Review Article

Therapeutic Potential of the Siddha Formulation Gowrichindamani Chendooram and Karappan Thylam in the Management of Karappan (Eczema): A Drug Review

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ABSTRACT

Karappan is a chronic dermatological condition described in Siddha literature, comparable to eczema in modern medicine. It is characterized by itching, erythema, dryness, vesiculation, scaling, and recurrent inflammation. Conventional therapies provide symptomatic relief but may produce adverse effects with prolonged use. Siddha medicine adopts a holistic therapeutic approach using both internal and external formulations. Gowrichindamani Chenduram and Karappan Thylam are classical Siddha preparations indicated for chronic inflammatory skin disorders. This review aims to analyze classical references, pharmacological properties, and available scientific evidence supporting their role in the management of Karappan (Eczema).

Keywords: Eczema, Siddha medicine, Gowrichindamani Chenduram, Karappan, Skin inflammation.

INTRODUCTION

Eczema is an inflammatory dermatological condition characterized histologically by spongiosis, varying degrees of acanthosis, and superficial perivascular infiltration of lymphocytes and histiocytes. Clinically, it presents with itching, erythema, scaling, and grouped papulo-vesicular lesions. The disorder may arise due to a combination of internal and external factors, acting either individually or together.[1] Eczema represents one of the most common forms of dermatitis, with both genetic predisposition and environmental influences contributing to its pathogenesis. It is frequently observed in children, although adults can also be affected. Patients typically present with dry, pruritic skin that is susceptible to secondary infections.[2]

Eczema encompasses a heterogeneous group of disorders that share similar clinical and histopathological features but may differ significantly in their underlying etiology. The term "eczema" is derived from a Greek word meaning "to boil," reflecting the inflammatory nature of the condition.[3] It broadly includes recurrent or persistent skin eruptions characterized by erythema, edema, pruritus, and dryness, often accompanied by crusting, scaling, blistering, fissuring, oozing, or bleeding. Post-inflammatory discoloration may occur during healing, although permanent scarring is uncommon. Chronic cases are typically associated with dryness, skin thickening, hyperpigmentation, and lichenification.

Elevated levels of immunoglobulin E (IgE), particularly in response to environmental and food allergens, are commonly observed in individuals with atopic eczema, indicating an underlying immunological component.[4] The lifetime prevalence of eczema is estimated to range between 15–30% in children and 2–10% in adults, with a majority of cases developing within the first year of life.

In the Siddha system of medicine, eczema is correlated with the condition known as Karappan. Siddhar Yugi described Karappan as a dermatological disorder presenting with dryness, itching, inflammation, vesiculation, and lesion formation, closely resembling the clinical features of eczema. The etiology is attributed to factors such as dietary allergens, psychosomatic influences, and exposure to irritant substances. Siddha medicine offers a wide range of therapeutic formulations for managing eczema and its associated complications. Among these, Gowrichindamani Chenduram is a classical formulation widely used in clinical practice. The present review aims to provide scientific insight into the pharmacological actions of its constituent drugs in the management of Karappan (eczema).

MATERIALS AND METHODS

Data Collection

Relevant information for this study was obtained through an extensive literature search using multiple electronic databases, including Google Scholar, PubMed, Wiley, ScienceDirect, ACS Publications, SpringerLink, Semantic Scholar, and Embase. Keywords such as Karappan, eczema, Gowrichindamani Chenduram, Siddha medicine, and skin diseases were used to retrieve appropriate articles. Additional emphasis was given to terms related to pharmacological activity, ethnopharmacology, traditional medicine, and herbal therapeutics.

The literature considered for analysis primarily spanned the period from 2019 to 2025. Articles were selected based on their relevance to the formulation, therapeutic applications, and pharmacological properties of Gowrichindamani Chenduram and Karappan Thylam.

Eligible studies included clinical trials, experimental studies, and review articles with full-text availability.

