



A Review on Ethnomedicinal Claims of *Desmodium Triquetrum* (L.) DC.

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ABSTRACT:

Desmodium triquetrum (L.) DC. is synonym of *Tadahagi triquetrum* (L.) H. Ohashi belongs to the family Fabaceae. *Desmodium triquetrum* (L.) DC. is traditionally used in common cold, sore throat, hemoptysis due to lung diseases, hepatomegaly, enteritis, traumatic injury, etc.

Aim: The aim of this review is to provide comprehensive information on ethnomedicinal claims of *Desmodium triquetrum* (L.) DC. from published literatures, books related to ethnobotany and ethnomedicine.

Materials and Methods: All the available information on *Desmodium triquetrum* (L.) DC. was collected via published literatures, books like Medicinal plants of Gujarat, Reviews on Indian medicinal plants, The wealth of India NISCAIR, etc. The obtained information was distributed into part-wise ethnomedicinal claims, region-wise traditional claims, local names in different languages, and therapeutic indications.

Result: It has been found to be reported in more than 23 states in India, widely distributed in western parts of India common in Maharashtra, Kerala, Karnataka, Gujarat etc. Its root, leaves, and the whole plant has been recommended in 19 different diseases both externally and internally. The whole plant has maximum application in 12 different diseased conditions, followed by root and leaves in 4 and 3 diseases respectively.

Conclusion: *Desmodium triquetrum* (L.) DC. is widely used for treatment of chronic cough and tuberculosis and also, the leaves have been used as a substitute for tea by hill tribes in upper Assam. As the findings, *Desmodium triquetrum* (L.) DC. need to explore with the help of detailed investigation, especially through pharmacological properties.

Keywords: *Dashmoola*, *Shalaparni*, *Laghupanchmoola*, *Desmodium gangeticum* (L.)

INTRODUCTION

Dashmoola is an ancient Ayurvedic formulation. It is being used as a broad-spectrum medication for the treatment of all three *Doshas*. Among that, *Shalaparni*. *Desmodium gangeticum* (L.) DC. is one of the constituents of

Dashmoola. It is included in *Laghupanchmoola*. An established botanical source of *Shalaparni* is *Desmodium gangeticum* (L.) DC. belonging to the family Fabaceae. In Hooker's "Flora of British India" 49 species of



Desmodium were recorded. Among that, 15 species of *Desmodium* were reported in Gujarat. *Shalaparni* is extensively used by *Ayurveda*, Folklore, Homeopathy, Siddha, and Unani system of medicine. *Charaka Samhita*, *Sushruta Samhita*, *Ashtangasamgraha*, and *Ashtangahridaya* mention 139, 64, 165 and 98 formulations of *Shalaparni* respectively. According to National Medicinal Plants Board, *Desmodium gangeticum* (L.) DC. comes in the list of 178 high volumes traded medicinal plants (>1000 MT per year). Due to this high demand and seasonal availability of *Shalaparni*, there is a need to find and promote the usage of equally efficient alternate species for use and especially which is geographically available in different areas.

Desmodium triquetrum (L.) DC. is synonym of *Tadahagi triquetrum* (L.) H. Ohashi which is having same species and family as the botanical source of *Shalaparni*. (*Desmodium gangeticum* (L.) DC.) *Desmodium triquetrum* (L.) DC. is an erect herb, growing up to 3m tall, with erect stems which are almost woody. Branches are triangular in cross-section, and velvety. Leaves are alternately arranged, and the leaf stalk has prominent wings. Leaves are linear-oblong, ovate or heart-shaped, with a tapering tip. Flowers arise in many-flowered racemes in leaf axils; inflorescence axillary and terminal, fruits pods 4-8 joined seed yellowish reniform. Legumes are hairy.¹ It is a very distinct species unlike *Desmodium gangeticum* (L.) DC. having reddish winged petioles and the triquetrous branches being its primary characteristics.

MATERIALS AND METHODS

In the present study, information was collected for the drug *Desmodium triquetrum* (L.) DC regarding Ethnomedicinal claims by using the books with special references from various flora, books of medicinal plants, compiled from books on Ethnomedicinal which are available and related articles from the internet were referred.

Data collection

Information on all reported ethnomedicinal uses of the *Desmodium triquetrum* (L.) DC. from 14 books related to ethnobotany and ethnomedicinal research articles have been compiled from library sources as well as from google scholar, PubMed, etc.

Search words

Ethno medicinal uses of *Desmodium triquetrum* (L.) DC. in the different states in India. Therapeutic claims of D.T in Indian states. Ethno medicinal claims of D.T of the flora of 17.

Study Selection

1. Inclusion criteria:
Publications that described the use of *Desmodium triquetrum* (L.) DC. to treat many disease conditions either human or animal or used as food i.e. having any economic value were included in the review. This includes both external and internal applications with no language restrictions and date limitations.
2. Exclusion criteria:
Other species of *Desmodium* were excluded from the present review.

RESULTS

Local Name:

Desmodium triquetrum (L.) DC. is known by 10 names in 8 languages (Table no. 3).

