



Phytochemical and Pharmacotherapeutic Evaluation of Vidhara Root (*Argyreia speciosa* Sweet.) in the Management of Aamavata (Rheumatoid Arthritis)

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Abstract

Background: Aamavata is an important Ayurvedic disorder marked by joint pain, stiffness, swelling, heaviness, loss of appetite, and systemic symptoms due to Ama and aggravated Vata. Its clinical features closely resemble rheumatoid arthritis (RA), a chronic inflammatory autoimmune disease. Although RA is mainly managed with DMARDs, medicinal plants with anti-inflammatory and immunomodulatory properties may offer complementary options. Vidhara, scientifically known as *Argyreia speciosa* Sweet. (Convolvulaceae), is a traditionally used Ayurvedic plant with reported analgesic, anti-inflammatory, and immunomodulatory effects, particularly in root preparations.

Objective: To evaluate the phytochemical profile and pharmacotherapeutic potential of Vidhara root (*Argyreia speciosa* Sweet.) for the management of Aamavata (Rheumatoid Arthritis).

Materials and Methods: Authenticated Vidhara roots should undergo pharmacognostical, physicochemical, preliminary phytochemical, and chromatographic evaluation. The standardized root extract may then be assessed using validated in-vitro or experimental models for anti-inflammatory and immunomodulatory activity. If a clinical study is included, eligible RA/Aamavata patients should be evaluated using predefined diagnostic criteria, relevant clinical and laboratory parameters, and validated disease-activity measures. The phytochemical and pharmacological data should be statistically analyzed and correlated.

Expected Results: Experimental studies suggest that Vidhara root contains diverse secondary metabolites and exhibits analgesic, anti-inflammatory, and immunomodulatory activities. Methanolic root extracts have shown significant inhibition of carrageenan-induced paw edema and reduction of pain responses in animal models, while ethanolic extracts have demonstrated immunomodulatory effects in experimental studies.

Conclusion: Vidhara root is a promising candidate for further research in Aamavata, supported by its traditional use and preliminary anti-inflammatory, analgesic, and immunomodulatory activities. However, direct clinical evidence supporting the efficacy of *Argyreia speciosa* root in rheumatoid arthritis is still limited. Well-designed, standardized, and adequately powered clinical studies are therefore needed to establish its therapeutic effectiveness.

Keywords: *Argyreia speciosa*; Vidhara; Vrudhadaruka; Aamavata; Rheumatoid Arthritis; Phytochemistry; Anti-inflammatory; Immunomodulatory; Analgesic; Ayurveda.

1. Introduction

Health is a state of complete physical, mental, spiritual & social wellbeing, but with passage of time gradually people as well as society disobeyed the law of healthy life. Thus, diseases surrounded the healthy person as well as society. Society became polluted with the use of junk food, hot-cold foods, contaminated water and food. With all the things human's *Doshas*, *Dushya*, *Agni*, *Mala* getting *Vaishamya* and human race is captured in web of diseases.

Aids, Cancer like dreadful diseases are increasing in full pace, thus destroying the society. Some of the disease like Bronchial Asthma, Rheumatoid Arthritis, Gout are also increasing gradually because of the change in life style and irregular eating habits.

The changing life style of human being by means of dietetic and behaviour pattern plays a major role in the manifestation of several disorders. Thus, this type of pattern may also lead to the development of the disease *Aamavata*. The disease Rheumatoid Arthritis can be presented as very similar to *Aamavata*. The disease R.A. is chronic in nature and affects mostly the middle-aged group. It is one of the common debilitating diseases by the virtue of its chronicity and implications. The onset of disease is frequent during 4th and 5th decade of life with 80% of patients developing the disease between 35-50 years of age. Community prevalence study shows that female more suffers than male and the ratio of occurrence between them is 3:1. In *Aamavata*, *Vata* as a *Dosha* and *Ama* are chief pathogenic factors. They are contradictory in nature and thus possesses difficulty in planning the line of treatment. *Aam* formation is due to the *mandagni* and with irregular diet habits and then *Ama* gets circulated in whole of the body in the form of *Aamvisha* and get embedded in joint and thus aggravates the *Vata* which is present there, forming the disease called *Aamvata*. The disease is characterized by various features like *Sandhishoola* in the nature of *Toda*, *Swelling*, inability of joints movements etc.

