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## Substitutes of *Shalaparni* (*Desmodium gangeticum*): A Conceptual Review

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### ABSTRACT

**Introduction:** There is difficulty in availability of all herbal medicinal plants at a single place. Even the available one is limited. So unavailability is the most common problem in practicing these herbal medicines. With the availability of *Pratinidhi Dravya* (Substitute plants), one can alternately fulfill the requirement of such medicinal plants. Thus study on *Pratinidhi Dravya*, is the demand of the current scenario. One such Ayurveda Drug is *Shalaparni* that is very useful in many herbal formulations and even as a single medicine. According to Ayurveda Pharmacopeia of India *Shalaparni* is taken as *Desmodium gangeticum* DC. *D. gangeticum* is nowadays reported as an endangered species. **Material and methods:** Conceptual analysis has been done from available literature and database for the selection of *Pratinidhi Dravya* (Substitute Drugs), on the basis of similarity of *Rasa* (Taste), *Guna* (Property), *Virya* (Potency) and *Vipaka* (test after digestion), but most important factor is *Karma* (Action). **Results:** As per the present review study five other species of genus *Desmodium* (*D. podocarpum*, *D. repandum*, *D. trifolium*, *D. diffusum*, and *D. lexiflorum*) were taken as consideration for its substitute. These drugs were also having similar actions (*Karma*) and other pharmacognostical and pharmaceutical similarities. **Conclusion:** This article advocates *Desmodium* species which are having similar actions can be taken as *Pratinidhi Dravya* (Substitute Drugs) of *Shalaparni*. So, *D. podocarpum*, *D. repandum*, *D. trifolium*, *D. diffusum*, and *D. lexiflorum* may be taken as Substitute of *D. gangeticum* as per need.

### KEYWORDS

*Pratinidhi Dravya*, Substitute, *Shalaparni*, *Karma*, *Desmodium*



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## INTRODUCTION

Approximate 75% of the world population fulfills their medicinal requirements through plants and plant products. As per the WHO report approximate 4 billion people of the world is using herbal medicines for their primary health care as an alternative system of medicine<sup>1</sup>. This phenomenal increment in the demand for herbal drugs leads to indiscriminately over-exploitation of the concerned medicinal plant species. Overexploitation of herbal medicinal resources leads to scarcity or endangerment of many valuable medicinal plant species.

*Shalaparni* is being used as the treatment of various ailments in Ayurveda. *Shalaparni* is one of the contents of many *Ayurvedic* formulations and also useful as a single drug, so it is famous as a Master Plant in Ayurveda. As per the Ayurveda Pharmacopeia of India, *Shalaparni* is taken as *Desmodium gangeticum*, which comes under the family *Fabaceae*. *Shalaparni* is also reported as an endangered species. In India, approximate 49 *Desmodium* species are found<sup>2</sup>.

In the current scenario, the list of endangered plants is increasing day by day thus evaluation and implementation of *Pratinidhi-dravya* is the need of the time. The drug whether it is mentioned in the

pharmacopeia or not should be assessed on the basic principles of *Dravyguna* like *Rasa, Virya, Vipaka, Karma*, etc. as well as structural and chemical resemblance, regional substitution on the behalf of synonyms, homonyms, pharmacological and clinical trials. Ayurveda practitioners are using these types of *Pratinidhi Dravya* in their clinical practice<sup>3</sup>. Here in this Review-study *Karma* is considered as a major object for substitute of *Desmodium gangeticum*.

## AIMS AND OBJECTIVES

1. To review *Shalaparni* as per classics.
2. To study functional and structural similarities of various herbs of genus *Desmodium*, which are used at their native places.
3. To prove conceptually, that various herbs of genus *Desmodium* can be taken as substitute for *Shalaparni*.

## MATERIALS AND METHODS

In this study compilation of the *Ayurvedic* literature, modern magazines, research journals, and PUBMED, *Ayurvedic* Research database, Digital source or internet source related to *Shalaparni* and *Desmodium* genus was made and then conceptual analysis was done.

**Compilation on *Shalaparni*:**



Sanskrit Name: *Shalaparna, Shalaparni*

Synonyms: *Aakuparnikaa, Anshumati, Atiguha, Atiruha, Deerghamoolika, Dhruva, Guha,*

*Mahaakleetaanika, Parninee, Peethanee, Saumya, Sthira, Triparni, Vidaarigandha*

Properties: *Rasa - Madhura, Tikta*

*Guna - Guru, Snigdha*

*Veerya - Ushna*

*Vipaka - Madhura*

**Single uses of *Shalaparni* found in Samhita are as follows:**

**a. Cardiac pain:** *Shalaparni* boiled with milk is efficacious in cardiac pain<sup>4</sup>.

**b. Raktapitta:** *Shalaparni* with *Mudgarasa* in *Ahara*<sup>5</sup>.

**c. Vatarakta:** *Shalaparni* and *Prisniparni* pounded with milk and mixed with saturating drink should be taken<sup>6</sup>.