Area of reporting:

Desmodium triquetrum (L.) DC. found on a variety of soils in evergreen or semi-deciduous forests, in the vicinity of watercourses on bunds of rice fields, grasslands and most common in the Western Ghats. *Desmodium triquetrum* have been reported in more than 23 countries of India like Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Dadra-Nagar-Haveli, Goa, Gujarat, Harayana, Himachal Pradesh, Karnataka, Kerala, Maharashtra, Manipur, Meghalaya, Nagaland, Orissa, Punjab, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, West Bengal and other countries. It is widespread in all South Asian, East Asian, and Southeast Asian countries. Among that, Maharashtra is mostly found in Ahmadnagar, Kolhapur, Nashik, Pune, Raigad, Ratnagiri, Satara, and Thane. And in Karnataka widely distributed in Chikmagalur, Coorg, and Shimoga. It is available in Indo-Malacia to Pacific Islands and China.

Parts used:

The whole plant has maximum applications in 12 disease conditions. The Root- 4 and the leaves – 3 (Table no.1).^{2,3,4,5,6,7,8}

Dosage forms:

It was observed that root, leaves, and whole plant of *Desmodium triquetrum* (L.) DC. are used in two dosage forms either Internal or External. In internal form it is mostly taken as decoction and Juice form. There were variations observed in the total number of claims and the external and internal applications as in some claims the mode of administration was not clearly explained.

Therapeutic uses:

Desmodium triquetrum (L.) DC. Was observed to be used in 19 different disease conditions. It is exclusively used in Fever, Gastrointestinal Disorders, Haemorrhoids, Tuberculosis, Chronic cough, Urinary problems, etc. Thus, it is observed that it has more beneficial and a vast range of therapeutic claims and is used in Hepatitis, Stomach discomfort, Indigestion, Wound healing, Ulcers, Diarrhoea, Dysentery, etc.(Table 1)

Desmodium triquetrum (L.) DC. being used in different states throughout India. Mainly in the diseases like Hemorrhoids, Anthelmintic, Demulcent, Diarrhoea, Dysentery, Antiemetic, Gastritis, Indigestion, and Ulcers. The part most widely used was leaves and the whole plant.

Table 2. Shows Use of *Desmodium triquetrum (L.) DC.* in the different states of India.⁹

Being a folklore plant *Desmodium triquetrum (L.) DC* is known with many local names such as Trefle Gros in English, Dammidi in Telugu, Ulucha in Assam, Khao Mao Nok in Thai, Arhriken in Mizo, Dodotte-Molada gida in Kannada, Kak Ganja in Marathi and Adakkachokki, Adakkapaanal, Adkhananal in Malayalam.

Table 3. Local Name of *Desmodium triquetrum (L.) DC.*¹⁰

The ethanolic extract of the plant reported wound healing activity, hepatoprotective, antioxidant, anti-inflammatory, antihyperlipidemic, and hypoglycemic activity as well as chemical constituents.

Table 4. Shows Previous research work^{11,12,13,14,15,16}

Method of administration of *Desmodium triquetrum (L.) DC.*¹⁷

1. The leaves are commonly used to treat haemorrhoids, usually in the form of decoction. An infusion of the leaves is used to treat stomach discomfort.
2. Both the leaves and the seed pods are used as part of diuretic remedies to treat gravel in the kidneys and bladder.
3. A decoction or infusion of the roots is used as a treatment for chronic cough and tuberculosis and also to treat kidney complaints.
4. The roots are eaten or used in baths as a treatment for gastrointestinal and urinary problems ranging from an upset stomach to hepatitis.
5. A decoction of the whole plant is used for invigorating the spleen and promoting digestion.

Comparative Ethnomedicinal claims of *Desmodium triquetrum (L.) DC.* Action and *Desmodium gangeticum (L.) DC.*

Among the 27 claims of *Desmodium gangeticum*¹⁸ and 19 claims of *Desmodium triquetrum (L.) DC.* Out of the 10, similar claims were found. They are-

1. Haemorrhoids
2. Fever
3. Diarrhoea
4. Dysentery
5. Abdominal pain
6. Antiemetic
7. Chronic cough
8. Tuberculosis
9. Urinary disorders
10. Muscular sprain

DISCUSSION

Identification of particular plants' roles an important role in day-to-day practice. *Desmodium triquetrum (L.) DC.* triquetrous often reddish-purple branches, reddish winged petiole are its identification characteristics.¹⁹ Various ethnomedicinal claims regarding *Desmodium triquetrum (L.) DC.* were found in different parts of India like Maharashtra, Gujrat, Assam, Kerala, Karnataka, etc. Different part-wise uses of *Desmodium triquetrum (L.) DC.* were found in various tribal communities of India. This shows the wide availability and use of this plant throughout India. Individual uses of leaves and roots are found, whereas uses of the whole plant are also observed. Maximum uses of whole plant of *Desmodium triquetrum (L.) DC.* were found in comparison to leaves and roots. The whole plant is used to expel worms, and treat spasms in infants, indigestion, haemorrhoids and abscesses, a decoction of the whole plant is used for invigorating the spleen and promoting digestion. Infusion or decoction of roots is used in baths for gastrointestinal and urinary problems ranging from an upset stomach to hepatitis. Decoction of roots is also used for chronic cough and tuberculosis. Leaves are used in haemorrhoids both as external and internal forms. Its use as a medicine is found all over India even though not found in classical Ayurvedic books. In the present study, the maximum uses of the whole plant are found i.e, the Whole plant has maximum applications in 12 diseased conditions followed by root and leaves in 4 and 3 diseases respectively.

