healing incorporates a variety of holistic practices and remedies. The drugs are categorized into three groups, namely herbal products, metal, mineral and animal products.[32] types of

internal medications and 32 external medications areadopted. Mathirai is the one of Internal Medicine. Sathi Linga Naabi Mathirai (SLNM) is one of the Herbo mineral prepration Which is Mentioned in Sarabendira Vaidya Muraigal – Jwaro Roga Sigichai. This drug is used to treat for Fever. Fever is also known as pyrexia and febrile response is defined as temperature above the normal range. A fever can be caused by many medical conditions ranging from not serious to potentially serious. This includes viral, bacterial and parasitic infection. Fever is one of the most common medical signs.[31] The ingredients of SLNM Such as Lingam. Naabi. Nervalam, Inji. The drug review is focused on pharmacological activities of each ingredients which is supports the Scientific evidence of the therapeutic usage Mentioned in Siddha Literature.

2. MATERIAL AND METHODS

A) Ingredients of SLNM

The ingredients of Sathi Linga Naabi Mathirai (SLNM) is mentioned in figure 1.

Purified Lingam

Purified Naabi

Purified Nervalam

Inji Juice

Sathi Linga Naabi Mathirai

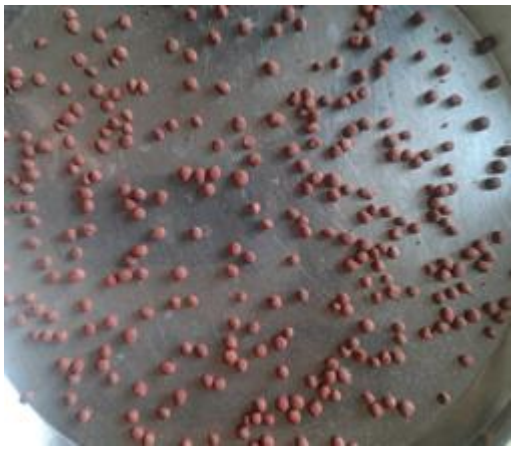

Figure I: Ingredients of SLNM.

B) Purification of raw drugs

All the raw drugs are purified as per mentioned in Siddha literature (Table 1).

Table 1: Purification and Quantity of ingredients of SLNM.

Ingredient	Botanical Name/ Chemical Name	Parts Used	Purification Method	Quantity
Lingam	Red sulphide of mercury(Cinnabar)	-	Lemon juice(*Citrus limon*), Cow milk, meni juice(*Acalyphaindica*) are mixed in equal proportion and allowed to fuse cinnabar. So as t get it in a consolidated potency state.[1]	16.8 Gram
Naabi	*Aconitum napellus*	Dried Root	Naabi**(**Aconitum ferox) should be cut into the small pieces. Those pieces have to be put in cow urine for three days. Then pieces have to be taken outside and to be dry.[2]	8.4 Gram
Nervaalam	*Croton tiglium*	Seed	Nervalam(Croton tiglium) should boiled in cow dung mixed water. After boiling seed should be put in lemon juice. Then sided and to be broken to remove the seed's inner side, fleshy and leafy parts. The remaining part of the seed have to be let day and then to be fried by ghee to get purified nervalam.[2]	25.2 Gram
Ginger	*(Zingiberofficinalis)*	Dried Root	Ginger is crushed and become a juice	Q.S

C) Preparation of sathilinga naabi mathirai

Take the above mentioned quantity of drug after purification are grinded with ginger juice(Requirement quantity) until it attern pill rolling make it into the milagu form(35-45 mg) of tablet and dried. Prepared pills will be stored in air tight container.[3]

D) Dosage and Vehicle: 1 tablet BD with Hot water.[3]

3. INFORMATION ON INGREDIENTS OF SATHILINGA NAABI MATHIRAI

The Siddha information of ingredients of Sathi Linga Naabi Mathirai is Mentioned in Table II.

Table II: Information on Ingredients of SLNM.

Ingredients	Family Name	Taste	Potency	Division	Action	Medicinal Uses
Lingam (Red Sulphide of Mercury)	-	No taste[1]	Hot[1]	-	Tonic[1]	Diarrhoea, Pyrexia, Delirium, Urticaria, Tuberculosis, Syohilis, and Thrombic Pain.[4]
Naabi (*Aconitum napellus*)	Ranunculaceae	Bitter[5]	Hot[5]	Pungent[5]	Diaphoretic, Diuretic, Antiperiodic, Anodyne, Antipyretic[5], Expectorant, Anti inflammatory, Febrifuge, Carminative, Cardiotonic, Emenogogue.[6]	Cough, Asthma, Cardiac debility, Nasal discharge, Fever, Inflammatory fever, Gout and Paralysis.[6]
Nervalam (*croton tiglium*)	Euphorbiaceae	Bitter	Hot	Pungent	Purgative,[5] Anthelmentic, Digestive, Carminative, Vermifuge, Diaphoretic, Expectorant.[7]	Constipation, Abdominal disorder, Cough, Bronchitis, Fever, Leucoderma, Catarrh, Convulsion, Ascitis, Anarsaca and Dropsy.[7]
Inji (*Zingiber officinale*)	Zingiberaceae	Pungent	Hot	Pungent	Carminative, Stomachic, Digestive, Stimulant,[5] Laxative.[8]	Asthma, Cough, Inflammation, Cholera, Elephantiasis, Nausea and Vomiting.[8]

