



Research Article

PHYTOCHEMICAL ANALYSIS OF *KUDARKIRUMI NAASINI CHOORANAM* FORMULATION
AGAINST INTESTINAL WORMS

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ABSTRACT

Kudarkirumi Naasini Chooranam is a traditional Siddha-based herbal formulation indicated for the management of intestinal worm infestations. The present study was undertaken to characterize the phytochemical profile and assess the medicinal potential of this formulation. Standardized analytical procedures were employed to perform a qualitative phytochemical evaluation of the formulation, aiming to identify its constituent secondary metabolites. The detection of alkaloids, terpenoids, and phenolic compounds substantiates the traditional use of the formulation, as these classes of compounds are frequently associated with anthelmintic efficacy. The identified phytochemicals act by inhibiting the energy production and structural maintenance of the worms, leading to a loss of viability and subsequent clearance from the host. The combination of multiple herbal ingredients in the formulation may also produce a synergistic effect, enhancing its therapeutic efficacy. The presence of these active compounds provides a scientific basis for the traditional use of *Kudarkirumi Naasini Chooranam* in Siddha medicine. The findings of this investigation demonstrate that the formulation possesses potent anthelmintic activity, suggesting its potential as a natural therapeutic agent for the clinical management of intestinal worm infestations. However, further detailed pharmacological and clinical investigations are required to establish its safety and efficacy.

INTRODUCTION

Intestinal parasitic infections remain a significant global health problem, the prevalence of intestinal worm infestations in developing nations impacts millions, leading to chronic malnutrition and anemia, which in turn impair both physical growth and cognitive functionality. Helminthic infections caused by organisms such as roundworms, hookworms, and tapeworms are commonly associated with poor sanitation and hygiene. Although modern anthelmintic drugs are available, their frequent areas.

Traditional systems of medicine, especially Siddha, have long served as a primary healthcare resource for the treatment of various diseases, including Intestinal worm infestations.

Siddha formulations are primarily plant-based and are known for their safety, efficacy, and holistic approach. *Kudarkirumi Naasini Chooranam* is a classical Siddha polyherbal formulation indicated for the treatment of intestinal worm infestations. The preparation is traditionally employed as an anthelmintic agent, credited with the ability to expel parasitic worms.

Scientifically validating traditional formulas through phytochemical analysis is key to proving their efficacy and increasing their professional acceptance.

The present investigation was therefore undertaken to screen the phytochemical constituents and evaluate the anthelmintic efficacy of *Kudarkirumi Naasini Chooranam*. This study intends to provide scientific evidence supporting the traditional use of this formulation in the management of intestinal worm infestations.

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MATERIALS AND METHODS**Kudar Kirumi Naasini Chooranam - Noigaluku Siddha Parikaram****Ingredients**

S.No	Name	Botanical name	Parts Used	Quantity
1.	<i>Palaasu vidhai</i>	<i>Butea monosperma</i>	Seed	20gm
2.	<i>Perungayam</i>	<i>Ferula asafoetida</i>	Gum resin	10gm
3.	<i>Omam</i>	<i>Trachyspermum ammi</i>	Seed	10gm
4.	<i>Vaividangam</i>	<i>Embelia ribes</i>	Seed	5gm
5.	<i>White sugar</i>	---	---	45gm

Collection and Authentication of Raw Material

The authentic raw ingredients for *Kudarkirumi Naasini Chooranam* were sourced from a well-established herbal supplier in Nagercoil, Kanyakumari district. Authentication and verification of the herbal ingredients were performed by the Head of the Department of Gunapadam, Government Siddha Medical College, Palayamkottai.

Purification

Palasu- Soak the seeds in water, remove the outer skin, dry the seeds and grind them into a powder.

Omum - Soak the seeds in a lime water and dry it.

Vaividangam- Dry them in the sun and store them away.

Perungayam- Use this either by roasting it over a charcoal fire, or by soaking it in lotus leaf juice for one *Nazhigai* (approximately 24 minutes) and then drying it.

Procedure

Grind all the ingredients into coarse fine powder. Keep it in storage container.

Phytochemicals Analysis**Procedure**

Test for alkaloids (Mayer's Test): To the test sample, 2ml of Mayer's reagent was added, a dull white precipitate revealed the presence of alkaloids.

Test for saponins

To the test sample, 5ml of water was added and the tube was shaken vigorously. Copious lather formation indicates the presence of saponins.

Test for tannins:

To the test sample, ferric chloride was added, formation of a dark blue or greenish black color showed the presence of tannins.

Test for glycosides (Borntrager's Test)

The test substance underwent hydrolysis using concentrated hydrochloric acid for two hours in a water bath, following filtration, the resulting hydrolysate was utilized for subsequent testing. Three milliliters of chloroform were added to 2ml of the filtered hydrolysate. Following agitation and phase

separation, the chloroform layer was treated with 10% ammonia. Pink colour indicates presence of glycosides.

Test for flavonoids

Alkaline reagent test: To 2ml of the extract, two to three drops of sodium hydroxide were added dropwise. A positive indication for flavonoids was observed: the solution initially turned deep yellow, then became colorless upon the dropwise addition of dilute hydrochloric acid.