Studies that were duplicated, methodologically weak, or not directly related to the topic were excluded. The selection process involved screening of titles and abstracts, followed by a detailed full-text evaluation. Only studies meeting predefined inclusion criteria were incorporated to ensure the reliability and scientific validity of the review.

Ingredients of the Medicine

Gowrichindamani Chenduram

The formulation consists of the following ingredients:

- Rasam – Hydrargyrum (Mercury)
- Gandhagam – Sulphur
- Vengaram – Sodium biborate (Borax) [5]

Table 1: Karappan Thylam Formulations

Siddha Name	Scientific Name
Rasa karpuram	Mercuric chloride
Elam	Elettaria cardamomum
Mayilthutham	Copper sulphate
Paal thutham	Zinc sulphate
Karpuram	Camphor
Rasam	Mercury
Karbogarisi	Psoralia corylifolia
Mirutharsingi	Lead sulphide
Kasthuri manjal	Curcuma aromatica
Neeradimuthu paruppu	Hydnocarpus pentandra
Kaatu seeragam	Vernonia antidysenterica
Thenkai paal	Cocos nucifera
Gandhagam	Sulphur[6]

Purification

The purification process was carried out according to classical Siddha procedures. Mercury (70 g) was initially triturated separately with brick powder and turmeric powder for one hour each, followed by thorough washing with clean water. The purified mercury was then heated in an earthen vessel, and 2.6 litres of Acalypha indica juice were gradually added until complete evaporation occurred. The processed mercury was subsequently removed, washed again, and preserved for further use.

Sulphur purification involved melting sulphur with butter in an iron ladle, followed by the addition of milk. This procedure was repeated multiple times to ensure proper purification. Borax was purified by heating until the complete removal of moisture content was achieved.

Indication

The formulation is indicated for the management of Karappan (eczema).

Administration

The medicine was administered at a dose of 200 mg twice daily after food. Thirikadugu chooranam (2 g) was used as an adjuvant, with honey as the vehicle. The duration of treatment was 40 days.[5]

LITERATURE REVIEW

The drug profiles of Gowrichindamani Chenduram and Karappan Thylam are presented in Tables 2 and 3, respectively.

PHARMACOLOGICAL STUDY

Pharmacological activities of selected ingredients, supported by available scientific evidence, are described below.

Rasam (Hydrargyrum – Mercury)

Anti-inflammatory activity:

Inflammation is a protective physiological response of living tissues to injury or harmful stimuli, aimed at removing the causative factors and initiating healing. Experimental studies have demonstrated that preparations such as *Mercurius solubilis* possess significant anti-inflammatory properties, which may help in reducing tissue damage and associated symptoms.[7]

Immunomodulatory activity:

Macrophages are key components of the immune system and act as the first line of defense against foreign substances. They release various mediators, including cytokines and reactive oxygen species, which influence immune responses and participate in inflammatory processes. Additionally, macrophages function as antigen-presenting cells, activating T and B lymphocytes. Research indicates that *Mercurius solubilis* can modulate macrophage function by enhancing the production of cytokines such as IL-4 and IFN-γ, along with mediators like nitric oxide and hydrogen peroxide. These effects suggest its role in regulating immune responses in chronic inflammatory conditions. [7]

Table 2: Drug Profile of Gowrichindamani Chenduram

S. No	Drug	Scientific Name	Taste	Potency	Division	Action
1	Rasam	Hydrargyrum (Mercury)	Sweet, sour, salty, bitter, pungent, astringent	Hot/Cold	Variable	Alters according to formulation
2	Gandhagam	Sulphur	Bitter, astringent	Hot	—	—
3	Vengaram	Sodium biborate (Borax)	Sweet, astringent	Hot	—	—

