

A Detail Study of an Ethnomedicinal Plant *Sarcostemma Acidum* Voigt

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ABSTRACT

Sarcostemma acidum Voigt is a leafless plant of the family Apocynaceae. Plant is locally known as Somlata. It is a traditional medicinal plant used to prepare Somras. Geographically *S.acidum* is mainly found in Bihar, West Bengal, Odisha and South India. It is mostly grown in dry rocky places. *S.acidum* is a shrub, more branched but no leaves. The phytochemicals present in the *S.acidum* are carbohydrates, glycosides, alkaloids, tannins, flavonoids, proteins, steroids, triterpenoids, fixed oils, mucilage, gums and waxes. Ethnomedicinally the *S.acidum* was used in otitis, dog bite, snake bite, rabies, emesis, arthritis and leprosy. The juice of this plant having some medicinal value, so used as natural restorative for health. *S.acidum* stem extract inhibits spermatogenesis and reduce the sperm count. Also the extract of *S.acidum* shown antipsychotic effect. The result of present pharmacological study shown that the *S.acidum* possess Analgesic, Antipyretic and Antidiabetic effects.

Key words: *Sarcostemma acidum* Voigt, Ethnomedicinal uses, Pharmacological effects, Macroscopy, Microscopy, Phytochemicals.

INTRODUCTION

Plant profile

Botanical name: – *Sarcostemma acidum* Voigt

Taxonomical classification

Kingdom: - Plantae

Order: - Asterids

Family: - Apocynaceae

Genus: - *Sarcostemma*

Species: - *acidum*

Synonyms: - *Asclepiasacida* Roxb. *Cynanchum acidum* (Roxb.), *Sarcostemma brevistigma*.

Description

Sarcostemma acidum Voigt (Somlata) is a shrub having the branched stem grown in dry rocky places. The stems are green, cylindrical in nature having 2 to 4 meter in length. The roots have number of sub- root branches. The flowers are light yellowish white in colour. The plant is found in India, Pakistan, Sri Lanka and European countries. In India it is mostly found in Odisha, Bihar, West Bengal and Tamil Nadu¹.

Collection of Plant

The plant was collected from the Gandhamardan hill of balangir district of Odisha and It was collected in the month of September.

Authentication

The plant was identified and authenticated by the scientist of Botanical survey of India, Central national herbarium, Howrah, Kolkata. (CNH/Tech II/2016/34).

Macroscopy

Sarcostemma acidum Voigt (Somlata) is a shrub with number of branches.

The stems are jointed with each other. These are green, cylindrical having 2 to 4 meter in length and 0.5 cm. to 1 cm. in diameter.

The leaves are present opposite but are reduced to scales. So, the plant is leafless in nature.

The flowers are actinomorphic, light yellowish white in nature.

The roots are branched and each root contain 3 to 5 sub-root branches².

Microscopy

The microscopy of the stem of *Sarcostemma acidum* is major divided into three parts.

(1) Outer epidermis layer

(2) Cortex

(3) Vascular bundles.

The outer most epidermis consist of single layer of cell.

The cortex consists of collenchyma and parenchymal cells. Below the epidermis 2 to 3 layers of collenchyma cells are present. Under these 5 to 6 layers of polyhedral parenchymal cells are present. A single layer endodermis cells separate the cortex and vascular bundles.

The vascular bundle is of ring shape containing the xylem and phloem fibers. Starch grains are present near the phloem tissue.

At the central part of the stem the medullary rays and pith are present.

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Powder microscopy

In the microscopy of powder, it is found that the powder contains

- (1) Starch grain
- (2) Prismatic crystal of calcium oxalate

Table 1. Physical Evaluation Parameters.

Sl. No.	Parameter	Values (% w/w)
1	Loss on Drying	0.4%
2	Extractive Value	
	Water Soluble Extractive	12%
	Methanol Soluble Extractive	8%
	Ethanol Soluble Extractive	6%
	Ether soluble Extractive	5%
	Ethyl acetate Soluble Extractive	7%
	3	Ash Value
Total Ash	9%	
Water Soluble Ash	4%	
Acid insoluble Ash	1%	
4	Swelling Index	Zero

Table 2. Phytochemical Screening Result.