CONCLUSION

A drug, if the unknown is like poison, weapon, fire and thunderbolt while if known is like nectar. A drug is unknown by its name, form, properties and administration responsible for complications. To avoid these complications proper identification, collection, storage and processing of the drugs are necessary. Hence identification tools of a particular drug play a very important role in therapeutic effect. For *Desmodium triquetrum (L.) DC*. reddish winged petioles and the triquetrous branches are characteristics, which are helpful for the identification of this species. As per ethnomedicinal claims *Desmodium triquetrum (L.) DC*. was found to have been used in various diseased conditions and also has a good therapeutic value. The use of the whole plant was seen primarily and repeatedly. Due to different geographical distribution and seasonal variations, it is not abundantly available. A large-scale propagation and conservation are needed to meet the increasing demand for the drug *shalparni*. *Desmodium triquetrum* is having same species and family as the botanical source of *Shalaparni*. (*Desmodium gangeticum (L.) DC*.) and hence, can be substituted after a detailed scientific exploration.

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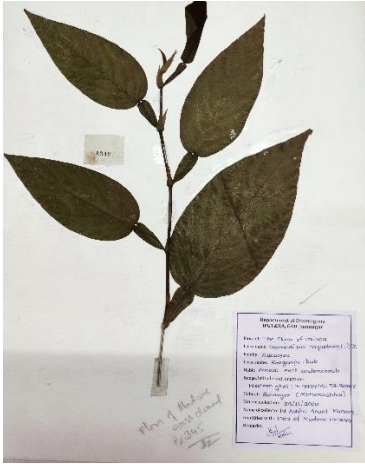


Fig-1 Herbarium of *D.triquetrum*



Fig -2 Whole plant of *D.triquetrum*



Fig.3 Stem of *D.triquetrum*



Fig-4 Legumes of *D.triquetrum*



Fig-5 Leaves of *D.triquetrum*



Fig-6 Roots of *D.triquetrum*

Table 1. Ethnomedicinal claims of different useful parts of *Desmodium triquetrum (L.) DC*.^{2,3,4,5,6,7,8}

Sr. No	Name of disease	Part used	Dosages form	Int /Ext.
1.	Muscular sprain.	Root	Root Paste	Ext
2.	Rickets	Root	-	-
3.	Anthelminthic	Whole part	-	-
4.	Ulcers	Whole part	-	-
5.	Demulcent	Whole part	-	-
6.	Diarrhoea	Whole part	-	-
7.	Dysentery	Whole part	-	-
8.	Antiemetic	Whole part	-	-
9.	Indigestion	Whole part	-	1. -
10.	Gastritis	Whole part	-	2. -
11.	Antiviral	Whole part	Plant Extract	-
12.	Haemorrhoids	Leaves	Juices	-
13.	Abdominal pain	Leaves	-	-
14.	Wound healing	Leaves	-	-
15.	Antipyretic	Whole part	-	-
16.	Diuretic	Whole part	-	-
17.	Chronic cough	Roots	Decoction/Infusion	Int
18.	Tuberculosis	Roots	Decoction /Infusion	Int
19.	For invigorating the spleen and for promoting digestion	Whole part	-	-

Table 2. Use of *Desmodium triquetrum (L.) DC*. in the different states of India.⁹

Sr.no	Part used	Disease	State
1.	Leaves	Piles	Kerala
2.	Leaves	Haemorrhoids	Assam
3.	Whole plant	Anthelmintic	Gujrat
		Demulcent	
		Diarrhoea	
		Dysentery	
		Antiemetic	
		Gastritis	
		Indigestion	
Ulcers			

Table 3. Local Name of *Desmodium triquetrum* (L.) DC.¹⁰

Sr.no	State name	Local name
1.	English name	Trefle Gros
2.	Telugu	Dammidi
3.	Assam	Ulucha
4.	Thai	Khao Mao Nok
5.	Mizo	Arhriken
6.	Kannada	Dodotte, Molada gida
7.	Marathi	Kak Ganja
8.	Malayalam	Adakkachokki, Adakkapaanal, Adkhapanal

Table 4. Previous research work.^{11,12,13,14,15,16}

Sr. No	Part used	Dosage form	Study
1.	Leaves	Ethanol extract	Wound healing activity
2.	Leaf	Ethanol extract	Hepaprotective and antioxidant activity
3.	Leaves	Ethanol extract	Anti-inflammatory, And antioxidant activity.
4.	Whole plant	Ethanol extract	Antihyperlipidemic, Chemical constituents
5.	Whole plant		Ethnopharmacological, Phytochemical
6.	Aerial part		Hypoglycemic activity