2. Aims and Objectives -

Aim

To evaluate the phytochemical profile and pharmacotherapeutic potential of Vidhara root (*Argyreia speciosa* Sweet.) for the management of Aamavata (Rheumatoid Arthritis).

Objectives -

A. PRIMARY OBJECTIVE

1. Clinical evaluation of *Vrudhadaruka* (*Argyreia speciosa* Sweet.) in the management of *Aamavata*.

B. SECONDARY OBJECTIVE

1. Conceptual study on *Aamavata* (Rheumatoid Arthritis), its pathogenesis and management in *Aamavata*.
2. Pharmacognosy and Phytochemistry of *Vrudhadaruka* (*Argyreia speciosa* Sweet.)

3. Material and Methods –

3.1 Study design

Study Type	Interventional (clinical study)
Purpose	Treatment
Allocation	Single Arm
Masking	Open
Timing	Prospective
End Point	Efficacy
No. Of Group	1
Total Study Period	60 Days
Participants	30 Patients
Follow Up Period	Every 15 th Day during treatment and 30 days after completion of trial

3.2 Selection Criteria:-

(a) Inclusion Criteria -

1. The Patients between the age group of 35 to 60 years in both sexes presenting with clinical features of *Aamavata*.
2. Clinically diagnosed and confirm patients on *Aamavata*.
3. RA Factor Positive
4. Patients willing to sign the consent form.

(b) Exclusion Criteria -

1. Patients of uncontrolled diabetes mellitus, severe anaemia, having any type of malignancy.
2. Patients having Neoplasm of spine, Gout, Ankylosing Spondylitis, Traumatic Arthritis, Pyogenic Osteomyelitis etc.
3. Patients having any other severe disease like Cardiac disease, Renal failure, Hypertension etc.
4. Pregnant women and lactating mother.
5. Patient below age of 35 & above 60.

4. Physicochemical Evaluation

Phytochemical study comprises of following parameters-

(A) Physical parameters

1. Foreign matter determination
2. Loss of drying/moisture content

(B) Physico-chemical parameters

- Total Ash value
- Acid soluble / insoluble Ash
- Water soluble / insoluble Ash
- PH value

(C) Extraction in different solvents

- Chloroform
- Ether
- Ethanol
- Aqueous

(D) Chemical parameters [Determination of chemical/organic parameters – by Qualitative and Quantitative methods]

- Detection of Carbohydrate
- Detection of Starch
- Detection of Tannins
- Detection of Alkaloids
- Detection of Saponins
- Detection of Flavonoids

5. Preliminary Phytochemical Screening

5.1 Observation of Qualitative analysis of organic matter of *Vidhara* root

S.No	<i>Vidhara</i> root		
	Name of test	Extract	Test Result
1	CARBOHYDRATE		
	Molish test	Aqueous	-
		Ethanol	-
	FeCl ₃	Aqueous	+
		Ethanol	+
2	Reducing Sugar Test		
	Benedict test	Aqueous	-
		Ethanol	-
3	ALKALOIDS		
	Wagner's test	Ethanollic Extract	+
4	SAPONIN		
	Foam test	Aqueous Extract	+
5	GLYCOSIDES		
	Keller-Kiliani	Ethanollic Extract	-
6	FLAVONOIDS		
	Shinods test	Ethanollic Extract	+
7	TENNINS		
	FeCl ₃	Ethanollic	+
		Aqueous	+
8	PHENOL		
	FeCl ₃	Ethanollic Extract	+