Test	Power Drug	Aqueous Extract	Methanolic Extract
TEST FOR CARBOHYDRATES			
Molisch's Test	+	+	+
Benedict's Test	+	+	+
Fehling's Test	+	+	+
Test for Starch	+	+	+
TEST FOR ALKALOIDS			
Mayer's Test	+	+	+
Dragendroff's Test	+	+	+
Wagner's Test	+	+	+
Hager's Test	+	+	+
TEST FOR PROTEIN			
Ninhydrin Test	+	+	+
Biuret Test	+	+	+
Millon's Test	+	+	+
Test with Tannic acid	+	+	+
TEST FOR GLYCOSIDES			
Keller-kiliani Test	+	+	+
Legal Test	+	+	+
Baljet Test	+	+	+
TEST FOR FLAVONOIDS			
Ferric chloride Test	+	+	+
Shinoda's Test	+	+	+
Acid Test	+	+	+
Alkali Test	+	+	+
TEST FOR PHENOL			
TEST FOR TANNINS	+	+	+
TEST FOR SAPONINS			
TEST FOR VOLATILE OIL	+	-	-
TEST FOR FIXED OILS AND FATS			
	+	-	-



Figure 1. *Sarcostemma acidum* plant.

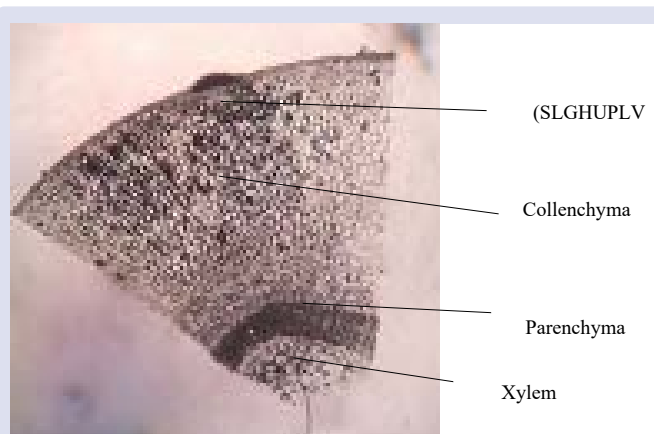


Figure 2. Microscopy of stem.



Figure 3. Microscopy of powder.

- (3) Mucilage
- (4) Elongated collapsed fiber.

Physical Evaluation

Different physical evaluation like Loss on drying, Extractive value, Ash value, Swelling index of powdered drugs were taken^{3,4}.

Preparation of Extracts

Preparation of Aqueous extract

500 gm. of drug powder was taken in the round bottom flask. Distilled water was added in it and shaken it for proper mixing of drug powder with water. The opening mouth of the flask was covered by aluminum foil. It was kept for 24 hours for maceration. After 24 hours filtered it. The filtrate was taken for evaporation in hot plate at 80° C. to get the aqueous extract.

Preparation of Methanolic extract

The preparation of methanolic extract was taken by Soxhlation process. 500 gm. drug powder was taken in the extractor. At first the drug powder was extracted by Petroleum ether to remove fatty substances, if any present. Then the drug was extracted by methanol. Methanol was taken in the round bottom flask. Then the extraction process was carried out at 40° C. for 72 hours. After 72 hours the extract was collected and filtered it by using cotton cloth. The filtrate was taken for evaporation to get the methanolic extract.

Phytochemical Study

Phytochemicals means plant chemicals. These are the secondary metabolites naturally formed in the plant. The phytochemicals are bio-active, non-nutrient plant compound. The different phytochemicals present in the plants are alkaloids, glycosides, tannins, amino acids, flavonoids, saponins etc. some of these phytochemicals having some pharmacological activity like

Alkaloids have analgesic effect.

Glycosides having cardiac effect.

Tannins and volatile oil having antimicrobial effects.

Flavonoids having antioxidant effect⁵.

So, here the phytochemical study was taken to know about the different phytochemicals present in the of *Sarcostemma acidum*⁶

Therapeutic Uses

The plant *S.acidum* having some ethnomedicinal uses. The juice of this plant (somras) is used as natural restorative for health. The *S.acidum* was used in otitis, dog bite, snake bite, rabies, emesis, leprosy, arthritis and on wound^{7,8,9}. The extract of the plant having number of psychopharmacological effects like anxiolytic, antipsychotic effect. *S.acidum* extract reduce the spermatogenesis¹⁰⁻¹². From recent studies it was shown that the aqueous extract of stem of *S.acidum* has antipyretic, analgesic and antidiabetic effects.

CONCLUSION

This Pharmacognostic studies of *Sarcostemma acidum* provide useful information to identify and authentication of this plant. This study gives details about distribution, identification and morphological features, microscopic characteristics, physical parameters of the plant.

The aqueous extract of *Sarcostemma acidum* contains carbohydrates, glycosides, alkaloids tannins, flavonoids, proteins and free amino acids,

steroids and triterpenoids, fixed oils and fats.

From this ethnomedicinal use it seems that the plant has Anti-inflammatory property, antimicrobial property. From the recent studies it was shown that the aqueous extract of this plant has antipsychotic, analgesic, antipyretic and antidiabetic effect.

This study gives an idea for further research about the isolation of active constituents of this plant which are having therapeutic effects.

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CONFLICTS OF INTEREST

The authors have no conflicts of interest.

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