Pharmacognostical Study of *Snuhi* (*Euphorbia nerifolia* Linn.)

**Keywords:** *Snuhi*, *Snuhi Panchanga*, *Kshara*, Macroscopic study, Microscopic study.

**ABSTRACT**

*Snuhi* consists of stem of *Euphorbia nerifolia* Linn. (Family Euphorbiaceae), a large branched, erect, glabrous, Succulent, xerophytic shrub occurring wild on rocky ground throughout central India and extensively grown as a hedge plant. *Snuhi Kshara* prepared by processing the ash of *Snuhi Panchanga* is widely used in Ayurvedic classics to treat vitiated conditions. *Snuhi* possesses *Tikta*- *Katu* Rasa, *Guru* - *Tikshna* Guna, *Ushna* *Virya* and *Katu* Vipaka. In present study, Macroscopic study, Microscopic study and Powder microscopic study was done to collect information regarding *Snuhi*. *Snuhi Panchanga* powder was also analyzed for Organoleptic, Physicochemical and Phytochemical analysis. Alkaloid, Carbohydrates, Amino acids, Flavonoids, Saponin and Steroids were found to be present in *Snuhi Panchanga* Powder.
INTRODUCTION

_Snuhi_ consists of stem of _Euphorbia nerifolia_ Linn. (Family Euphorbiaceae), a large branched, erect, glabrous, Succulent, xerophytic shrub occurring wild on rocky ground throughout central India and extensively grown as a hedge plant. Snuhi possesses _Tikta-Katu Rasa, Guru- Tikshna Guna, Ushna Virya_ and _Katu Vipaka_.

The American Society of Pharmacognosy defines pharmacognosy as “the study of the physical, chemical, biochemical and biological properties of drugs, drug substances or potential drugs or drug substances of natural origin as well as the search for new drugs from natural sources”.

Ayurveda emphasis proper identification of a drug with proper quantity through that we can get expected results. Without knowing name, form and properties of drug or despite of having knowledge of it, if we shouldn’t administered it properly it will be results in bad consequences. _Snuhi Kshara_ is prepared by processing the ash of _Snuhi Panchanga_.

The present study deals with the Pharmacognostical, Analytical and preliminary phytochemical studies on _Snuhi Panchanga_.

AIMS AND OBJECTIVES

- To identify and authenticate fresh _Snuhi_ and dry Powder of _Snuhi Panchanga_ (_Euphorbia nerifolia_ Linn.)

COLLECTION OF RAW DRUGS

The fresh _Snuhi Panchanga_ was collected from Sundar Ayurved Pharmacy, J.S. Ayurved Mahavidyalaya, Nadiad with due permission from Concern authorities.

MATERIALS AND METHODS

1. Material:

The fresh _Snuhi_ and dry _Snuhi Panchanga_ Powder were used as material for the present study.
2. Pharmacognostical study:

Conventional pharmacognostical method was used for the study of macroscopic, microscopic characters of the *Snuhi Panchanga*.

Method of macroscopic study:

Macroscopic characters of all parts were studied by observing under the dissecting microscope.

Method of microscopic study:

Material: Fresh *Snuhi* stem and leaves, Dry *Snuhi Panchanga* powder.

Equipment: Compound microscope, eyepiece, glass slide, coverslip, watch glass, hairbrush, mountain brush, blotting paper, blades etc.

Chemical: Phloroglucinol, Conc. HCl, Iodine sol. Chloralhydrate and Glycerine.

Methods:

1. Staining Method:

□□A thin transverse section of the sample was taken & transferred on a glass slide with help of mountain hair brush.

□□A drop of water was added.

□□Few drops of chloral hydrate and 2 drops of glycerine were added heated for two minutes.

□□Equal proportion of phloroglucinol and conc. HCL was added gently, warmed and allowed to cool and covered the section with coverslip avoiding air bubbles. The section was focused under microscope and arrangement of cells was studied.

□□The photographs of the T.S. were taken.

