FINGER PRINT ANALYSIS OF ETHANOLIC EXTRACT OF 
AMORPHOPHALLUS CAMPANULATUS DECNE TUBER.

Seema Firdouse\textsuperscript{1*}, Dr. Jyoti Gupta\textsuperscript{2} and Parwez Alam\textsuperscript{3}

\textsuperscript{1}Research Scholar, School of Pharmacy and Medical Sciences, Singhania University, Pacheri Bari, Jhunjhunu- 333515 Rajasthan, India.
\textsuperscript{2}Dean, School of Pharmaceutical Sciences, MVN University, Palwal-121105, Haryana, India.
\textsuperscript{3}Research Scholar, School of Pharmacy and Medical Sciences, Singhania University, Pacheri Bari, Jhunjhunu- 333515 Rajasthan, India.

ABSTRACT

A selective HPTLC analytical method has been developed for the finger printing of Amorphophallus campanulatus tuber. Initially dried powder of Amorphophallus campanulatus tuber was extracted with ethanol, and a new solvent system has been developed for the best separation of phytoconstituents present in the extract. The solvent system selected for HPTLC was Ethanol: Ethyl Acetate: Glacial Acetic Acid (7:3:0.1) v/v, stationary phase was precoated silica gel aluminium plate 60 F\textsubscript{254} (5 cm \times 10 cm) with 250 \mu m thickness. The separated bands on the HPTLC plates were scanned over the wavelength of 200 - 400 nm.

KEYWORDS: Amorphophallus campanulatus, Ethanolic extract, HPTLC.

INTRODUCTION

Amorphophallus campanulatus or Amorphophallus paeoniifolius is also known as Elephant foot yam, Amorphophallus is a perennial, terrestrial underground hemispherical depressed dark brown corm of approximately 20-25 cm in diameter which bears flowers and fruits in the month of April – May.\textsuperscript{[1,2]} It is an important tuber crop of tropical and sub-tropical countries because of its yield potential and culinary properties.\textsuperscript{[3]} Elephant foot yam is widely grown and consumed in south eastern countries like India, Philippines, Malaysia, Indonesia. In India, it is cultivated in Andhra Pradesh, West Bengal, Gujarat, Kerala, Tamil Nadu,
Maharashtra, Uttar Pradesh, and Jharkhand.\textsuperscript{[4,5]} Amorphophallus is a good source of energy, sugar, starch, proteins as well as minerals.\textsuperscript{[6]} The tuberous roots of the plant posses blood purifier properties and have been used traditionally for the treatment of piles, abdominal disorders, tumours, enlargement of spleen, asthma and rheumatism.\textsuperscript{[7,8]} Arthralgia, elephantiasis, inflammations, hemorrhoids, hemorrhages, vomiting, cough, bronchitis, anorexia, dyspepsia, flatulence, colic, constipation, helminthiasis hepatopathy, amenorrhea, dysmenorrhoea, seminal weakness, fatigue, anemia and general debility.\textsuperscript{[9]}

**MATERIALS AND METHODS**

The crude Amorphophallus campanulatus Decne tubers were procured from Rithu bazar market, Mehdipatnam, Hyderabad, Telangana, India. The tubers were authenticated by Botanical survey of India, Deccan regional centre Hyderabad-500048, Telangana, India, with reference number BSI/DRC/2015-16/Tech./735. The Amorphophallus campanulatus tubers were cut into proper size and dried in shade with proper care. The dried plant tuber was blended in to coarse powder.

**PREPARATION OF EXTRACT**

The coarse powder 500gm was subjected to maceration for 72 hours, followed by exhaustive maceration for 48 hours by using solvent ethanol. The solvents was decanted and filtered with filter paper and recovered by distillation with help of rotary vacuum evaporator. The extracts were dried under desiccators and stored in airtight container at room temperature.\textsuperscript{[10]}

**INSTRUMENTATION AND CHROMATOGRAPHIC CONDITIONS**

The sample was spotted (10 µL) in the form of band of width of 6 mm with a 100 µL sample syringe (Hamilton, Bonaduz, Switzerland) on precoated silica gel aluminium plate 60 F\textsubscript{254} (5 cm ×10 cm) with 250 µm thickness (E. MERCK, Darmstadt, Germany) using a CAMAG Linomat 5 sample applicator (Switzerland). The slit dimensions 5 mm × 0.45 mm and scanning speed of 20 mm/sec was employed.