**d. Netraroga:** Root of *Shalaparni* combined with rock salt and *Maricha* and rubbed with sour gruel in a copper vessel should be used as collyrium. It destroys *Pilla*<sup>7</sup>.

**e. Hemicrania:**

1. Juice of *Shalaparni* should be applied locally overhead<sup>8</sup>.

2. Snuffing with *Shalaparni* juice alleviates hemicranias<sup>9</sup>.

**f. For easy parturition:** *Shalaparni* root paste used locally as *lepa* on navel, pelvis, vulva, etc. Expels the confounded fetus<sup>10</sup>.

**g. Pediatric diseases:** Decoction of *Shalaparni, Prishniparni* and *Puga Twak*(bark) with honey pacifies all three *Doshas* and useful in diarrhea<sup>11</sup>.

**i. Other uses:** *Vishahara, Kasahara, Arshahara, Santaphara, Angamardaprashamana, Atisaraghna, Brihmana, Chardighna, Garavishahara, Hridya, Krimighna, Kshataghna, Mehaghna, Mootrala, Rasayana, Shoshahara, Shothahara, Shwasahara, Snehana, Stambhana, Trishnaghna, Vishamajwaraghna, Vrishya*<sup>12</sup>.

***Shalaparni* [*Desmodium gangeticum* DC.] and other species of *Desmodium* genus<sup>13</sup>:**

No reference is found in any Vedic literatures regarding *Shalaparni* but the name “*Anshumati*” has been mentioned in *Atharvaveda*. *Shalaparni* is taken as *Desmodium gangeticum* DC<sup>14</sup> (Figure 5). *Shalaparni* comes under the list of endangered drugs. Nowadays few *Desmodium* species, that are having morphologically similar characteristics are being used in place of *Shalaparni* i.e. *Desmodium gangeticum* DC (Figure 5), such as *D. repandum* DC (Figure 1), *D. triflorum* DC (Figure 2), *D. podocarpum* (Figure 3), *D. diffusum* DC (Figure 4), and *D. lexiflorum* DC (Figure 6), (as per shown in table no. 1).

There are very minute differences between these *Desmodium* species. Regarding the



structure of *Shalaparni*, there is no direct reference but *Acharya Bhavamishra* has mentioned *Shalaparni* in *Guducyadi-Varga* with *Triparni* synonym. So the word

*Triparni* indicates trifoliolate leaves plant that might be a *Shalaparni* or any other species of *Desmodium*.

**Table no 1: Various species of Desmodium Genus**



Figure 1. *Desmodium repandum*



Figure 2. *Desmodium triflorum*

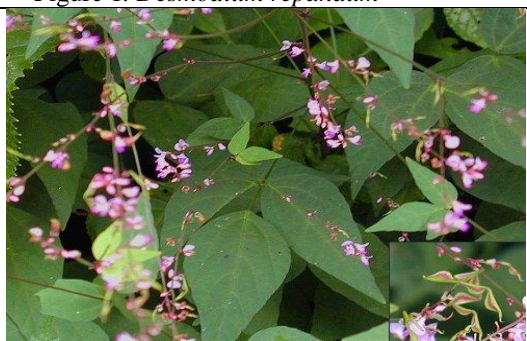


Figure 3. *Desmodium podocarpum*



Figure 4. *Desmodium diffusum*



Figure 5. *Desmodium gangeticum*



Figure 6. *Desmodium laxiflorum*

***D. podocarpum*:** *Hylodesmum podocarpum* (synonym) is the herbaceous perennial plant with erect stems 50 – 110 cm tall. The whole plant and bark of the root is used for fever and curing malaria. *Panchangas* are used medicinally for treating dysentery, and rheumatism<sup>15</sup> (subspecies *fallax*). The

tincture is useful as a respiratory stimulant. The decoction is having diaphoretic property<sup>16</sup> (subspecies *oxyphyllum*). *D. podocarpum* have properties like anti-inflammatory, analgesic and antipyretic actions<sup>17</sup>. Geographical distribution of the plant is around Bhutan, Burma, China,



India, Japan, Korea, Nepal, Taiwan, and Vietnam.