Table 3: Drug Profile of Karappan Thylam

S. No	Drug	Scientific Name	Taste	Potency	Division	Action
1	Rasa karpuram	Mercuric chloride	—	—	—	—
2	Elam	Elettaria cardamomum	Pungent	Hot	Pungent	Stomachic, carminative, stimulant
3	Mayilthutham	Copper sulphate	—	—	—	—
4	Paal thutham	Zinc sulphate	—	—	—	—
5	Karpuram	Camphor	—	—	—	—
6	Rasam	Mercury	—	—	—	—
7	Karbogarisi	Psoralia corylifolia	Pungent, sweet	Hot	Pungent	Alterative, laxative, digestive, stimulant
8	Mirutharsingi	Lead sulphide	—	—	—	—
9	Kasthuri manjal	Curcuma aromatica	Bitter	Hot	Pungent	Tonic, stimulant, carminative
10	Neeradimuthu paruppu	Hydnocarpus pentandra	Bitter	Hot	Pungent	Alterative, stimulant, detergent, parasiticide
11	Kaatu seeragam	Vernonia antidysenterica	Bitter	Hot	Pungent	Anthelmintic, antiperiodic, stomachic, diuretic
12	Thenkai paal	Cocos nucifera	Astringent	Cool	Pungent	Refrigerant, aperient, nutrient, diuretic, anthelmintic
13	Gandhagam	Sulphur	—	—	—	—

Gandhagam (Sulphur)

Anti-pruritic activity:

Sulphur has been widely used in dermatological practice due to its effectiveness in relieving itching and reducing skin lesions. Clinical studies have shown that sulphur-based formulations, particularly when used alongside standard therapies, result in improved lesion scores, decreased pruritus, and better overall patient outcomes in chronic eczema conditions.[8]

Immunomodulatory and antimicrobial activity:

Sulphur exhibits a wide range of biological activities, including antimicrobial and immunomodulatory effects. It exists in multiple oxidation states and forms various inorganic and organic compounds, contributing to its diverse therapeutic applications. In topical dermatological preparations, precipitated sulphur is considered more effective due to its enhanced absorption and clinical efficacy.[9]

Anti-inflammatory activity:

Sulphur compounds also play a role in regulating inflammatory processes. Hydrogen sulphide (H_2S), a biologically active molecule derived from sulphur, has been shown to influence cytokine signaling pathways and modulate immune responses. These properties contribute to its potential in reducing inflammation in various dermatological conditions.[10]

Vengaram (Borax) – Anti-inflammatory activity

Boron-based compounds have gained increasing attention due to their diverse therapeutic applications. Experimental studies have demonstrated that boron derivatives possess significant anti-inflammatory effects, particularly in models of induced systemic inflammation. These findings suggest that borax may contribute to reducing inflammatory responses in chronic skin conditions.[11]

Elam (Elettaria cardamomum) – Antioxidant and Anti-inflammatory activity

The essential oil extracted from *Elettaria cardamomum* has shown considerable immunomodulatory and anti-inflammatory effects in experimental studies. It has been observed to reduce pathogen load and improve survival outcomes in infected animal models. Additionally, it enhances antioxidant enzyme activity and regulates cytokine expression, thereby reducing oxidative stress and inflammation. These properties indicate its potential role in controlling inflammatory conditions and strengthening immune responses.[12]

Mayilthutham (Copper sulphate) – Antioxidant and Anti-inflammatory activity

Copper-associated compounds have been linked to antioxidant activity through the modulation of enzymatic defense systems. Compounds such as β-sitosterol enhance the activity of antioxidant enzymes like superoxide dismutase (SOD) and glutathione peroxidase (GPX), which play a key role in neutralizing reactive oxygen species. This mechanism contributes to the reduction of oxidative stress and associated inflammatory damage.[13]

Paal thutham (Zinc sulphate) – Immunomodulatory activity

Zinc plays a vital role in immune function and cellular repair. Studies have shown that zinc supplementation enhances both humoral and mucosal immune responses by activating

B cells and promoting antibody production. It also supports cytokine regulation and improves overall host defense mechanisms, making it beneficial in chronic inflammatory and immune-mediated conditions.[14]

