The Pharma Innovation Journal 2026; 15(2): 08-12

www.ThePharmaJournal.com

The Pharma Innovation

ISSN (E): 2277-7695
ISSN (P): 2349-8242
Impact Factor (RJIF): 6.34
TPI 2026; 15(2): 08-12

www.thepharmajournal.com
Received: 13-11-2025
Accepted: 18-12-2025

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Exploration of various medicinal parasitic plants on diverse host in North Bihar region

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DOI: https://www.doi.org/10.22271/tpi.2026.v15.i2a.26385

Abstract
Medicinal properties of parasitic plants were found out by means of ethno botanical study in Mithila region of Bihar. Parasitic plants have many activities and the most reported and pronounced effect are antibacterial, anti-inflammatory and neuroprotective properties. Many of the parasitic plants ar used as folk medicine in several regions in North Bihar. The study presents the ethnobotanical use of eight species of common parasitic plants belonging to four families. *Cuscuta* species is used in the treatment of baldness and applied on head for curing hairfall, *Cassytha filiformis* is used in prostate cancer, *Castillegia angustifolia* is used to treat excessive menstrual discharge and menstrual imbalance, Orobanchae aegytiaca is used to treat kidney stones and scabby ulcers, *Striga asiatica* is applied as a wound dresser, Dendropthae falcate is used to treat brochitic and respiratory troubles. *Cuscuta* species have generally wide host range to many different crops at the same time. *Cuscuta* reportedly uses weak chemical defense to select host range of high nuitritional values.

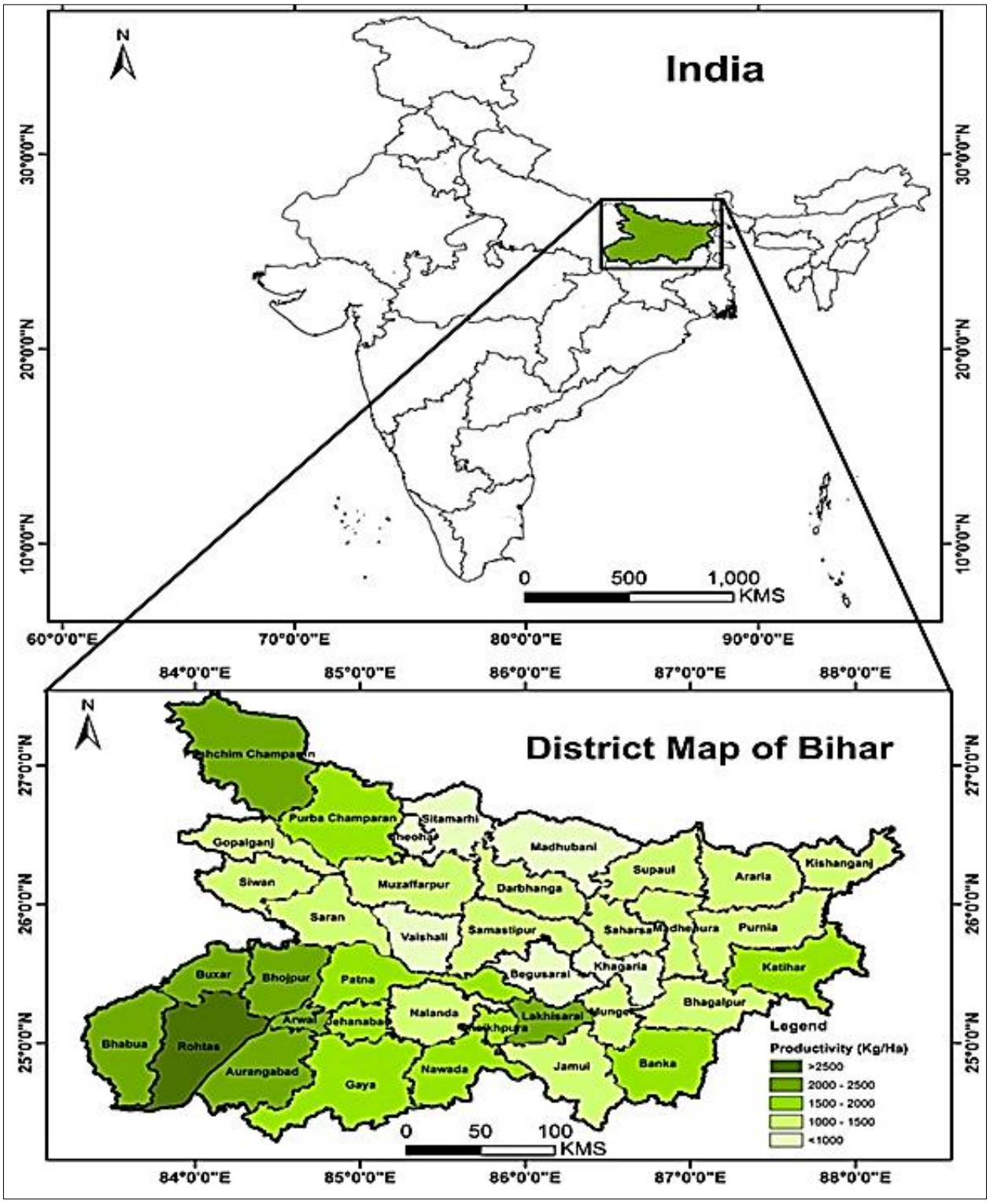
Keywords: Antibacterial, anti-inflammatory, chronic, neuroprotective

