



PHYTOCHEMICAL ANALYSIS OF MENISAMULA PARPAM: A SIDDHA HERBAL FORMULATION

Dr. Hariharasuthan V.^{*1}, Dr. Harini S.², Dr. S. Balamani³

^{1,2}PG Scholar (III Year), Department of Nanju Maruthuvam, Government Siddha Medical College, Palayamkottai.

³Associate Professor, Department of Nanju Maruthuvam, Government Siddha Medical College, Palayamkottai.



***Corresponding Author: Dr. Hariharasuthan V.**

PG Scholar (III Year), Department of Nanju Maruthuvam, Government Siddha Medical College, Palayamkottai..

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ABSTRACT

Background: Siddha medicine employs various herbal formulations for the management of respiratory disorders. *Menisamula Parpam*, a mono-herbal preparation derived from *Acalypha indica*, is traditionally indicated for conditions such as *Kasam* and *Swasam*. Scientific validation through phytochemical analysis is essential for its standardization and therapeutic justification. This paper qualitatively evaluated the phytochemical constituents, present in *Menisamula Parpam*. **Materials and Methods:** *Menisamula Parpam* was prepared using the whole plant of *Acalypha indica* following classical Siddha procedures, including calcination (*Pudam*). The prepared sample was subjected to qualitative phytochemical screening using standard pharmacognostical methods to detect major bioactive constituents such as alkaloids, flavonoids, glycosides, steroids, triterpenoids, phenols, tannins, saponins, and proteins. **Results:** The analysis revealed the presence of alkaloids, flavonoids, steroids, triterpenoids, phenols, and tannins, while glycosides, coumarins, saponins, and proteins were absent. These phytoconstituents are known to possess anti-inflammatory, antioxidant, antimicrobial, and bronchodilator activities. The presence of key bioactive compounds in *Menisamula Parpam* supports its traditional use in respiratory disorders. This study provides a scientific basis for its therapeutic potential and highlights the importance of phytochemical screening in the standardization of Siddha formulations. Further pharmacological and clinical studies are recommended to substantiate its efficacy and safety.

KEYWORDS: *Menisamula parpam*, phytochemical analysis, Siddha medicine, *Kasam*, *Swasam*.

INTRODUCTION

In the modern world, research on medicinal plants is highly valued. Medicinal plants are considered as nature's gift to mankind health.^[1] Phytochemicals are bioactive substances present in plants that support their metabolism and healing properties.^[2] Phytochemical screening is the process of identifying chemical components present in the plants. The presence of therapeutically advantageous phytochemical constituents that are in charge of a specific biological process are investigated in plant-based medicine. Some of them are alkaloids, saponins, tannins, glycosides, flavonoids, steroids, etc.^[3] Numerous phytochemicals were discovered with an array of biological actions such as anti-inflammatory, antioxidant, anticancer and antibacterial qualities along with anti-allergic activity by blocking the upregulation of H1R mRNA.^[4,5] They

directly interact with the receptors, cell membranes and nucleic acids which produces therapeutic mechanisms.^[6] As per PLIM recommendations for ASU pharmaceuticals, pharmacopeial parameters includes authentication quality and purity of the herbal medications.^[7] The first step in standardising the herbal medicine is phytochemical analysis. Complementary medicine is becoming more and more popular in the industrialized nations. The public is drawn to Siddha medicine because of its high therapeutic standards.^[8] It includes mono-herbal, polyherbal and herbo-mineral formulation. *Menisamula parpam* is a mono-herbal preparation with *Acalypha indica*, indicated for respiratory diseases.^[9]

MATERIALS AND METHODS**PREPARATION OF MENISAMULA PARPAM****Ingredient**

Acalypha indica (Kuppaimeni)

The whole plant (*Samulam*) was collected, cut into small pieces, and shade-dried. The dried material was then incinerated to obtain ash. The ash was placed in an earthen container (agal), covered with another agal, sealed using five layers of clay-smear cloth, and subjected to *gaja Pudam* for calcination. Again, this *parpam* is subjected to second plain *pudam*. It becomes reddish *parpam*.

