

Phytochemical Evaluation and Therapeutic Potential of *Bavana Panjankula Thailam* in Siddha Medicine

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ABSTRACT

The Siddha system of medicine, one of the ancient traditional healing systems of India, employs numerous polyherbal and herbo-mineral formulations for the management of various pathological conditions. *Bavana Panjankula Thailam* (BPT) is a classical Siddha oil preparation indicated for conditions associated with derangement of *Saptha Thathukkal*, including Kaanasuram, Karpasoodu, burning sensation during urination (*Neerthuvarathil Yerichal*), increased internal heat (*Ushnam*), dryness of the body (*Sarira Ularal*), and Malavirtha Vatham.

The present study aimed to evaluate the qualitative phytochemical profile of BPT prepared using ingredients such as *Amanakku Vithai* (*Ricinus communis*), *Sevvilaneer* (*Cocos nucifera*), and *Sotru Katrazhai* (*Aloe barbadensis*). Standard phytochemical screening was carried out following the PLIM protocol for ASU formulations.

The results revealed the presence of bioactive constituents including alkaloids, flavonoids,

glycosides, steroids, and triterpenoids, whereas coumarins, phenols, tannins, saponins, proteins, sugars, anthocyanins, and betacyanins were absent.

These findings suggest that BPT possesses significant pharmacological potential, supporting its traditional use in managing heat-related and Vatha-predominant disorders. Further pharmacological and clinical studies are warranted to validate its efficacy and safety.

Keywords: Siddha medicine, *Bavana Panjankula Thailam*, phytochemical analysis, *Saptha Thathukkal*, Vatha disorders

INTRODUCTION

The Siddha system of medicine is one of the oldest traditional medical systems originating in the southern part of India and is renowned for its holistic and systematic approach to disease management. It emphasizes the balance of the three fundamental humors—*Vatham*, *Pitham*, and *Kabam*—along with the integrity of the *Saptha Thathukkal* (seven body constituents)

for maintaining health. Siddha therapeutics extensively utilizes natural resources, including plant, animal, and mineral-based formulations, to manage a wide spectrum of acute and chronic diseases.

Medicated oil preparations (*Thailam*) constitute an important dosage form in Siddha medicine, particularly in the management of disorders associated with Vatha derangement and altered thermal balance. *Bavana Panjankula Thailam* (BPT) is a classical formulation indicated in conditions such as *Saptha Thathukkal Patriya Vethuppu*, *Kaanasuram*, *Karpasoodu*, burning micturition, increased internal heat (*Ushnam*), dryness of the body (*Sarira Ularal*), and *Malavirtha Vatham*.

The formulation comprises key herbal ingredients such as *Ricinus communis*, *Cocos nucifera*, and *Aloe barbadensis*, which are traditionally known for their cooling, anti-inflammatory, detoxifying, and Vatha-pacifying properties. These ingredients are believed to act synergistically to restore humoral balance.

Despite its widespread clinical use, there is limited scientific evidence regarding its phytochemical composition and pharmacological basis. Phytochemical evaluation plays a crucial role in identifying bioactive constituents and establishing a scientific rationale for traditional formulations. Secondary metabolites such as alkaloids, flavonoids, glycosides, steroids, and triterpenoids exhibit diverse pharmacological activities, including antioxidant, anti-inflammatory, antimicrobial, and tissue-protective effects. Therefore, the present study aimed to investigate the qualitative phytochemical profile of *Bavana Panjankula Thailam* to substantiate its traditional claims and provide a scientific basis for its therapeutic application.

MATERIALS AND METHODS

BAVANA PANJANKULA THAILAM

“*Bavana Panjankula Thailam* was selected from the classical Siddha text **Theraiyar**

Thaila Varga Surukkam (4th ed., 2006; p. 132).”