Introduction
Parasitic plants are traditionally very important for medicinal properties in Northern region of Bihar. They are mostly in the family of Convolvulaceae, Loranthaceae, Orobanchaceae and Viscaceae. *Cuscuta* (dodder), is also known as aakashbel or amarbel in vernacular terms. According to older literature it is an angiospermic parasite belonging to the family Convolvulaceae the most common species are *Cuscuta* reflexa, *Cuscuta* chinensis, and *Cuscuta* campestris. Its geographical distribution, wide host range and difficulty in control make *Cuscuta*, one of the most harmful parasites present worldwide (Parker and Riches, 1993) [23]. *Cuscuta* is the most noticeable among all parasites. It has so many hosts belonging to dicots but monocots are less preferred (Mescher, 2006; Nawakocha and Aigbokan, 2013; Rowntree *et al.*, 2014) [24, 25, 26]. The members of the Monogynella subgenus are fruit killers that can kill and damage fruits but the species of subgenus *Cuscuta* prefer herbaceous hosts and more harmful than *Monogynella* as in case of the subgenus, Grammica. Parasitic plants have many activities, and the most reported and pronounced effects are antibacterial, anti-inflammatory, antioxidant, anticancer and neuroprotective properties (Palambo, 2009). The scientific literature regarding the traditional uses has revealed remarkable.
These parasites are a bizarre group of plants with countless chemical properties yet are poorly understood in many areas (Ghimire *et al.*, 2004) [27]. The name of the plant for which the medicine is prescribed, the family, the use of the part, the disease, the method of administration, etc. are mentioned. Although these plants are very common in several parts of the Mithila region and widely studied from ethnomedicinal point of view but the current study primarily focuses on the ethnomedical perspective of local rural communities Riches and Parker (1995) [28] pointed out that Broomrape species are related to crops in the Apiaceae, Astraceae, Brassicaceae, Cucurbitaceae, Fabaceae and Solanaceae families and are therefore directly involved in food consumption by humans. Like many weeds, some pathogenic plant parasites are spread. Ethnobotanical information is an indispensable tool for drug development. Overall, the ethno botanical use of parasitic plants is important. Medicinal parasitic plants in rural areas of developing countries are major source of medicines for human use (Palambo, 2009). However, the traditional knowledge of these plants is seriously threatened by the current trends of intensive agriculture, industrialization, and economic globalization that are promoting migration of rural people to urban areas

(Bhogankar and Deokule, 2002 [29]; Bhattarai A great proportion of parasitic plants have been used as folk medicine in various regions around the Mithila region of Bihar [1].
Based on the ethno botanical survey, leaf was found to be showing maximum medicinal properties.