Indications

Traditionally indicated for *Kasam* and *Swasam* (respiratory diseases, especially bronchial asthma).

Dosage

2–4 grains, administered twice daily with honey.

PHYTOCHEMICAL ANALYSIS

The analysis was carried out to identify the presence of major bioactive constituents in *Menisamula parpam*. It provides essential information regarding the chemical composition of the formulation and helps to understand its potential therapeutic properties. The analysis was carried out using standard qualitative methods based on colour reactions and precipitation tests. These tests are widely employed for the detection of different classes of phytoconstituents such as alkaloids, flavonoids, tannins, phenols, steroids, triterpenoids, glycosides, saponins and proteins. All the tests were carried out as per standard pharmacognostical procedures to ensure reliability and reproducibility of results.

Test for Alkaloids (Mayer's Test)

To the test sample, 2 mL of Mayer's reagent was added. The formation of a dull white precipitate indicated the presence of alkaloids.

Test for Flavonoids (Alkaline Reagent Test)

To 2 mL of extract, 2–3 drops of sodium hydroxide were added, producing a deep yellow colour, which turned colourless upon addition of dilute hydrochloric acid, confirming the presence of flavonoids.

Test for Glycosides (Borntrager's Test)

The test sample was hydrolysed with concentrated hydrochloric acid for 2 hours on a water bath and filtered. To 2 mL of filtrate, 3 mL of chloroform was added and shaken. The chloroform layer was separated, and 10% ammonia solution was added. A pink coloration indicated the presence of glycosides.

Test for Steroids

To the test sample, 2 mL of chloroform and a few drops of concentrated sulphuric acid were added. The

appearance of a red upper layer and yellow-green fluorescence in the acid layer indicated the presence of steroids.

Test for Triterpenoids (Liebermann–Burchard Test)

To the chloroform extract, a few drops of acetic anhydride were added followed by concentrated sulphuric acid along the side of the test tube. Formation of a reddish ring indicated the presence of triterpenoids.

Test for Coumarins

To the test sample, 1 mL of 10% sodium hydroxide solution was added. The appearance of yellow coloration indicated the presence of coumarins.

Test for Phenols (Lead Acetate Test)

To the test sample, 3 mL of 10% lead acetate solution was added. Formation of a bulky white precipitate indicated the presence of phenolic compounds.

Test for Tannins (Ferric Chloride Test)

To the test sample, a few drops of ferric chloride solution were added. Formation of dark blue or greenish-black coloration indicated the presence of tannins.

Test for Saponins (Foam Test)

To the test sample, 5 mL of distilled water was added and shaken vigorously. Persistent froth formation indicated the presence of saponins.

Test for Proteins (Biuret Test)

To the extract, 1% copper sulphate solution followed by 5% sodium hydroxide was added. Formation of violet or purple colour indicated the presence of proteins.

RESULT

The qualitative phytochemical analysis of *Menisamula Parpam* revealed the presence of alkaloids, flavonoids, steroids, triterpenoids, phenols, and tannins, while glycosides, coumarins, saponins, and proteins were absent. The presence of alkaloids and flavonoids suggests potential bronchodilatory, anti-inflammatory, and antioxidant activities, which may contribute to its effectiveness in managing respiratory disorders such as *Kasam* and *Swasam*. Phenolic compounds and tannins are known for their antimicrobial and free radical scavenging properties, further supporting the therapeutic value of the formulation. Steroids and triterpenoids may contribute to anti-inflammatory and immunomodulatory effects. The absence of certain phytoconstituents like saponins and glycosides may be attributed to the calcination (*Pudam*) process, which can alter or degrade heat-sensitive compounds. Overall, the observed phytochemical profile provides a scientific basis for the traditional use of *Menisamula Parpam* in respiratory ailments.