Phytochemical constituents of ingredients of SLNM

Phytochemical constituents of ingredients of SLNM mentioned in below Table III.

Table III: Phytochemical constituents of SLNM.

Ingredients	Phyto and Chemical Constituents
Naabi (*Aconitum napellus*)	Bikha aconitine, Chasmaconitine, Indaaconitine, Pseudoaconitine.[9] Aconitine, Aconine, Picroaconine.[10]
Nervaalam (*croton tiglium*)	Crotonoleic Acid, Tiglinic Acid, Crotonoside,[10] β sitosterol and Phorbol 12 tiglate 13 decanoate.[9]
Inji (*Zingiber officinale*)	Phellandrene, Gingerol[10], β – pinene, myrecene, limonene, β phellandrene and 1,8 cineole, gingediol, Zingiberonol, Zingiberene, Geraniol.[11]

4. PHARMACOLOGICAL REVIEW ON INGREDIENTS OF SATHI LINGA NAABI MATHIRAI

Cinnabar (Red Sulphide of Mercury)

Antioxidant Activity

The antioxidant activity of Red sulphide of Mercury is interact with Bovine Serum Albumin (BSA) with an association constant of 9.76 ±0.56 X 10^3 M and behaves as a protease inhibitor by inhibiting the proteolysis of BSA by trypsin. It shows the antioxidant Property.[12]

Free Radical Scavanging Activity

The Red sulphide of mercury was subjected to the screening of free radical scavenging activity in rat's liver homogenate with four parameters like lipid peroxidation (LPO), super oxide dismutase (SOD), catalase (CAT) and reduced glutathiosone (GSH). In lipid peroxidation assay maximum decrease in concentration of MDA There was no significant difference when control and test sample compared with standard drug, this shows that the action of standard and test samples were same in concentration of SOD and GSH and same in decrease of elevated GSH level with all the concentrations.[13]

Anxiolytic Activity

The effects of cinnabar on anxiety-like behaviors in mice were studied using the elevated plus maze test. Cinnabar at the oral dose of 50 and 100 mg/kg/d for 10 days significantly improved the performance in the elevated maze test This pharmacological effect is associated with the decreased in serotonin levels in mouse brain.[14]

Sedative and Hypnotic Activity

In mice given low dose of cinnabar (10 mg/kg/d) for 11 weeks of continuous administration, the locomotor activity was reduced and pentobarbital sleeping time was increased, suggesting sedative or hypnotic effects.[15]

Aconitum heterophyllum

Antiinflammatory

The antiinflammatory activity of ethanolic extract of *A. heterophyllum* is evaluated by the cotton‑pellet induced granuloma method. Their Results showed that *A. heterophyllum* tuber has significant anti-inflammatory Activity.[16]

The Antipyretic Activity

The antipyretic effects of roots of *A. heterophyllum* in the form of aqueous, chloroform and hexane extracts were examined by method of yeast induced pyrexia, with aspirin as a standard antipyretic agent for comparison. These studies showed that the extracts were nontoxic (up to 1.6 g/kg) and had no significant antipyretic activity.[17]

Anti microbial Activity

Antimicrobial activity of methanolic extract (50 mg/well) aerial parts of the *Aconitum heterophyllum* was evaluated against different bacterial and fungal strains. The result was Observed the extract which showed significant inhibition of the growth of Gram positive bacteria, such as *Staphylococcus aureus* and *Bacillus subtilis*. Antifungal activity was shown by two extracts against *Candida albicans* and *Aspergillus flavus*. Methanolic extract showed considerable antifungal activity while feeble antifungalactivity was obtained with ethyl acetate extract even at higher concentrations.[18]

Anthelminthic activity

The Anthelmintic activity of alcoholic and aqueous extracts of root of Aconitum heterophyllum were screened for in-vitro antihelmintic activity against Pheritema postuma; piperazine citrate was used as standard. The results of study shows that plant possess good anthelmintic potential particularly at dose of 100%.[19]