Karpuram (Camphor) – Anti-inflammatory, Antioxidant, and Anti-allergic activity

Camphor, derived from *Cinnamomum camphora,* has demonstrated significant antioxidant and anti-inflammatory properties. Studies comparing different drying techniques have shown that shade-dried plant material retains higher bioactive content, resulting in improved antioxidant capacity, enhanced anti-inflammatory activity, and better essential oil yield. These findings indicate that naturally processed camphor can serve as an effective therapeutic agent in inflammatory conditions.[15]

In addition to its anti-inflammatory effects, camphor also exhibits anti-allergic activity. Experimental studies have reported that treatment with *Cinnamomum camphora* extracts significantly reduces serum immunoglobulin E (IgE) levels in dermatitis-induced animal models. Since elevated IgE levels are closely associated with allergic and atopic conditions, this reduction suggests that camphor may help in modulating allergic responses and alleviating skin inflammation.[16]

Psoralia corylifolia – Anti-allergic / Antihistaminic activity

Neobavaisoflavone (NBIF), a bioactive compound isolated from *Psoralia corylifolia*, has been reported to exhibit multiple pharmacological properties, including antifungal, antitumor, and osteogenic effects. Recent studies have also explored its role in allergic conditions by evaluating its effect on mast cell activation.

Experimental findings demonstrate that NBIF significantly reduces the release of inflammatory mediators such as leukotriene C_4, prostaglandin D_2, and various cytokines from IgE-stimulated mast cells. It also inhibits mast cell degranulation, which plays a key role in allergic reactions. Mechanistically, NBIF suppresses key intracellular signaling pathways, including mitogen-activated protein kinases (MAPK) and nuclear factor-κB (NF-κB), thereby reducing inflammatory responses.

In vivo studies further indicate that oral administration of NBIF decreases IgE-mediated systemic allergic reactions in a dose-dependent manner. These findings suggest that NBIF possesses significant anti-allergic potential and may be beneficial in the management of hypersensitivity and inflammatory conditions such as eczema.[17]

Kasthuri manjal (Curcuma aromatica) – Anti-inflammatory activity

Curcumin, the principal bioactive compound present in *Curcuma* species, exhibits strong anti-inflammatory, antioxidant, and therapeutic properties. It functions by modulating inflammatory mediators and reducing oxidative stress, thereby playing a key role in the management of inflammatory disorders. Traditionally, turmeric has been widely used in various medical systems for treating inflammation and related conditions.[18]

Thenkai paal (Cocos nucifera) – Anti-pruritic activity

Coconut-derived formulations have demonstrated significant anti-pruritic effects in experimental studies. Topical applications containing coconut oil have been shown to reduce itching frequency and improve skin condition in induced pruritus models. These formulations also exhibit good stability and tolerability, making them suitable for managing itching associated with dermatological conditions. [19]

Thenkai paal (Cocos nucifera) – Anti-inflammatory activity

Extracts of *Cocos nucifera* have been traditionally used for the treatment of inflammatory conditions. Experimental studies have shown that these extracts significantly reduce inflammatory responses in animal models by inhibiting mediators such as histamine, serotonin, and pro-inflammatory cytokines. These effects support their role in reducing tissue inflammation and promoting healing.

Thenkai paal (Cocos nucifera) – Antioxidant activity

Coconut extracts have demonstrated strong antioxidant potential in various in vitro studies. They effectively scavenge free radicals such as DPPH and nitric oxide and protect cells from oxidative damage. Among different varieties, certain coconut extracts exhibit superior antioxidant capacity, which may contribute to reducing oxidative stress and supporting tissue repair in chronic skin conditions.[20]

Toxicity study in Gowrichindamani Chenduram

A chronic toxicity study was conducted to evaluate the safety profile of Gowri Chinthamani Chenduram in Wistar albino rats following repeated oral administration for 90 days, along with a subsequent 30-day recovery period to identify any delayed toxic effects. The assessment included detailed evaluation of hematological, biochemical, and histopathological parameters, in addition to monitoring body weight, food and water intake, general behavior, and clinical signs.

