Pharmacognostic Evaluation of *Prishniparni-Desmodium Gangeticum* (Linn.) DC.

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**INTRODUCTION**

*Prishniparni—Desmodium gangeticum* (Linn.) DC. is a well-known drug extensively discussed in the Ayurvedic classics. The illustration and description of the drug commences from the Vedic period itself. It is one among the *Parnidwaya* and is an ingredient of the group of *Dashamoola*.\(^1,2\) It is described as best among the *sangrahika, vatahara, deepaneeya* and *vrishya* drugs by *Acharya Charaka*.\(^3\) *Acharya Susratha* has enumerated it in the *roodadhi basthi*\(^4\) which is used in treating *hridroga*. In *Ashtanga hridaya*, *Acharya Vaghbata* included *Prishniparni* under *Vidaryadi gana* having *hridya karma*.\(^5\) *Sthirasidha payas* is mentioned in *vatavyadhi chikitsa* advocated to be given in *hridayagata vata*.\(^6,7\) The plant and the therapeutic potential of its root is highly emphasized in the literature. It is a slender undershrub with poorly developed tap root and deep growing prominent lateral...
roots. It is found in the plains, in dry forests up to 900m elevations grows as an undergrowth in semi-deciduous forests at low elevations. The plant is subjected to controversy on account of the regional variation hence the through pharmacognostical evaluation is vital in confirming its identity. The pharmacognostical evaluation was conducted in the Department of Dravyaguna Vijnanam, Government Ayurveda College, Tripunithura.

**MATERIALS AND METHODS**

I. Macroscopic evaluation  
A. Materials  
Magnifying lens and digital camera were used for this study.  

B. Procedure  
The fresh root of *Prishniparni – Desmodium gangeticum* (Linn.) DC. was collected and washed thoroughly under running water, dried and then subjected to identification with naked eyes and other sensory perceptions. The macroscopic features of the root of collected fresh plants were studied. The photographs of the drug were also taken using digital camera.  

II. Microscopic evaluation  
A. Materials  
Razor or safety razor blade, dissecting needles, watch glasses, petri dishes, glass slides, cover slips ¾ circles (No. 2 thickness), camel hair brush (medium size), dropper, safranine stain, glycerine, compound microscope, digital camera.  

B. Procedure  
Fine handmade transverse section of fresh root of *Prishniparni – Desmodium gangeticum* (Linn.) DC. was made with the help of razor blade. The cut sections were then suspended in water in a petri dish. After that a few drops of safranine stain was added to the watch glass containing water and the staining solution was prepared. Very thin section was taken from the petri dish and added to the watch glass containing the prepared staining solution to make it properly stained. When the section was sufficiently stained, it was transferred on a clean slide with help of a hair brush. The section was then mounted at the centre of the slide and a drop of glycerine water was added to the section. Then it was covered with a cover slip without getting air bubble between the slide and cover. The prepared slide was placed on the stage of the compound microscope and fixed with the clips. The light was focused to mounted slide by using the mirror. After this the lens was adjusted at a power of 10X for visualizing the histological parameters of the section. Then the power was adjusted to 40X for getting finer details of the histological parameters. Photographs of the sections were taken using a digital camera at 10X and 40X powers.

III. Powder macroscopic evaluation  
A. Materials  
Magnifying lens, white paper, digital camera  

B. Procedure  
Powder of dried root of *Prishniparni – Desmodium gangeticum* (Linn.) DC. was placed on white paper separately and viewed using magnifying lens and naked eye. Texture of powder was assessed using fingers. After that they were subjected to smell and taste to determine the odour and taste. A photograph of powder was taken with a digital camera.  

IV. Powder microscopic evaluation  
A. Materials  
Watch glass, glass slide, cover slips, 3/4 circles (no: 2 thickness), camel hair brush (medium sized), compound microscope, digital camera.  

B. Procedure  
A pinch of fine powder of sample drug was taken and placed on glass slide. Few drops of water were added and mixed with hair brush. This mixture was then spread throughout the glass slide to overcome the overlapping of constituents of various structures. Cover slip was placed on the glass slide and it was then viewed using compound microscope under 10X powers. Images were then obtained using digital camera.

**RESULTS AND DISCUSSION**

Pharmacognostical evaluation  
A. Macroscopic evaluation of fresh root  
Organoleptic features of freshly collected root of the drug were assessed. The observation was similar to the description given in Pharmacognosy of Ayurvedic drugs of Travancore-Cochin by Kolammal and Narayana Iyer[8] and the observations are tabulated as follows.  