The species of *Cuscuta* were found to be medicinally important while others are threats to natural ecosystems and crops.

Material and Method



Several field visits were conducted during the research period and ethnobotanical data were collected through interviews, and structured questionnaires from various traditional healers, herbalists, and other elders of the Mithila region to find out the efficacy of parasitic plants and their parts used in the treatment of various diseases and disorders. In this regard, regular visits were made to different sites of Darbhanga, Madhubani and Samastipur districts to collect samples of parasitic plants and further to observe all hosts infected with different parasitic plants.

Observation

Many of the parasites are used as folk medicine in many regions around the Mithila region of Bihar. The bioactive chemicals found in parasitic plants include phenolic compounds, especially flavonoids, glycosides, alkaloids, and fatty acids (Tahir and Gul, 2014) [14] *Cuscuta* spp Decoction of stem is used to cure jaundice, urinary disorder problems, diarrhoea, cholera, asthma, fever, cough and cold.

- The whole plant is used in the treatment of ailments like baldness. Whole plant was grinded and applied on the head for curing hair fall esp. in men *Orobanche aegyptiaca*
- It is used to treat kidney stones and scabby ulcers
- Decoction is used as herbal tonic meant for treating impotence, spermatorrhea and dermatological problems.

Striga asiatica

- The powdery form of the plant is applied as a wound dresser.
- The sap is used in the treatment of skin problems.
- Decoction is used as an antibacterial and antifungal agent.
- Decoction of whole plant is used as an antioxidant (Wolf and Timko, 1991) [30].

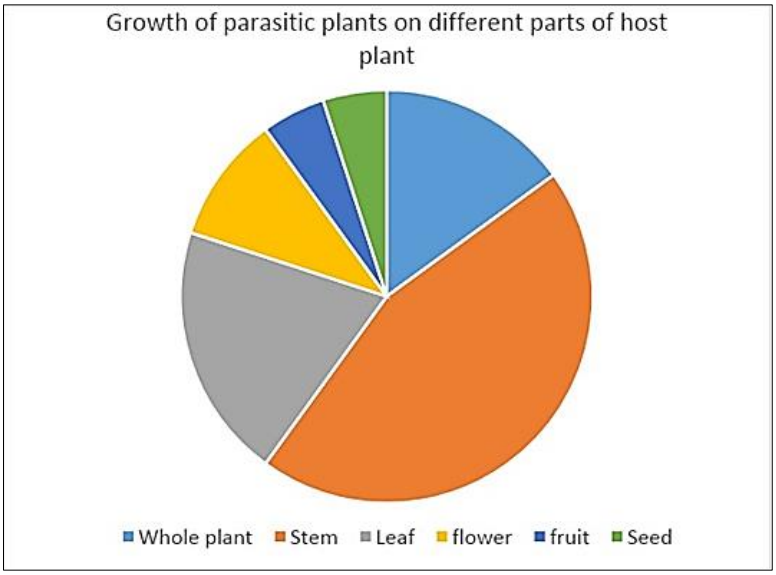
Viscum album: Decoction of young twigs and leaves are used in the treatment of respiratory ailments. The paste of tendril is applied for insect bite. The paste of the plant is administered to patients to reduce fever, and in the treatment of ulcers, blood disease, fractured bone, dislocation, and cancerous wounds (Abdel-Salam *et al.*, 2010) [31].

