

RESEARCH ARTICLE

Phytochemical and Physicochemical Standardization of a Siddha Formulation Seenthil Chooranam

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ABSTRACT:

The aim of the present study is to investigate the phytochemical and physicochemical investigation of a traditional classical Siddha formulation known as Seenthil chooranam (SC). Preliminary phytochemical analysis, HPTLC analysis and physicochemical parameters such as ash values, extractive values and loss on drying were determined as per standard protocols. The SC upon successive extraction with petroleum ether, chloroform, ethyl acetate and ethanol gave a yield of 0.05, 0.33, 1.50 and 1.90% w/w respectively. Phytochemical analysis of different extracts gave positive test for alkaloids, steroids, terpenoids, flavonoids, tannins, carbohydrates, glycosides, and proteins. HPTLC finger print analysis of the extracts showed the presence of possible number of components. Physicochemical parameters such as total ash, water soluble ash and acid insoluble ash values were found to be 2.98, 1.62 and 1.04% w/w, respectively; extractive value were found to be alcohol soluble 10.20 % w/w, water soluble- 10.24% w/w and moisture content- 0.105% w/w. The present study provides phytochemical and physicochemical details of SC which are useful in laying down standardization and pharmacopoeia parameters.

KEYWORDS: *Seenthil chooranam*, Siddha formulation, Standardization, HPTLC.

INTRODUCTION:

World Health Organization (WHO) and National Center for Complementary and Alternative Medicine (NCCAM) accentuates the need to ensure quality and safety of herbal medicine by modern techniques and applying suitable standards and has proposed guidelines for development of standard herbal medicine 1. Quality assessment of herbal formulations is of paramount importance in order to justify their acceptability in modern system of medicine 2. The majority of CAM (complementary and alternative medicine) therapy like Siddha medicine has not been rigorously tested in the way conventional western medicines have been. So in order to take the Siddha system of medicine in to the global lime light, we have come with one of the best traditional classical Siddha formulation known as *Seenthil chooranam* (Agathiyar vaidhya Kaviyam 1500), consisting of *Widelia chinensis*, *Tinospora cordifolia* and *Poonagam*.

Its traditional uses in folk medicine are multiple, and some of its therapeutic effects includes antiasthmatic, antidiabetic, antirheumatic, anti-inflammatory, antipyretic and antiallergic. In the present study, we have elucidated the phytochemical and physio-chemical, profile of SC using standard and modern techniques

MATERIALS AND METHODS:

Material:

The *Seenthil chooranam* (SC) selected for the proposed study was procured from Indian Medical Practitioners Co-operative Pharmacy and Stores Ltd., Chennai. (IMCOPS)

Extraction:

The SC was extracted successively with petroleum ether, chloroform, ethyl acetate and ethanol by cold maceration method. The extracts were concentrated under reduced pressure at room temperature.

Preliminary Phytochemical Analysis:

The petroleum ether, chloroform, ethyl acetate and ethanol extracts were dried and weighed. The extracts were subjected to chemical analyses to detect the presence of different phytoconstituents 3.

High performance thin layer chromatography:

Chromatograph was performed on 10x10 cm aluminum packed TLC plate coated with 0.2 mm layer of silica gel 60F 254 (E. Merck Ltd, Darmstadt, Germany) stored in a desiccator, application was done by Hamilton microsyringe (Switzerland), mounted on a Linomat V applicator. Spotting was done on the TLC plate, ascending development of the plate, migration distance 80 mm (distance to the lower edge was 10 mm) was performed at 25±20 °C in a camag chamber previously saturated for 30 min. After development the plate was dried at 60 °C in an oven for 5 minutes. Densitometric scanning was then performed with a Camag TLC Scanner 3 equipped with win CATS Software and the chromatograms were recorded 4

Physico-chemical examination:

Physicochemical parameters of powdered sample such as total ash, water-soluble ash and acid-insoluble ash values, and petroleum ether, chloroform, ethyl acetate and alcohol soluble extractive values were determined as per standard protocols 5.