Table 1

S.NO	PHYTOCHEMICAL	OBSERVATION
1	Alkaloids	+
2	Flavonoids	+
3	Glycosides	-
4	Steroids	+
5	Triterpenoids	+
6	Coumarin	-
7	Phenol	+
8	Tannins	+
9	Saponins	-
10	Proteins	-

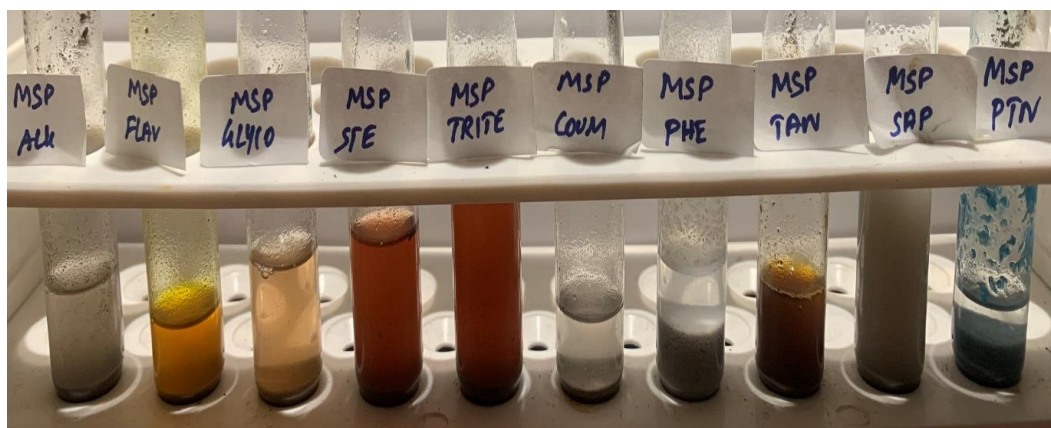


Image 1

DISCUSSION

Phytochemical analysis plays a crucial role in the preliminary standardization and validation of traditional herbal formulations. In the present study, *Menisamula parpam*, a mono-herbal Siddha formulation prepared from *Acalypha indica*, was subjected to qualitative phytochemical screening to identify its bioactive constituents. The results revealed the presence of alkaloids, flavonoids, steroids, triterpenoids, phenols, and tannins. These phytoconstituents are widely reported to possess significant pharmacological activities. Alkaloids possess anti-inflammatory, anti-oxidant, bronchodilators, antiasthma, anti-histaminic properties.^[10,11,12] Flavonoids have been demonstrated to have anti-inflammatory, antiallergenic and anti-oxidant activities. Steroids have expectorant action which is very useful in the management of upper respiratory tract inflammation. Tannins are reported to possess physiological astringent which ameliorate inflamed mucus membrane. Tannins contribute to the anti-microbial and anti-oxidant properties which prevents the secondary infections.^[13] Many respiratory syndromes can be treated effectively with phenolic supplements, including pulmonary fibrosis, asthma and lung cancer. Phenolic compound dampens the immune response that can worsen respiratory conditions like asthma.^[14] *Acalypha indica* exhibits potent anti-asthmatic activity and inhibits the infiltration of inflammatory cells and goblet cells into the lung. *Acalypha indica* protected guinea pigs from histamine induced bronchoconstriction. It possesses powerful antiallergic, antihistaminic, anti-

inflammatory, broncho-dilatory, and mast cell stabilizing activities. Hence, the phytochemicals present in *Acalypha indica* may prove to be an efficient therapeutic agent in asthma.^[15]

CONCLUSION

The present study demonstrates that *Menisamula Parpam*, a mono-herbal Siddha formulation prepared from *Acalypha indica*, contains important bioactive phytoconstituents such as alkaloids, flavonoids, steroids, triterpenoids, phenols, and tannins. These compounds are well known for their anti-inflammatory, antioxidant, antimicrobial, and bronchodilator properties, which support the traditional use of the formulation in the management of respiratory disorders such as *Kasam* and *Swasam*. Overall, the findings of this study provide a scientific basis for the therapeutic efficacy of *Menisamula Parpam* and highlight the importance of phytochemical screening in the standardization of Siddha formulations. However, further studies including quantitative phytochemical estimation, pharmacological evaluation, and clinical validation are recommended to substantiate its efficacy and ensure safety.

CONFLICT OF INTEREST: None.

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