5.2 Determination of inorganic compounds in Samples of *Vidhara* root

S.No.	Name of Inorganic Matter present in ash	<i>Vidhara</i> root
1	Calcium	+
2	Iron	+
3	Phosphorus	-
4	Potassium	-

5.3 pH value of sample *Vidhara* root

S. No.	Sample	<i>Vidhara</i> root
1	pH	5.90

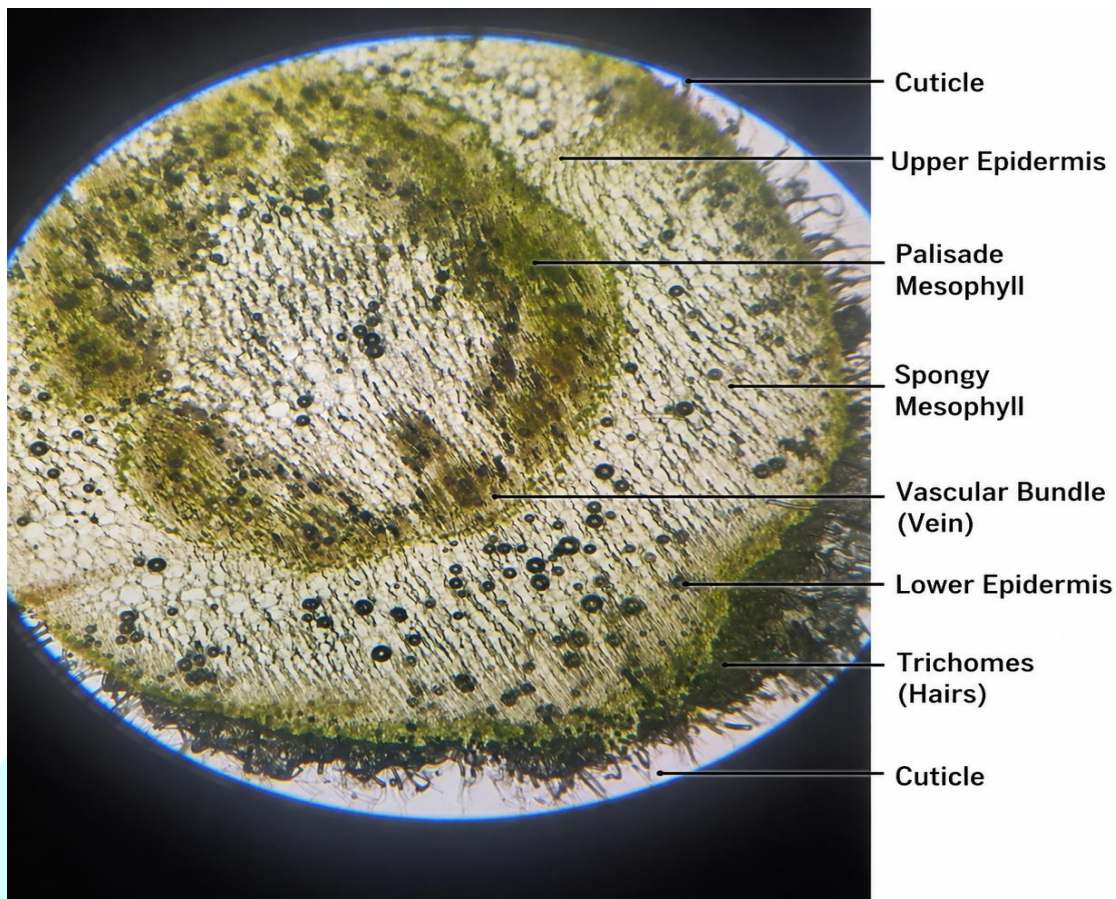
5.4 Extract values of *Vidhara* root

Name of Solvent for extraction	Weight of empty Petri plates [P1]	Weight of the Drug sample [X]	Weight of Petriplates after drying [P2]	Extractive Value [W3]	Percentage of Extractive Value
Aqueous	131.6010	5.0493	131.7917	0.1282	15.10%
Chloroform	96.8456	5.0303	97.2377	0.6336	31.17%
Ethanol	98.3524	5.0339	98.6095	0.1934	20.42%
Ether	106.4573	5.0746	106.8909	1.5868	34.17%

