



QUALITATIVE PHYTOCHEMICAL ANALYSIS OF SWASA URUNDAI

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ABSTRACT

Swasa Urundai is a classical Siddha formulation traditionally prescribed for respiratory disorders such as *Swasa kaasam* (Bronchial asthma). The present study aims to identify the major classes of phytoconstituents present in *Swasa Urundai* through qualitative phytochemical screening. The investigation revealed the presence of several bioactive compounds including alkaloids, flavonoids, saponins, tannins, phenols, triterpenoids, carbohydrates, which may contribute to the therapeutic efficacy of the formulation.

KEYWORDS: *Swasa Urundai*, Siddha medicine, Phytochemical, Bronchial asthma, Secondary metabolites.

1. INTRODUCTION

The Siddha system of medicine emphasizes the use of siddha formulations for managing chronic respiratory ailments. *Swasa Urundai* is the siddha formulation indicated for *Swasa kaasam* (bronchial asthma) and other obstructive pulmonary disorders. Phytochemical analysis plays a crucial role in validating traditional medicines by identifying active chemical constituents that possess pharmacological significance. The present study focuses on the qualitative analysis of secondary metabolites in *Swasa Urundai* to correlate its traditional claims with its biochemical composition.

2. AIM AND OBJECTIVE

To qualitatively evaluate the phytochemical constituents present in *Swasa Urundai*.

3. MATERIALS AND METHODS

3.1 Sample Preparation

Test for Alkaloids (Mayer's Test)

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

Test for Coumarins

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

Test for Saponins

To the test sample, 5 mL of water was added and shaken vigorously. The formation of stable froth confirmed the presence of saponins.

Test for Tannins

To the test sample, ferric chloride solution was added. The appearance of a dark blue or greenish-black colour showed the presence of tannins.

Test for Glycosides (Borntrager's Test)

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

Test for Flavonoids (Alkaline Reagent Test)

To 2 mL of extract, 2–3 drops of sodium hydroxide solution were added. A deep yellow colour appeared, which turned colourless upon adding a few drops of dilute hydrochloric acid, indicating the presence of flavonoids.

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 confirmed the presence of phenolic compounds.

Test for Steroids

To the test sample, 2 mL of chloroform and a few drops of concentrated sulphuric acid (3 mL) were added and shaken well. The upper layer turned red, while the sulphuric acid layer appeared yellow with green fluorescence, confirming the presence of steroids.

Test for Triterpenoids (Liebermann–Burchard Test)

To the chloroform solution, a few drops of acetic anhydride were added and mixed well. Then, 1 mL of

concentrated sulphuric acid was added along the sides of the test tube. The appearance of a red ring indicated the presence of triterpenoids.

Test for Anthocyanins

To the test sample, 1 mL of 2N sodium hydroxide was added and heated at 100°C for 5 minutes. Formation of a bluish-green colour showed the presence of anthocyanins.

Test for Carbohydrates (Benedict's Test)

To the test sample, 0.5 mL of Benedict's reagent was added. The mixture was heated in a boiling water bath for 2 minutes. Formation of a characteristic coloured precipitate indicated the presence of sugars.

Test for Proteins (Biuret Test)

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

4. RESULTS

Figure no. 1: Tests for identifying phytoconstituents.

Table 1: Tests for identifying phytoconstituents.

S.No	Bioactive compounds	Interference
1.	Proteins	–
2.	Anthocyanin	–
3.	Phenols	+
4.	Flavonoids	+
5.	Saponins	+
6.	Glycosides	–
7.	Steroids	–
8.	Terpenoids	+
9.	Alkaloids	+
10.	Tanin	+
11.	Sugar	+
12.	Coumarin	–
13.	Betacyanin	–

The qualitative phytochemical analysis of *Swasa Urundai* confirmed the presence of multiple bioactive groups such as alkaloids, flavonoids, tannins, triterpenoids, steroids, and saponins. These compounds are known for their bronchodilator, anti-inflammatory,

antioxidant, and immunomodulatory properties, supporting the traditional indication of *Swasa Urundai* in the management of respiratory diseases.

5. DISCUSSION

The presence of alkaloids and flavonoids suggests potential bronchodilatory and antihistaminic effects, which may alleviate airway obstruction in asthma. Tannins and phenolic compounds contribute to antioxidant activity, reducing oxidative stress in bronchial tissues. Saponins facilitate mucolytic and expectorant actions, improving airway clearance. Steroids and terpenoids exhibit anti-inflammatory properties that may modulate immune response and reduce bronchial inflammation. Thus, the phytochemical profile of *Swasa Urundai* justifies its traditional therapeutic use in *Swasa kaasam*.

6. CONCLUSION

The qualitative phytochemical evaluation of *Swasa Urundai* demonstrates a diverse presence of pharmacologically active constituents. These findings

provide preliminary evidence supporting the formulation's efficacy in respiratory disorders and warrant further quantitative and pharmacological investigations to elucidate its mechanism of action.

7. REFERENCE

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