Method of Powder Study:

Organoleptic characters of the powder like color, odour, taste etc. were studied for microscopical characters, slides were prepared by using water, chloral hydrate as a clearing agent, stained with phloroglucinol and HCL for lignified tissues and glycerine as mounts.
RESULTS:

*Snuhi*

Botanical Name: *Euphorbia nerifolia* Linn.
Sanskrit Name: *Sudha, Snuhi*
Family: Euphorbiaceae
Local Name: *Thor*
Part Used: *Panchanga*

Macroscopic study of *Snuhi* (fig. 1)

**Stem:**
- Green, cylindrical stem with round large branches and terete, spiral ridge portion.
- Sharp stipular thorns, with hollow space in center containing white reticulate mass.
- The younger branchlets are somewhat verticillate, with two or more whorls without articulations, fleshy, cactus-like, swirled, light-green, glabrous, 8-30(-40) mm thick, often leafless, and spine shield in 5 distinct rows on more or less distinct angles (not winged) which are visible for a long time.

**Stippular Thorns:**
- The spines are short, about 1-4mm long.
- Grayish brown to black in color,
- Sharp, persistent, from low conical truncate distant, spirally arranged tubercles 2-5 mm height and 2-3 cm apart.

**Leaves:**
- Plant is leafless most of the year, except during monsoon when fresh leaves appear.
- Apex rounded, base attenuated, margins entire, hairless, oval shaped leaves, fleshy, alternate, subsessile, ovate, oblong are present towards the end of the branches.
During vegetation period they are deciduous but in the late summer, they fall.

**Microscopic study of T.S of stem**

**Characters Identified (Fig. 2)**

A. Epidermis  
B. Hypodermis  
C. Cortex with parenchyma  
D. Cortex having Chlorenchyma  
E. Phloem  
F. Xylem  
G. Cambium  
H. Lactiferous vessel

**Microscopic study of T.S of leaves**

**Characters Identified (Fig. 3)**

A. Lower epidermis  
B. Chlorenchmatous cells  
C. Xylem  
D. Phloem  
E. Spongy Parenchyma  
F. Oil globule in spongy parenchyma  
G. Lower epidermis  
H. Parenchyma  
I. Lower epidermis showing paracytic stomata  
J. Upper epidermis showing paracytic stomata
Powder microscopy of *Snuhi panchanga*:

Light Cream coloured power was mounted on slide and analyzed microscopically for its characteristics.

**Diagnostic Character of Powder : (Fig. 4)**

A. Xylem vessels

B. Epidermal cells

C. Calcium oxalate crystals

D. Mesophyll of leaves

E. Broken fragment of fibres.

**ANALYTICAL STUDY**

*Snuhi* Panchanga Powder was analysed for

**Organoleptic characters**

Colour, Touch, Taste and Odor.

**Physico-chemical parameters**

1. Loss on drying at 105°C

2. Ash value

3. Acid insoluble ash.

4. Alcohol soluble extractive.

5. Water soluble extractive:
Preliminary Phytochemical Screening/ Chemical tests.

Table No. 1: Organoleptic parameters of *Snuhi* powder

<table>
<thead>
<tr>
<th>Parameters</th>
<th><em>Snuhi</em> powder</th>
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</thead>
<tbody>
<tr>
<td>Colour</td>
<td>Light Cream</td>
</tr>
<tr>
<td>Touch</td>
<td>Rough</td>
</tr>
<tr>
<td>Taste</td>
<td>Astringent and pungent</td>
</tr>
<tr>
<td>Odour</td>
<td>Characteristic</td>
</tr>
</tbody>
</table>

Table No. 2: Physico-chemical Parameters of *Snuhi* Powder

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Parameters</th>
<th><em>Snuhi</em> Powder</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Batch I</td>
</tr>
<tr>
<td>1</td>
<td>Loss on drying 105°C (% w/w)</td>
<td>10.4</td>
</tr>
<tr>
<td>2</td>
<td>Ash value (% w/w)</td>
<td>10.9</td>
</tr>
<tr>
<td>3</td>
<td>Acid insoluble Ash (% w/w)</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>W.S.E. (% w/w)</td>
<td>24</td>
</tr>
<tr>
<td>5</td>
<td>A.S.E. (% w/w)</td>
<td>12.8</td>
</tr>
</tbody>
</table>