INGREDIENTS

- Amanakku vithai (*Ricinus communis*)
- Sevilaneer (*Cocos nucifera*)
- Sottru katralai (*Aloe barbadensis*)

DOSAGE: Early morning: ¼ palam (10 ml),
Night: 1/8 palam (5 ml)

ADJUVANT: Lukewarm water

INDICATION: *Saptha thaathukal patriya vethuppu*, *Kaanasuram*, *Karpasoodu*, *Neerthuvarathil undakira yerichal*, *Iymporikalin ushnam*, *sarira ularal*, *malavirtha vatham*, *parpala marunthukalil yeriya vegum*.

SAMPLE PREPARATION:

The formulation was prepared in accordance with classical Siddha guidelines. The prepared medicated oil was filtered using a muslin cloth to remove any particulate impurities and ensure clarity.

For phytochemical analysis, a measured quantity of the oil sample was subjected to solvent extraction. The oil was mixed with ethanol and kept for maceration for 48 hours at room temperature with intermittent shaking to facilitate the extraction of bioactive constituents. The mixture was then filtered, and the ethanolic extract obtained was concentrated and used for qualitative phytochemical screening.

All reagents used in the study were of analytical grade.

PHYTOCHEMICAL ANALYSIS METHOD OF ANALYSIS: PLIM- Protocol – ASU Formulation

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 coumarins:

To the test sample, 1 ml of 10% sodium hydroxide was added. The presence of coumarins is indicated by the formation of yellow colour.

Test for saponins:

To the test sample, 5 ml 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

Test drug is hydrolysed with concentrated hydrochloric acid for 2 hours on a water bath, filtered and the hydrolysate is subjected to the following tests. To 2 ml of filtered hydrolysate, 3 ml of chloroform is added and shaken, chloroform layer is separated and 10% ammonia solution is added to it. Pink colour indicates presence of glycosides.

Test for flavonoids:

Alkaline reagent test. Two to three drops of sodium hydroxide were added to 2 mL of extract. Initially, a deep yellow colour appeared but it gradually became colourless by adding few drops of dilute HCL, indicating that flavonoids were present.

Test for phenols:

Lead acetate test: To the test sample; 3 ml of 10% lead acetate solution was added. A bulky white precipitate indicated the presence of phenolic compounds.

Test for steroids:

To the test sample, 2ml of chloroform was added with few drops of conc. Sulphuric acid (3ml), and shaken well. The upper layer in the test tube was turned into red and sulphuric acid layer showed yellow with green fluorescence. It showed the presence of steroids.

Triterpenoids

Liebermann–Burchard test: To the chloroform solution, few drops of acetic anhydride was added then mixed well. 1 ml concentrated sulphuric acid was added from the sides of the test tube; appearance of red ring indicates the presence of triterpenoids.

Test for Cyanins

Anthocyanin:

To the test sample, 1 ml of 2N sodium hydroxide was added and heated for 5 min at 100°C. Formation of bluish green colour indicates the presence of anthocyanin.

Test for Carbohydrates - Benedict's test

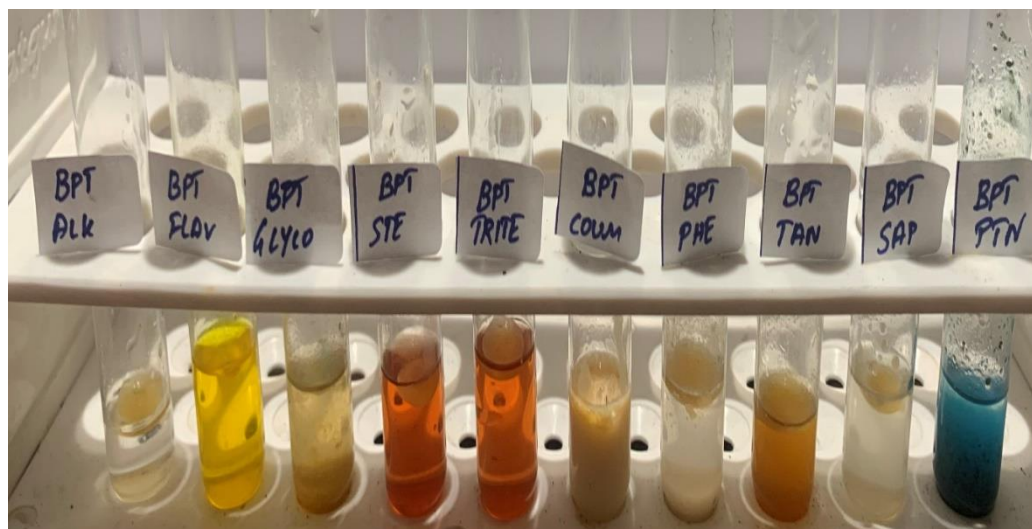
To the test sample about 0.5 ml of Benedict's reagent is added. The mixture is heated on a boiling water bath for 2 minutes. A characteristic-coloured precipitate indicates the presence of sugar.