The findings revealed no significant treatment-related alterations in physiological parameters, clinical observations, or organ histology during both the treatment and recovery phases. There were no signs of mortality or systemic toxicity associated with the formulation. Based on these results, the no-observed-adverse-effect level (NOAEL) for Gowri Chinthamani Chenduram was determined to be greater than 400 mg/kg/day when administered orally for a duration of 90 days, indicating a favorable safety profile.[21]

RESULTS AND DISCUSSION

Karappan, as described in Siddha literature, shows a close clinical resemblance to eczema in modern dermatology, as both conditions present with features such as chronicity, pruritus, erythema, vesiculation, scaling, and recurrent inflammation.

The present review suggests that the combined use of Gowrichindamani Chenduram (internal) and Karappan Thylam (external) provides a synergistic therapeutic effect by targeting multiple pathological mechanisms, including inflammation, immune dysregulation, microbial involvement, and impairment of the skin barrier.

Rasam (mercury), when processed through classical Siddha purification methods, differs significantly from its elemental form. These processes are believed to enhance bioavailability while minimizing toxicity, as supported by recent nanoparticle-based studies. Mercurial preparations such as *Mercurius solubilis* have demonstrated notable anti-inflammatory and immunomodulatory properties, particularly through macrophage activation, cytokine regulation (IL-4, IFN-γ), and nitric oxide-mediated pathways, which are relevant in chronic inflammatory skin disorders.

Gandhagam (sulphur) plays a vital role due to its anti-pruritic, antimicrobial, keratolytic, and immunomodulatory properties. These actions directly address key symptoms of eczema, including itching, scaling, and susceptibility to secondary infections.

Vengaram (borax) contributes additional anti-inflammatory effects by modulating inflammatory signaling pathways, as demonstrated in experimental studies.

The herbal constituents of Karappan Thylam, including *Psoralia corylifolia*, *Curcuma aromatica*, and *Cocos nucifera*, exhibit potent antioxidant, wound-healing, anti-allergic, and skin-repair properties. These actions are essential in managing chronic eczema and preventing recurrence.

Trace elements such as zinc and copper sulphates further support epithelial regeneration, immune modulation, and antimicrobial defense, thereby contributing to improved healing and reduced chronic diseases.

Topical application of Karappan Thylam enhances local drug absorption, reduces dryness, controls microbial growth, and promotes faster healing of lesions. This complements the systemic immunomodulatory effects of internal therapy.

Overall, the Siddha approach offers a holistic treatment strategy by addressing both internal causative factors, such as immune imbalance, and external manifestations, such as skin lesions. This integrated approach provides advantages over conventional therapies that mainly offer symptomatic relief.

CONCLUSION

The combined use of Gowrichindamani Chenduram and Karappan Thylam represents a rational and holistic Siddha therapeutic approach for the management of Karappan (Eczema). The formulation demonstrates multiple pharmacological activities, including anti-inflammatory, anti-pruritic, immunomodulatory, antioxidant, antimicrobial, and wound-healing effects, which align closely with the pathophysiology of eczema.

Traditional purification techniques play a crucial role in enhancing the safety and therapeutic efficacy of herbo-mineral preparations. Existing pharmacological and experimental evidence supports the classical indications of these formulations, thereby validating traditional Siddha practices through modern scientific understanding.

This review highlights the potential of Siddha medicine in integrative dermatological care, particularly in chronic, recurrent, and steroid-dependent cases of eczema. However, further well-designed clinical trials and toxicity studies are necessary to establish long-term safety, optimize dosage, and confirm therapeutic efficacy.

Overall, Gowrichindamani Chenduram and Karappan Thylam may serve as effective, safe, and cost-efficient alternatives in the management of chronic inflammatory skin disorders.

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