W.S.E.- Water soluble extractive, A.S.E. – Alcohol soluble extractive

Table No. 3: Qualitative Phytochemical parameters of *Snuhi* powder

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Results <em>Snuhi</em> Powder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alkaloid</td>
<td>Present</td>
</tr>
<tr>
<td>Carbohydrates</td>
<td>Present</td>
</tr>
<tr>
<td>Glycosides</td>
<td>Absent</td>
</tr>
<tr>
<td>Amino acids</td>
<td>Present</td>
</tr>
<tr>
<td>Proteins</td>
<td>Absent</td>
</tr>
<tr>
<td>Tannin</td>
<td>Absent</td>
</tr>
<tr>
<td>Flavonoids</td>
<td>Present</td>
</tr>
<tr>
<td>Saponin</td>
<td>Present</td>
</tr>
<tr>
<td>Steroids</td>
<td>Present</td>
</tr>
<tr>
<td>Starch</td>
<td>Absent</td>
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</tbody>
</table>
CONCLUSION

The fresh *Snuhi Panchanga* was analyzed for macroscopic, microscopic and powder microscopic study and photographs were taken. The study shows characteristics features of *Euphorbia Nerifolia* Linn. as mentioned in Quality Standard of Indian Medicinal plants, Volume 11, which reveals the authentication of *Snuhi Panchanga*. Average loss on drying of *Snuhi* Powder was 10.63, Average Ash value was 10.3, Average Water soluble extractive and Alcohol soluble extractive values were 27.17 and 12.13 respectively. Alkaloid, Carbohydrates, Amino acids, Flavanoids, Saponin and Steroids were found to be present in *Snuhi Panchanga* Powder.

ACKNOWLEDGEMENT

I would like to acknowledge Post graduate department of R.S.B.K and Dravyaguna, J.S Ayurveda Mahavidyalaya Nadiad, Sundar Ayurved Pharmacy and Indukaka Ipcowala College of Pharmacy for their help during this study.

![Figure No. 1.1: Snuhi](image1.jpg)  ![Figure No. 1.2: Snuhi Panchanga powder](image2.jpg)

**Figure No. 1: Macroscopic characters of Snuhi**
**Figure No. 2.1:** A - Epidermis, B - Hypodermis
C - Cortex with parenchyma
D - Cortex having Chlorenchyma
E - Phloem, F - Xylem

**Figure No. 2.2:** A - Epidermis, B - Hypodermis
C - Cortex with parenchyma
D - Cortex having Chlorenchyma

**Figure No. 2.3:** C - Cortex with parenchyma

**Figure No. 2.4:** E - Phloem, F - Xylem, G - Cambium
<table>
<thead>
<tr>
<th>Figure No. 2.5: F–Xylem, G–Cambium, H- Lactiferous vessel</th>
<th>Figure No. 2.6: F–Xylem, G–Cambium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure No. 2: Microscopic characters of T.S of Snuhi Stem</td>
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<tr>
<td>Figure No. 3.1: A – Lower Epidermis B – Chlorenchyma cells</td>
<td>Figure No. 3.2: C–Xylem, D–Phloem E -Spongy Parenchyma</td>
</tr>
<tr>
<td>Figure No. 3.3:</td>
<td>F–Oil globule in spongy parenchyma</td>
</tr>
<tr>
<td>Figure No. 3.4</td>
<td>G – Lower epidermis H-Parenchyma</td>
</tr>
<tr>
<td>Figure No. 3.5:</td>
<td>Lower epidermis showing paracytic stomata</td>
</tr>
<tr>
<td>Figure No. 3.6:</td>
<td>Upper epidermis showing paracytic stomata</td>
</tr>
</tbody>
</table>

**Figure No. 3: Microscopic Characters of T.S of Snuhi leaves**
Figure No. 4.1: A - Xylem Vessels

Figure No. 4.2: B - Epidermal Cells

Figure No. 4.3: C - Calcium Oxalate Crystals
D - Mesophyll of leaves

Figure No. 4.4: E – Broken Fragment of Fibers

Figure No. 4: Powder Microscopic Characters of Snuhi

REFERENCES

3. The American Society of Pharmacognosy.
6. The Ayurvedic Pharmacopoeia of India, part-2, Volume- 3, Pg. No. 147.
8. The Ayurvedic Pharmacopoeia of India, part-2, Volume- 3, Pg. No. 146.
10. The Ayurvedic Pharmacopoeia of India, part-2, Volume- 3, Pg. No. 147.