Proteins (Biuret Test)

To extracts 1% solution of copper sulphate was added followed by 5% solution of sodium hydroxide, formation of violet purple colour indicates the presence of proteins.

RESULTS

QUALITATIVE PHYTOCHEMICAL INVESTIGATION



PHYTOCHEMICAL ANALYTICAL REPORT

S.NO	TEST	OBSERVATION
1	ALKALOIDS	+
2	FLAVONOIDS	+
3	GLYCOSIDES	+
4	STEROIDS	+
5	TRITERPENOIDS	+
6	COUMARINS	-
7	PHENOLS	-
8	TANNINS	-
9	SAPONINS	-
10	PROTEIN	-
11	SUGAR	-
12	ANTHOCYANIN	-
13	BETACYANIN	-

(+) -> Indicates Positive and (-) -> Indicates Negative

The phytochemical screening of *Bavana Panjankula Thailam* revealed the presence and absence of various bioactive constituents. The results indicate positive (+) reactions for alkaloids, flavonoids, glycosides, steroids, and triterpenoids, confirming their presence in the formulation. All other tested constituents, including coumarins, phenols, tannins, saponins, proteins, sugars, anthocyanins, and betacyanins, showed negative (-) results, indicating their absence.

DISCUSSION

The present study provides a qualitative phytochemical evaluation of *Bavana Panjankula Thailam*, revealing the presence of key secondary metabolites such as

alkaloids, flavonoids, glycosides, steroids, and triterpenoids.

These compounds are known for their pharmacological activities. Alkaloids may contribute to analgesic and anti-inflammatory effects, while flavonoids provide antioxidant protection against oxidative stress associated with increased internal heat (Ushnam). Glycosides may enhance antimicrobial activity, and steroids and triterpenoids are associated with anti-inflammatory and immunomodulatory effects.

The absence of phenols and tannins may be attributed to the oil-based extraction process, which preferentially isolates lipophilic constituents while limiting the extraction of polar compounds. The absence of saponins, proteins, and sugars may also enhance the stability of the formulation.

The observed phytochemical profile reflects the synergistic action of *Ricinus communis*, *Cocos nucifera*, and *Aloe barbadensis*, which are traditionally recognized for their cooling and Vatha-pacifying properties.

Overall, the findings support the traditional use of *Bavana Panjankula Thailam* in managing heat-related and Vatha disorders. However, further quantitative, pharmacological, and clinical studies are necessary.

CONCLUSION

The present study establishes the qualitative phytochemical profile of *Bavana Panjankula Thailam*, demonstrating the presence of key bioactive constituents, including alkaloids, flavonoids, glycosides, steroids, and triterpenoids. These findings provide a scientific basis for its traditional application in Siddha medicine, particularly in the management of heat-related and Vatha-predominant disorders. The absence of certain phytoconstituents further defines its selective phytochemical composition and may contribute to its formulation-specific therapeutic properties. However, the current findings are limited to preliminary qualitative analysis; therefore, advanced investigations encompassing quantitative phytochemical characterization, pharmacological validation, and well-designed clinical studies are warranted to

comprehensively establish its efficacy, safety, and mechanism of action.

Declaration by Authors

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