***D. repandum***: Its leaf juice is helpful in infants for abdominal pain. Its roots are helpful for treating large sores<sup>18</sup>. Its roots are emmenagogue, aperient, stomachic, and deobstruent. It has been used medicinally in West Tropical Africa. In Cameroon, it is being used in food indigestion<sup>19</sup>. It occurs in India in Arunachal, Gujarat, Manipur, Meghalaya, the Peninsula, and Rajasthan.<sup>20</sup>

***D. trifolium***: It is used in the treatment of asthma and cough. Also offers protection against acetylcholine and histamine-aerosol-induced bronchospasms<sup>21</sup>. The plant leaves are being used as a galactagogue, for diarrhea, dysentery and convulsions. Plant roots are being used in *Kasa*(cough) and *Tamaka Swas*(asthma) and locally applied on wounds and abscesses. It is common throughout India and in the region of *Himalaya* up to height<sup>22</sup> of 7000 ft. *Bhils* in Mount Abu area are using names “*Jaharipana*” and “*Khataldi*” for the *D. trifolium*, its leaf paste is being used over erupted wounds and abscesses<sup>23</sup>. The freshly prepared juice from the whole plant has been given to children for cough. In Ceylon, it has been used for dysentery. It has been used both as laxative and anti-dysentery in the Gold Coast.” Its leaves are being used medicinally for abscesses, diarrhea and dysentery, diseases of the

nails, eruptions, toothaches, and wounds. The whole plant is being used for body aches and swellings. Unspecified parts used for sores, breast pain, colic, spleen complaints, diarrhea, menorrhoea, and whitlow<sup>24</sup>. Boiled leaves as tea are being used for rheumatism in Haiti<sup>25</sup>. The whole plant is boiled and the decoction is being used is taken for kidney problem & urinal problems in Mizoram<sup>26</sup>.

***D. diffusum***: The whole plant *D. diffusum* is being used for fever and stomach-ache<sup>27</sup>. It occurs in Burma, China, Eritrea, Ethiopia, India (in Peninsula, Bihar, Gujarat, Rajasthan, Uttar Pradesh, and W. Bengal), Indonesia, Nigeria, and Sudan<sup>28</sup>.

***D. laxiflorum*** DC: Its root powder has been given to cure unconsciousness<sup>29</sup>. It is used by the *Bheels* in Mount Abu area (border of Rajasthan and Gujarat states, Western India). Plant roots are being used in chronic fevers and vomiting<sup>30</sup>. Its boiled root is being used for puerperium in the Philippine Islands<sup>31</sup>. Its roots are used to treat fever, applied to small-pox, also used for unconsciousness or vomiting<sup>32</sup>. Antitussive activity is reported on mice<sup>33</sup>. *D. laxiflorum* is indicated in fever, diarrhea, dysentery, stomachache, UTI, bronchitis, cough etc<sup>34</sup>. It occurs in most of India including Andaman-Nicobar Islands, Bangladesh, Bhutan, Burma, China, Indonesia,



Malaysia, Nepal, Pakistan, Philippines, Taiwan, Thailand, and Vietnam<sup>35</sup>.

## RESULTS AND DISCUSSION

Pharmacognostically (microscopically), not much differentiating features were found in *D. gangeticum*. Species *D. lexifloram* and *D. trifloram* DC were having higher alkaloid content on comparing with *Desmodium gangeticum* DC. All five species (No information about *D. podocarpum*) were having Flavonoids, Steroids, and Alkaloids. Tannins were not present in all five *Desmodium* species (No information about *D. podocarpum*). TLC profiles showed major similarities when developed by the Alkaloid method. When the overall activity was assessed, the profile generated during the study suggested that in the absence of *D. gangeticum* DC, *D. podocarpum* may be useful as *Vishamjwarahara*, *Shothhara*, *Ateesaraghna*, *Swasahara*, *Kasahara*, *Vatarakta-hara*. For actions like *Rasayana*, *Aamaja Atisaraghna*, *Vatika Ateesaraghna*, *Kshataghna* *D. repandum* can be taken. *D. trifolium* can be taken for actions like *Ateesaraghna*, *Shwasahara*, *Kasahara*, *Shothahara*, *Kshataghna*, *Vatarakta-hara*, *Mutrala*. *D. diffusum* may be useful as *Vishamajwarahara*, *Kasahara*, *Shothhara*;

*D. lexiflorum* may be useful as *Chardighna*, *Vishamajwaraghna*, *Kasahara*.

## CONCLUSION

It can be concluded from the above review study that in the absence of endangered *Desmodium gangeticum*, other five species (*D. podocarpum*, *D. repandum*, *D. trifolium*, *D. diffusum*, and *D. lexiflorum*) of Genus *Desmodium* can be considered as substitutes on the base of *Karma*, Pharmacognostical morphology and some of the common chemical constituents of them.



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