Table No: 1 Organoleptic features of fresh root of *Desmodium gangeticum* (Linn.) DC. Figure No 1: Fresh root of *Desmodium gangeticum* (Linn.) DC.  

B. Microscopic evaluation of fresh root  
The transverse section of the root is found to be circular and regular in outline. The cortex is composed of several thin-walled
oblong cells, radiating in between are the medullary rays.
The region between the rays is composed of cells of sclerenchymatous groups of various shapes and sizes. A distinct cambium is present. The xylem is shown to consist of thick-walled parenchyma that formed the bulk tissue. The patches of sclerenchyma are mostly associated with the vessels and medullary rays. The medullary rays are not plenty in number. Their cells especially in the xylem region is composed of starch grains, there is no pith in the center. The structures seen were similar to the description given in Pharmacognosy of Ayurvedic drugs of Travancore-Cochin, Ayurvedic pharmacopoeia of India and research articles. The powder microscopy was conducted and identified fragments of vessels and fibres, large lumened fibres, pitted parenchyma cells, crystal fibres, medullary rays, starch grains, stone cells, prismatic crystals of calcium oxalate, fragments of bordered pitted vessels and cork cells.

ACKNOWLEDGEMENT
I express my sincere gratitude to Dr.T.D Sreekumar, Principal, Government Ayurveda College Tripunithura. I also express my gratitude towards my teachers, Dr.Honey Thomas, Assistant Professor, Dr.Jilu Joy, Assistant Professor, Department of Dravyaguna Vijnana, Dr.Mridula M.K, Former Assistant Professor, Government Ayurveda College Tripunithura, for their encouragement and constant support during the completion of the work.

Financial Support : Nil
Conflict of Interest: Nil

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Aswathy Krishan R et al “Pharmacognostic Evaluation of Prishniparni- Desmodium Gangeticum (Linn.) DC.”
2022; 5 (9):28-35


How to cite this article: Krishna A R, P Ansary Y, Oommen S M, Shincymol V V “Pharmacognostic Evaluation Of Prishniparni- Desmodium Gangeticum (Linn.) DC.” IRJAY,[online] 2022;5(9); 28—35
Available from: https://irjay.com
DOI link: https://doi.org/10.47223/IRJAY.2022.5905
Table No: 1 Organoleptic features of fresh root of *Desmodium gangeticum* (Linn.) DC.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>7cm in length</td>
</tr>
<tr>
<td>Shape</td>
<td>Cylindrical with slender root hairs</td>
</tr>
<tr>
<td>Colour</td>
<td>Light yellow or yellowish white</td>
</tr>
<tr>
<td>External characters</td>
<td>Nearly smooth, lenticels present, leathery texture</td>
</tr>
<tr>
<td>Cut surface</td>
<td>Thick central strand of wood, surrounded by comparatively thin but tough bark, slight yellowish tint</td>
</tr>
<tr>
<td>Fracture</td>
<td>Hard and short</td>
</tr>
<tr>
<td>Odour</td>
<td>Not characteristic</td>
</tr>
<tr>
<td>Taste</td>
<td>Mucilaginous sweetish taste</td>
</tr>
</tbody>
</table>

Figure No 1: Fresh root of *Desmodium gangeticum* (Linn.) DC.

Figure No 2: T.S of fresh root of *Desmodium gangeticum* (Linn.) DC. at 10x magnification.

Figure No 3: T.S of fresh root of Desmodium gangeticum (Linn.) DC.

Figure No 4: T.S of cortex and pith of fresh root of Desmodium gangeticum (Linn.) DC.

Table No: 2 Powder macroscopy of dried root of Desmodium gangeticum (Linn.) DC.

<table>
<thead>
<tr>
<th>Characters</th>
<th>Powder of dried root</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>Dark brown</td>
</tr>
<tr>
<td>Texture</td>
<td>Fibrous</td>
</tr>
<tr>
<td>Odour</td>
<td>Characteristic</td>
</tr>
<tr>
<td>Taste</td>
<td>Bitter</td>
</tr>
</tbody>
</table>
Figure No 5: Powder of dried root of *Desmodium gangeticum* (Linn.) DC.

- **Fragments of vessels**
- **Large lumened fibres**
- **Fragments of fibres**
- **Pitted parenchyma**
Crystal fibres

Fibres and medullary rays

Starch grains

Stone cells

Prismatic crystals of calcium oxalate

Fragments of bordered pitted vessel

Cork cells

Figure No: 6 Powder microscopy of dried root of *Desmodium gangeticum* (Linn.) DC.