The linear ascending development was carried out in 10 cm×10 cm twin trough glass chamber (CAMAG, Muttenz, Switzerland) using Ethanol: Ethyl Acetate: Glacial Acetic Acid (7 : 3: 0.1 v/v) as mobile phase. The optimized chamber saturation time for mobile phase was 15 min. The length of chromatogram run was 9 cm and development time was approximately 15 min. TLC plates were dried in a current of air with the help of a hair drier. Densitometric scanning was performed on CAMAG thin layer chromatography scanner at 380 nm for all
developments operated by WINCATS software version 1.4.2.[11]

RESULTS

Figure 1 Represents peak of extract in the HPTLC chromatogram, while figure 2 represents Spectra of *Amorphophallus campanulatus* tuber Extract.

![Figure 1. Peaks of Amorphophallus campanulatus tuber Extract](image1)

![Figure 2. Spectra of Amorphophallus campanulatus tuber Extract](image2)
QUALITATIVE ESTIMATION

Table1. Chromatographic profile of *Amorphophallus campanulatus* tuber Extract

<table>
<thead>
<tr>
<th>Peak</th>
<th>Start Position</th>
<th>Start Height</th>
<th>Max Position</th>
<th>Max Height</th>
<th>Max %</th>
<th>End Position</th>
<th>End Height</th>
<th>Area</th>
<th>Area %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.01 Rf</td>
<td>1.8 AU</td>
<td>0.03 Rf</td>
<td>324.7 AU</td>
<td>60.16%</td>
<td>0.07 Rf</td>
<td>52.3 AU</td>
<td>7397.4 AU</td>
<td>33.05%</td>
</tr>
<tr>
<td>2</td>
<td>0.17 Rf</td>
<td>53.4 AU</td>
<td>0.18 Rf</td>
<td>53.6 AU</td>
<td>9.93%</td>
<td>0.27 Rf</td>
<td>18.3 AU</td>
<td>3092.6 AU</td>
<td>13.82%</td>
</tr>
<tr>
<td>3</td>
<td>0.54 Rf</td>
<td>1.9 AU</td>
<td>0.59 Rf</td>
<td>10.4 AU</td>
<td>1.93%</td>
<td>0.63 Rf</td>
<td>3.9 AU</td>
<td>462.6 AU</td>
<td>2.07%</td>
</tr>
<tr>
<td>4</td>
<td>0.72 Rf</td>
<td>5.6 AU</td>
<td>0.81 Rf</td>
<td>51.1 AU</td>
<td>9.48%</td>
<td>0.84 Rf</td>
<td>47.6 AU</td>
<td>3223.2 AU</td>
<td>14.40%</td>
</tr>
<tr>
<td>5</td>
<td>0.84 Rf</td>
<td>47.7 AU</td>
<td>0.92 Rf</td>
<td>99.9 AU</td>
<td>18.50%</td>
<td>1.00 Rf</td>
<td>1.6 AU</td>
<td>8204.9 AU</td>
<td>36.66%</td>
</tr>
</tbody>
</table>

DISCUSSION

The simple, accurate and precise HPTLC method was developed for *Amorphophallus campanulatus* tuber Extract. The optimized mobile phase was Ethanol: Ethyl Acetate: Glacial Acetic Acid (7: 3: 0.1) v/v, ratio gave good resolution Well-defined spots were obtained when the chamber was saturated with the mobile phase for 30 min at room temperature. In qualitative estimation of *Amorphophallus campanulatus* tuber Extract Rf values was found to be 0.03, 0.18, 0.59, 0.81, 0.92. at 254nm&366nm in U.V light.

CONCLUSION

In conclusion, the HPTLC method was found to be specific and accurate and can be used for qualitative estimation *Amorphophallus campanulatus* tuber Extract. HPTLC method is especially suitable for the fingerprinting and high throughput analysis of botanical samples.

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REFERENCES