6. PHARMACOGNOSTICAL STUDY



Transverse Section (T.S.) of *Argyreia speciosa* (Sweet) Leaf



The leaf of *Argyreia speciosa* (Family: Convolvulaceae) is dorsiventral (bifacial) with a prominent midrib and unicostate venation. A transverse section reveals the following anatomical features:

Upper Epidermis (Adaxial Surface)

- Single layer of compact, rectangular cells covered by a thick cuticle.
- Few stomata and occasional unicellular non-glandular trichomes.

Mesophyll

- Differentiated into palisade and spongy parenchyma.
- The palisade consists of one (occasionally two) layers of chloroplast-rich cells.
- The spongy tissue contains loosely arranged cells with large intercellular spaces.
- Laticifers (latex canals) are present throughout both tissues.

Lower Epidermis (Abaxial Surface)

- Made up of smaller epidermal cells with numerous stomata.
- Densely covered with long, silvery unicellular hairs (tomentum), a key identifying feature.

Midrib

- Prominent and convex on the lower side.
- Supported by several layers of collenchyma.
- Ground tissue is parenchymatous with laticifers.

- Contains a large bicollateral vascular bundle, with central xylem and phloem on both the inner and outer sides, typical of the Convolvulaceae family.

Vascular Tissue

- Vascular bundles are collateral to bicollateral and extend continuously through the lamina.
- Xylem comprises vessels, tracheids, fibres and xylem parenchyma.
- Phloem contains sieve tubes, companion cells and phloem parenchyma.

Diagnostic Microscopic Features

- Dorsiventral leaf structure.
- Single-layered palisade tissue.
- Well-developed spongy parenchyma.
- Numerous laticifers.
- Dense silvery unicellular hairs on the lower epidermis.
- Bicollateral vascular bundle in the midrib.

7. Statistical Analysis:

The statistics collected on the basis of observation made about various parameters was subjected to statistical analysis in terms of Mean, Standard Deviation and Standard error (SE). In Star Graph Pad 3 software was used & for Nonparametric Data Wilcoxon matched-pairs signed ranks test is used while for Parametric Data Paired 't' Test is used and result Calculated. Paired t test was carried out $p < 0.05$ $p < 0.01$ $p < 0.001$ $p < 0, 1$

For intergroup comparison, of nonparametric variable was used Mann-Whitney Test for statistical analysis & for the Parametric data, we used Unpaired t test. The result was calculated.

- ✓ Insignificant : $P > 0.005$
- ✓ Significant : $P < 0.005$
- ✓ Highly significant : $P < 0.001$ $P < 0.001$ $P < 0.0001$

8. Ayurvedic Interpretation

Drug Properties :- Name of drug	<i>Vrudhadaruka</i>
Latin Name	<i>Argyreia speciosa</i> Sweet.
Family	Convolvulaceae
Ras	Katu, Tikta, Kashaya
Guna	Laghu, Snigdha
Virya	Ushna
Vipak	Madhur
Doshakarma	Kapha Vata Shamak
Used part	Stem

9. Chromatographic Evaluation

TLC of *Vidhara* root

Freshly prepared Chloroform extract of *Vidhara* root was taken in capillary and applied on activated silica plate and it was kept in TLC chamber containing solvent system of toluene, ethyl acetate and Methanol in 6 : 3.8 : 0.2 ratios. When the solvent system travelled nearly to the upper end, the solvent height was marked and TLC plate was allowed to dry.