RESULTS AND DISCUSSION:

Extraction:

The SC upon successive extraction with pet. ether,

Chloroform, ethyl acetate and ethanol gave a yield of 0.05, 0.33, 1.50 and 1.90% w/w respectively.

The petroleum ether extract showed the presence of steroids, chloroform extract showed the presence of steroid, terpenoid and flavonoid, ethyl acetate extract showed the presence of terpenoid, glycoside, phenol, tannin and flavonoid and ethanol extract showed the presence of carbohydrate, alkaloid, flavonoid, glycoside, saponin and tannin respectively.

High performance thin layer chromatography:

The petroleum ether, chloroform, ethyl acetate and ethanol extracts were further subjected to HPTLC for the conformation of the active constituents. The petroleum ether extract showed 7 resolutions of spot in the mobile phase petroleum ether: benzene (1:9) and corresponding ascending order of Rf values start from 0.11 to 0.85 and chloroform extract showed 10 resolutions of spot and corresponding ascending order of Rf values start from 0.10 to 0.87 with the solvent system toluene: ethyl acetate: formic acid: water (5:4:1:0.5). The ethyl acetate extract showed 9 resolutions of spot and corresponding ascending order of Rf values start from 0.09 to 0.74 and ethanol extract showed 7 resolutions of spot and corresponding ascending order of Rf values start from 0.11 to 0.83 with the solvent system toluene: ethyl acetate: formic acid: water (5:4:1:0.5). The chromatogram and Rf values were correspondingly depicted in Fig. 1-4. Thus the developed chromatogram will serve the better tool for standardization of the formulation.

Preliminary Phytochemical Screening:

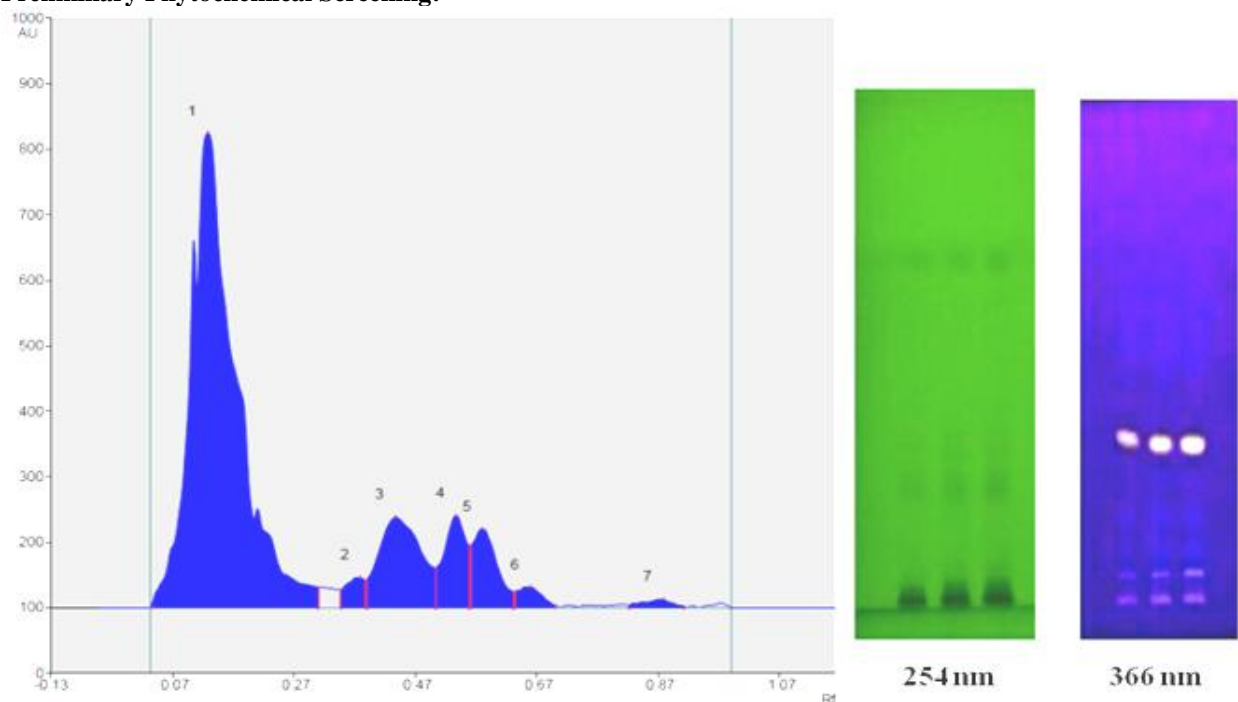


Figure 1: HPTLC chromatogram and finger print of Pet. Ether extract of SC

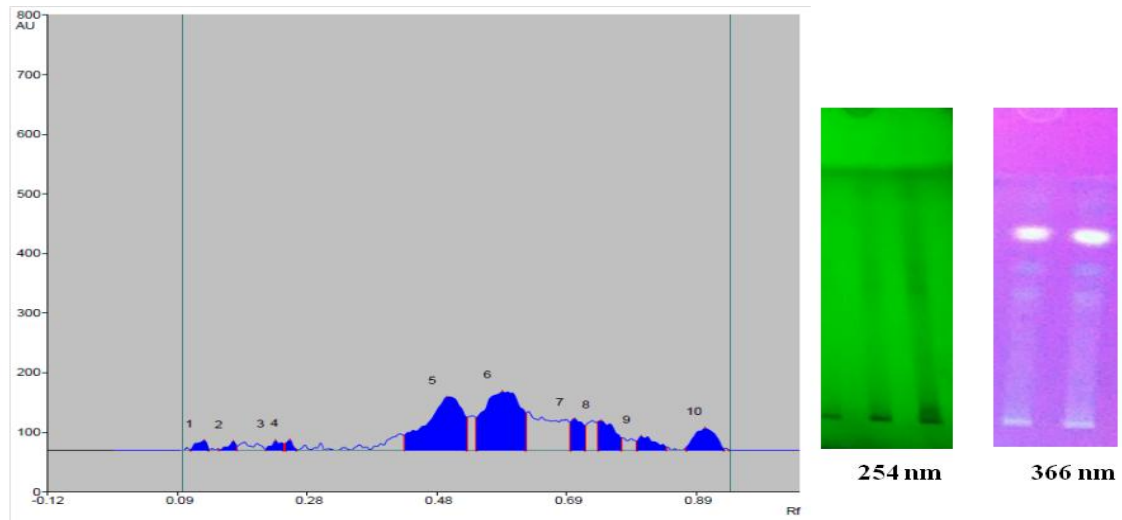


Figure 2: HPTLC chromatogram and finger print of Chloroform extract of SC

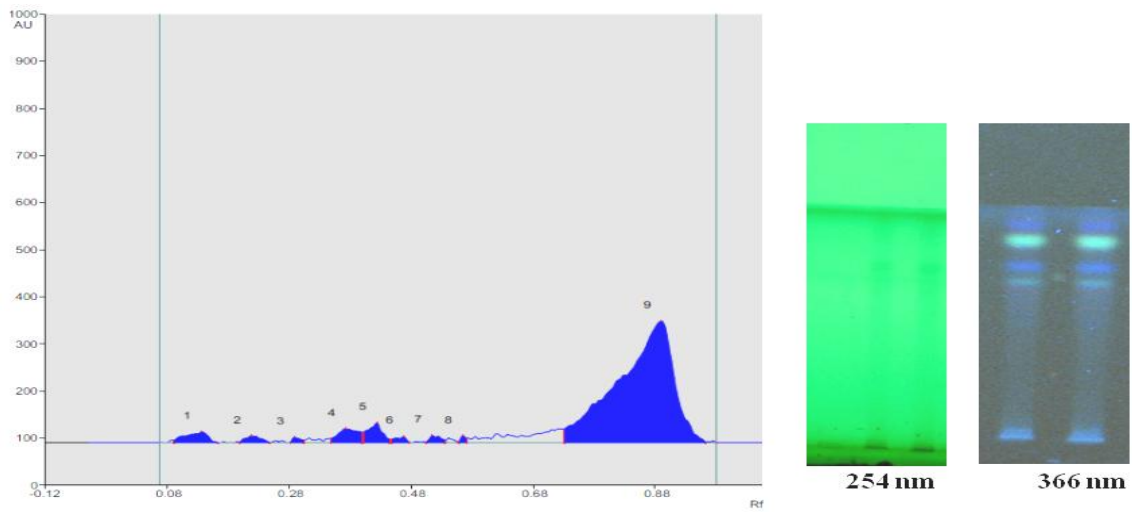


Figure 3: HPTLC chromatogram and finger print of Ethyl acetate extract of SC

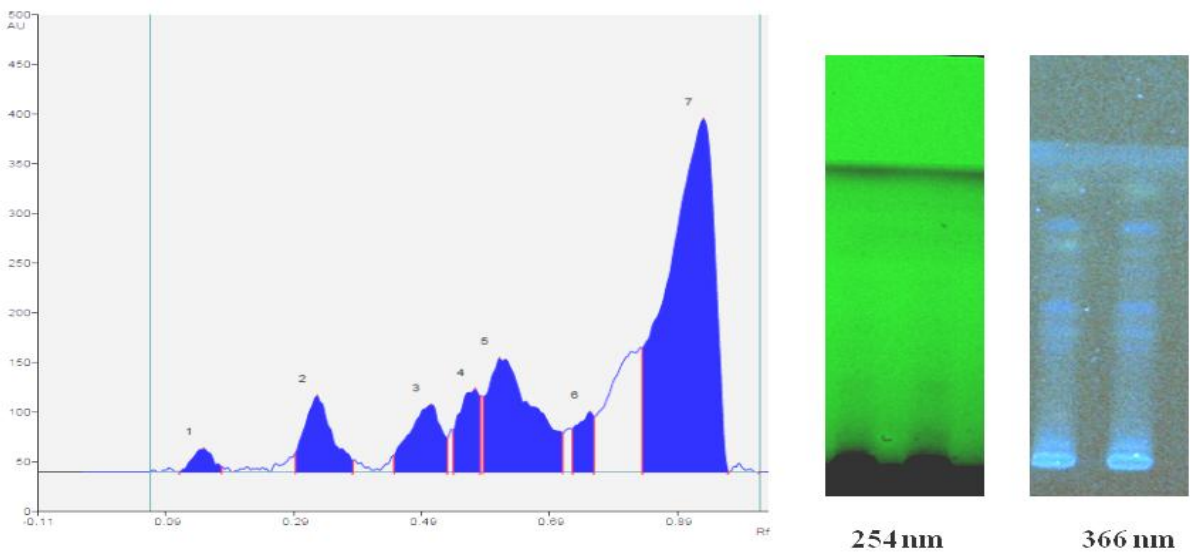


Figure 4: HPTLC chromatogram and finger print of Ethanol extract of SC

Physicochemical characterization:

The physico chemical constants are important parameters for detecting adulteration or improper handling of drugs. Various physicochemical parameters viz ash, extractive values and loss on drying were determined. The results were summarized in Table 1. These data's were helpful for identifying and ascertaining the quality of the collected crude drug.

Table 1: Physico chemical analysis of SC

S. No	Parameters	Values (%w/w)
1.	Ash Values	
	Total ash	2.98
	Water soluble ash	1.62
2.	Extractive Values	
	Alcohol soluble extractive value	10.20
	Water soluble extractive value	10.24
3.	Moisture content	0.105

CONCLUSION:

In the present investigations, the phytochemical and physicochemical characteristics of SC were studied. The therapeutic effect of Siddha medicine depends on quality of plant materials and appropriate protocols for development of herbal formulations. Therefore, the necessity of standardization of various herbal formulations will pave way to explore the therapeutic effects as claimed in Siddha literature and thereby improving the scientific credibility of Siddha medicine. Various parameters established in the present study will help in controlling the standards and quality of the raw material of SC.

CONFLICT OF INTEREST:

Conflict of interest declared none.

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