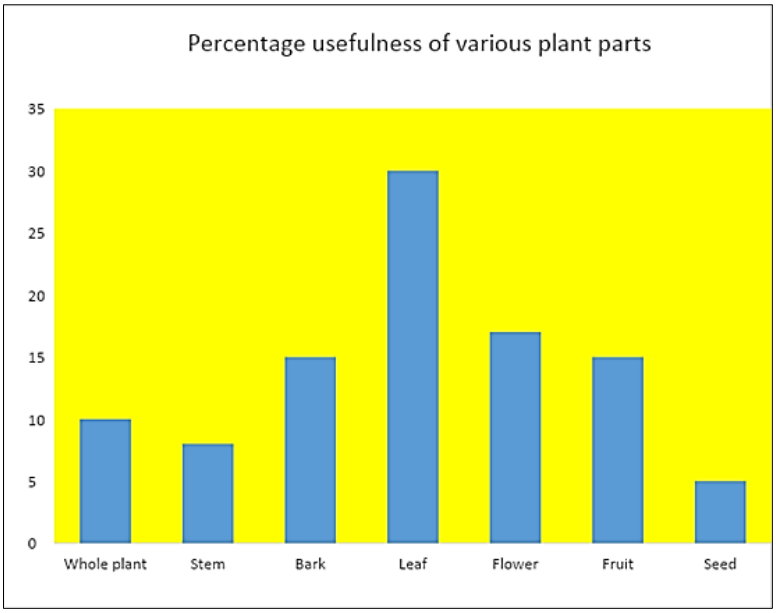
Loranthus odoratus

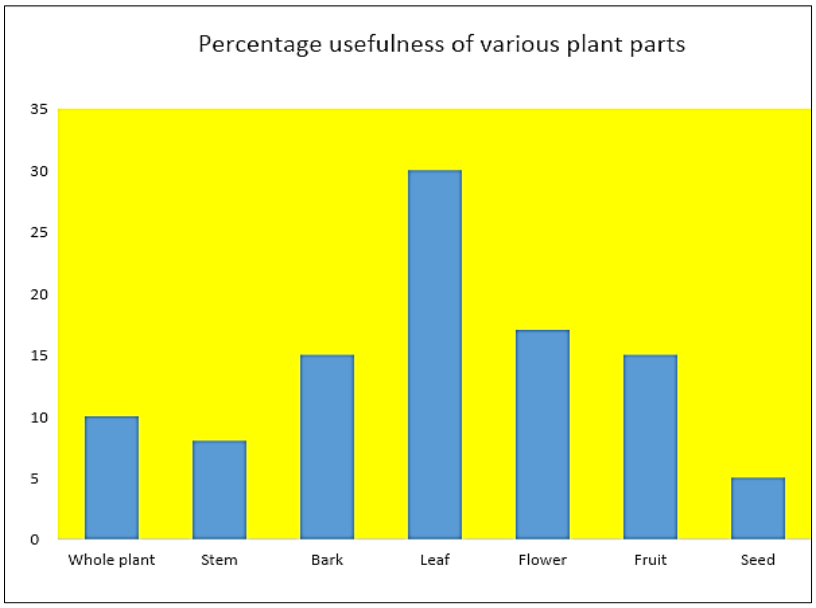
- Leaves are used in the treatment of hypertension, diabetes, and rheumatism and possess immunomodulatory, hypolipidemic properties, antimicrobial and antioxidant properties (Yusuf *et al.* 2013) [22].
- Fruits are used in indigestion.

Dendropthoe falcata: Decoction of the whole plant is used to treat bronchitis and respiratory troubles.

Decoction of bark is the remedy for asthma and menstrual disorders in women. The bark is used in impotency.







Flowers of *Cuscuta chinensis* *Orobanche aegyptiaca*

Dendrophthoe falcate *Loranthus odoratus* *Viscum articulatum*

Conclusions

The findings of the study confirm and validate the great potential and ethnomedical use of parasitic plants. The aim of our study is to record the medicinal value of these parasitic plants. The ethnomedicinal importance of these parasitic plants are found out. The plants were explored with respect to the treatment of chronic and incurable diseases.

Acknowledgment

Authors are grateful to Dr. Sabita Verma, Head, University Department of Botany, Bihar for her constant support and encouragement.

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