TLC profile of test solution of chloroform extract of *Vidhara* root

Solvent System

Toluence : Ethyl acetate : Methanol

6 : 3.8 : 0.2

10. Clinical Result

1.% Effect Parameter (Subjective)

% Effect Parameters (Subjective)	% Effect
Pain in Joints	55.93
Swelling of the joint	54.00
Morning Stiffness	52.50
Tenderness	53.49
Angamarda	54.84
Aruchi	60.00
Jwara	50.00
Apaka	50.00

2.% Effect Parameter (Objective)

% Effect Parameters (Objective)	% Effect
R.A. Factor	15.23
CRP	7.25
ESR	16.31
S.Uric Acid	18.31
WBC	40.81
Neu	55.34
Lym	29.00
Mon	75.50
Eos	75.50
Baso	75.50
RBC	75.50

3. %Overall Effect (Patient wise)

Overall Effect (Patient wise)	N	%
Complete Relief	1	3.33%
Marked Improvement	7	23.33%
Moderate Improvement	12	40.00%
Mild Improvement	10	33.33%
No Improvement	0	0.00%
Total	30	100.00%

4.Overall % Effect:

Overall % Effect	Subjective Parameters	Objective Parameters
	53.85	44.02

11. DISCUSSION

A research scholar's responsibility is to diligently seek the truths embedded within ancient Ayurvedic literature. This task involves not only uncovering these hidden truths but also rigorously examining the reasoning and principles that form their foundation. Such exploration is essential for fully grasping and understanding the wisdom contained in these ancient texts.

In this process, discussion plays a crucial role. Through thoughtful and in-depth dialogue, scholars can analyze and interpret the subject matter from various perspectives. This collaborative exchange of ideas fosters a deeper understanding and aids in reaching well-founded and insightful conclusions.

Engaging in robust discussions allows scholars to challenge assumptions, refine hypotheses, and validate findings, ultimately leading to a more thorough and accurate interpretation of Ayurvedic knowledge. This process honors the rich heritage of Ayurveda while integrating its timeless wisdom into contemporary scientific discourse, thereby enriching modern medical research and practice.

Therefore, the objective of the present research is to undertake "Phytochemical And Pharmacotherapeutic Evaluation of *Vidhara* Root (*Argyreia speciosa* Sweet.) in The Management of *Aamavata* (Rheumatoid Arthritis)" and to provide scientific evidence supporting the proposed hypothesis regarding the mechanism of action of the drugs utilized in this clinical trial.

Probable mode of action of drug.

By *katu & tikta rasa*, it eliminates the symptoms of *Aruchi* and *apaka* also decrease the symptoms *shoonangata* by having the property of *sroto shodhan*. The *tikta rasa* helps in elimination of *jwara*. By *katu rasa & ushna veerya* symptoms of *Gaurwa* get relieved. *Ushna veerya* also helps in *pachana* of *Aama* thereby relieving the symptoms of *Angamarda* in the patient of *Aamvta*. Though *Aamavta* (R.A.) is auto Immune disease, so *Madhur Vipaka* of drug acts as *Rasayana* thereby increasing the *bala*. By *ushna veerya & Snigdha guna* it helps in relieving the symptoms of morning *Stiffness* and tenderness of joint.

12. CONCLUSION

This section of the dissertation outlines the conclusions, as every research study must culminate in a conclusion. The conclusions are derived from the data collected during the clinical trial. Conclusion are a summary of what a researcher has done. Without coming to some kind of conclusion about the work, the scientific investigation can't be said to have met its goals.

The overall study, titled "***Phytochemical and Pharmacotherapeutic Evaluation of Vidhara Root (Argyreia speciosa Sweet.) in the Management of Aamavata (Rheumatoid Arthritis)***", may be summarized and concluded as follows:

The conceptual analysis indicates that most of the etiological factors described in classical literature are associated with causes that aggravate *Ama* and *Vata*. In *Aamavata*, both *Vata* and *Ama* are regarded as the chief pathological factors. The observations made during this study are consistent with these classical references. Furthermore, a sedentary lifestyle and unhealthy dietary practices contribute to the aggravation of *Vata* and *Kapha*, which eventually results in the formation of *Ama*.

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