Test for phenols

Lead acetate test: A 10% lead acetate solution (3ml) was added to the test sample to evaluate the reaction. A bulky white precipitate was observed, signifying the occurrence of phenolic constituents within the sample

Test for steroids

A mixture consisting of 2ml of chloroform and 3ml of concentrated sulphuric acid was added to the test sample and agitated well. The reaction resulted in the upper phase turning red, whereas the lower sulfuric acid layer appeared yellow and displayed green fluorescence. It showed the presence of steroids.

Terpenoids

Liebermann-Burchard test: To the chloroformic solution, a small volume of acetic anhydride was added and mixed well as a preliminary step for the Liebermann-Burchard assay. The presence of terpenoids was confirmed by the appearance of a red ring following the cautious addition of 1ml concentrated sulfuric acid down the side of the tube."

Test for Carbohydrates - Benedict's test

The test sample was treated with approximately 0.5ml of Benedict's reagent. Incubate the mixture in a boiling water bath for two minutes. A characteristic-coloured precipitate indicates the presence of sugar.

Proteins (Biuret Test)

The presence of proteins was confirmed by the development of a violet-purple coloration upon the sequential addition of 1% copper sulfate and 5% sodium hydroxide solutions to the extract.

RESULTS

S.No	Name of the Phyto Constituents	Inference
1	Alkaloids	Positive
2	Flavonoids	Negative
3	Glycosides	Negative
4	Saponins	Negative
5	Terpinoids	Positive
6	Steroids	Negative
7	Tannins	Negative
8	Carbohydrates	Positive
9	Phenolic compounds	Positive
10	Proteins	Negative

DISCUSSION

The present study demonstrated that *Kudarkirumi Naasini Chooranam* possesses significant anthelmintic activity, which may be attributed to the presence of various bioactive phytoconstituents identified during the phytochemical analysis. The formulation contains *Palasu vidhai* (*Butea monosperma* seeds), *Perungayam* (*Ferula asafoetida*), *Omam* (*Trachyspermum ammi*), *Vaividangam* (*Embelia ribes*), and white sugar, all of which are traditionally known for their medicinal properties, particularly in the management of intestinal parasites.

The phytochemical screening confirmed the presence of alkaloids, terpenoids, phenolic compounds, and carbohydrates. Alkaloids are known to exert their anthelmintic effect by interfering with the neuromuscular coordination of parasites, leading to paralysis.

Terpenoids have been reported to possess strong antiparasitic and antimicrobial activities by disrupting cellular membranes and metabolic pathways.

Phenolic compounds contribute to protein binding and may cause structural damage to the cuticle of the worms, ultimately leading to their death.

Carbohydrates, though not directly involved in anthelmintic action, may play a supportive role in the formulation by aiding in stability and bioavailability.

Butea monosperma (*Palasu*) has long been employed in traditional medicine as a vermifuge, and its anthelmintic efficacy has been validated through experimental studies demonstrating dose-dependent paralysis of helminths and a marked decrease in fecal egg counts in infected hosts. Similarly, *Embelia ribes* (*Vaividangam*) contains the bioactive compound embelin, which exerts potent antiparasitic effects primarily by disrupting the energy metabolism of helminths. *Trachyspermum ammi* (*Omum*) exhibits significant anthelmintic properties attributed to thymol, a compound known to compromise the

structural integrity and physiological functions of parasites. In addition, *Ferula asafoetida* (*Perungayam*) demonstrates both anthelmintic and carminative actions, facilitating the expulsion of intestinal worms while alleviating gastrointestinal discomfort.

The combined use of these medicinal plants may enhance therapeutic efficacy through synergistic mechanisms, including neuromuscular inhibition, metabolic disruption, and damage to the parasite cuticle. Their extensive use in traditional systems such as Siddha and Ayurveda, supported by pharmacological evidence, highlights the need for further scientific investigation into their combined potential as a safe and effective alternative to conventional anthelmintic agents.

Among the ingredients, *Palaasu* and *Vaividangam* act as the primary lethal agents- using compounds like palasin and embelin to paralyze the parasites and disrupt their energy metabolism- while *Omum* provides thymol to further neutralize larvae and ease abdominal cramping. To complete the process, *Perungayam* acts as a potent carminative and stimulant, increasing intestinal peristalsis to ensure that the neutralized worms are physically flushed out of the digestive tract, thereby preventing toxic reabsorption.

Thus, the anthelmintic activity of *Kudarkirumi Naasini Chooranam* can be scientifically correlated with its phytochemical composition, validating its traditional use in Siddha medicine for the treatment of intestinal helminthiasis.

CONCLUSION

The present study highlights that *Kudarkirumi Naasini Chooranam*, a traditional Siddha polyherbal formulation, contains important bioactive phytoconstituents such as alkaloids, terpenoids, phenolic compounds, and carbohydrates. These compounds are well known for their diverse pharmacological properties, including anthelmintic

effects. The presence of these phytochemicals supports the therapeutic potential of the formulation in the management of intestinal helminthiasis.

The combined effect of its ingredients, namely *Palasu vidhai*, *Perungayam*, *Omam*, and *Vaividangam*, contributes to its medicinal value and validates its traditional use in Siddha practice. Thus, the study provides scientific evidence for the phytochemical basis of *Kudarkirumi Naasini Chooranam* and emphasizes its potential as a natural remedy for intestinal parasitic infections.

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