Antidiarrheal Activity

The antidiarrheal activity of ethanolic extract of A. heterophyllum(EAH) was evaluated using fecal excretion and castor oil induced diarrhea models. The results shows significant reduction in normal fecal output at 100 1nd 200 mg/kg p.o. The EAH at 100 mg/kg p.o show significant activity in small intestinal transit, fluid accumulation and PGE2 induced enteropooling models which also restored and altered biochemical parameters and prevented NA and K loss.[20]

Croton tiglium

Analgesic activity

Recent study prove that leaves of croton tiglium contains crotonine, pyragine is derivative of crotonine which is evaluated by the writhing test in Mice. The results shows the Significantly reduced writhing in mice.[21]

Antioxidant activity

Shahid M et al., 2012 showed highest specific activities of peroxidase (POD) in leaf extract and high concentration of Zn. Statistics data showed antioxidant and enzymatic activities were notably ($p< 0.05$) different between medicinal plant, leaf and seed extract.[22]

Anti-HIV activity

The Anti HIV activity of MeOH and water extracts of the seeds of croton *tiglium* significantly inhibited the infectivity and HIV-1-induced cytopathic effect (CPE) on MT-4 cell. *Croton tiglium* seeds contain anti-HIV-1 phorbolesters, 12-Oacetlyphorbol-13-decanoate and 12-O-decadienoylphorbol-13-(2-methylbutyrate) that inhibit the cytopathic effect of HIV-1 on MT-4 cells.[23]

Antitumor activity

They discussed isoguanosine which isolated from *tiglium*, showed antitumor activity against S-180associates mice. Results proved that isoguanosine inhibit the growth of S-180 and Ehrlich solid tumor in mice atoptimal dose of 96mg/kg/day ×12 and 48mg/kg/day×12 with a 1-T/C value of 65% and 60%. Researchers findthe effective result of *tiglium* on Nasopharyngeal carcinoma (NPC) led to induction of EBV in humanlymphoblastoid cell lines.[24]

Cytotoxic and Anti inflammatory Activity

The five Phorbol esters compound are isolated from the branches and leaves of *croton tiglium.* These compound showed potent cytotoxicity against the K562, A549, DU145, MCF-7, U937, HL 60, Hela and MOLT-4 Cell lines with IC50 values ranging from 1.0 to 43 µM. In addition these compound exhibited moderate COX-1 and COX-2 inhibition, with IC 50 values of 0.14 and 8.5 µM respectively.[25]

Zingiber officinale

Antipyretic Activity

The antipyretic activity of Soxhelt extract of *Z.officinale* in 80% ethanol reduced yeast induced fever in rats by 38%. When administrarted orally (100 mg/kg), This was Comparable to the Antipyretic effect of acetylsalicylic acid at the same dose.[26]

Analgesic Activity

The analgesic activity of the *Z. officinale* extract was evaluate by the acetic acid induced writhing test in Swiss albino mice. The rhizome extract (50 and 100 mg/kg body weight) significantly reduced the number of writhing induced by acetic acid in mice.[27]

Anti-inflammatory activity

The extract of *Z. officinale* showed the the anti-inflammatory activity by the carrageenan - induced rat paw oedema in Wistar strain albino rats. The rhizome extract (50 and 100 mg/kg body weight) significantly reduced the carrageenan – induced rat paw oedema in rats.[27]

Antioxidant Activity

The antioxidant effect of *Z. officinale* was reported by DPPH radical scavenging activity. The total phenolic content in the alcoholic extract of the dried rhizome of *Z. officinale* was 870.1 mg/g of dry extract. Extract exhibited 90.1% of DPPH radical scavenging activity with the IC50 concentration of 0.64 µg/ml.[28]

Antimicrobial activity

Antimicrobial activity of the different organic extracts (n-hexane, ethylacetate, ethanol and water) of *Z. officinale* rhizome was reported against *Colliform bacillus*, *Staphylococcus epidermidis* and *Streptococcus viridians*. The study showed that all the extracts except the water extract have antibacterial activity and that the inhibition of bacterial growth. Among all, ethanol extract showed maximum antimicrobial activity.[29]

Anthelmintic property of ginger

Aqueous extracts of rhizome of *Z. officinale* was investigated for their anthelmintic activity against the earthworm *Pheretima posthuma*. The result reveledthat the test extract (100mg/ml) possess significant anthelmintic activity.[30]

CONCLUSION

This Literature review is the evident of the Ingredients of SLNM have Pharmacological Activity such as Antimicrobal Activity, Anti Oxidant Activity, Anti inflammatory Activity, Anthelmentic Activity and Anti Pyretic Activity. Which are responsible for its therapeutic usage.

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