

Medicinal importance of *Catharanthus roseus* in the rural areas around Getalsud Dam, Jharkhand: An ethnobotanical study

Arpana Sharma*

Department of Botany, School of Science, Y. B. N. University, Ranchi, Jharkhand, India

Received : 28th May, 2026 ; Accepted : 28th June, 2026

DOI:- <https://doi.org/10.5281/zenodo.22112809>

ABSTRACT

Getalsud Dam, also known as Rukka Dam, is one of the largest and most important reservoirs in Jharkhand. It is located near Ormanjhi in Ranchi district. This landscape supports a rich diversity of plant species, including many medicinal plants such as *Catharanthus roseus*. The combination of forest vegetation and village Medicinal plants have been an integral part of traditional healthcare systems in rural India. *C. roseus* (L.) G. Don, (syn. *Vinca rosea*), commonly known as Sadabahar, or Madagascar periwinkle, is one of the most valuable medicinal plants because of its wide range of therapeutic properties. The present study explores the medicinal importance of *C. roseus* in the rural communities surrounding Getalsud Dam in Ranchi district, Jharkhand. Information was gathered through ethnobotanical observations, interactions with local villagers, and a review of published scientific literature. The study found that rural households cultivate the plant mainly as an ornamental species while also using it in traditional remedies for diabetes, wounds, skin infections, fever, and digestive disorders. Besides its traditional uses, the plant possesses pharmacologically important alkaloids such as vincristine and vinblastine, which are widely used in modern cancer treatment. The findings emphasize the need to conserve medicinal plants and preserve indigenous knowledge for sustainable healthcare and biodiversity conservation.

Key Words - *Catharanthus roseus*, Ethnobotany, Medicinal plants, Getalsud Dam, healthcare

***Corresponding author** : drarpanasharma18@gmail.com

INTRODUCTION

India is recognized as one of the world's richest countries in medicinal plant diversity. Rural communities continue to depend on locally available medicinal plants because they are affordable, accessible, and culturally accepted. In Jharkhand, tribal and rural populations possess extensive knowledge of medicinal flora that has been transmitted across generations.

Getalsud Dam, also known as Rukka Dam, is one of the largest and most important reservoirs in Jharkhand. It is located near Ormanjhi in Ranchi district, approximately 35 km from Ranchi city. The

dam was constructed across the Subarnarekha River and became operational in 1971. Its primary purpose is to supply drinking water to Ranchi city, support industrial water needs, generate hydroelectric power, and provide irrigation benefits.

The reservoir has a catchment area of about 717 km² and a gross storage capacity of approximately 289 million cubic metres (MCM). The dam is around 35 metres (116 feet) high and supports a hydroelectric power station with an installed capacity of 130 MW (2 × 65 MW Francis turbines).

Water releases are carefully managed to ensure an adequate drinking water supply for Ranchi, particularly during dry seasons.

The area surrounding Getalsud Dam is characterized by rolling hills, sal forests, agricultural fields, and rural villages. This landscape supports a rich diversity of plant species, including many medicinal plants such as *C. roseus*, *Azadirachta indica* (Neem), *Ocimum tenuiflorum* (Tulsi), and *Aloe vera*. The combination of forest vegetation and village home gardens makes the region suitable for ethnobotanical studies on traditional medicinal plant use.

C. roseus, commonly known as Sadabahar or Vinca rosea, belongs to the family Apocynaceae. Although native to Madagascar, it is widely cultivated throughout India. The plant is valued not only for its attractive flowers but also for its medicinal significance. Scientific investigations have identified more than one hundred alkaloids in the plant, including vincristine and vinblastine, which have become essential drugs in cancer chemotherapy.

The villages surrounding Getalsud Dam are characterized by agricultural landscapes, forest patches, and diverse medicinal plant resources. This study aims to document the traditional medicinal uses of *C. roseus* in these rural communities and highlight its importance in local healthcare practices.

OBJECTIVES

The objectives of the study were:

- To document the traditional medicinal uses of *C. roseus* in villages around Getalsud Dam.
- To understand the ethnobotanical importance of the plant in rural healthcare.
- To compare traditional knowledge with scientifically validated medicinal properties.
- To emphasize the need for conservation and sustainable utilization of medicinal plants.

Study Area

Getalsud Dam, also known as Rukka Dam, is located approximately 35 km from Ranchi city in Jharkhand. The surrounding villages depend mainly on

agriculture, animal husbandry, and forest resources for their livelihoods. The region experiences a tropical climate with moderate rainfall and supports a variety of medicinal plant species.

Most households maintain small home gardens where medicinal plants such as Tulsi, *Aloe vera*, Neem, and *C. roseus* are cultivated. Traditional healers and elderly villagers continue to use these plants for treating common ailments.

METHODOLOGY

The study adopted an ethnobotanical approach combining field observations and secondary literature.

Information was collected through: Visits to villages surrounding Getalsud Dam. Informal interviews with villagers, elderly residents, and traditional healers. Direct observation of cultivated medicinal plants. Review of scientific books and peer-reviewed research articles on *C. roseus*.

The collected information was analyzed to identify commonly reported medicinal uses and compare them with published pharmacological evidence.

Botanical Description

C. roseus is a perennial evergreen herb growing up to 30–100 cm in height. It has glossy green leaves arranged opposite each other on the stem. The flowers are usually pink, white, or purple with five petals. The plant produces slender fruits containing numerous small seeds.

The entire plant including leaves, flowers, roots, stems, and seeds-contains biologically active compounds with medicinal value.

Ethnobotanical Importance in Rural Areas Around Getalsud Dam

The study revealed that *C. roseus* is commonly grown in household gardens for both ornamental and medicinal purposes.

Diabetes Management

The most common traditional use reported by villagers was the preparation of leaf extracts for controlling blood sugar levels. Fresh leaves are washed and consumed in small quantities or prepared as a herbal decoction. Although local

users believe it helps regulate blood glucose, medical supervision is essential because dosage and effectiveness can vary.

Wound Healing

Fresh leaves are crushed into a paste and applied externally to cuts and minor wounds. Villagers believe the paste promotes healing and reduces infection.

Skin Diseases

Leaf paste is traditionally used for treating skin rashes, itching, and minor fungal infections. Local residents consider the plant useful for relieving irritation.

Fever

Some households prepare a decoction of leaves as a traditional remedy for mild fever. The herbal preparation is consumed in limited amounts.

Digestive Disorders

Traditional healers reported using small quantities of plant extracts for stomach discomfort and digestive problems. Such use varies among villages and is generally based on inherited local knowledge.

Oral Health

In certain households, leaves are occasionally used in traditional practices intended to support oral hygiene and relieve minor gum discomfort.

Scientific Validation of Medicinal Properties

Modern scientific research has confirmed several pharmacological activities of *C. roseus*.

Anticancer Activity

The plant contains vincristine and vinblastine, two important anticancer alkaloids widely used in treating leukemia, lymphoma, Hodgkin's disease, and several other cancers.

Antidiabetic Activity

Experimental studies suggest that extracts of the plant may help reduce blood glucose levels because of their bioactive compounds. However, further clinical research is needed before recommending routine therapeutic use.

Antioxidant Activity

The plant contains flavonoids and phenolic compounds that help neutralize harmful free radicals and reduce oxidative stress.

Antimicrobial Activity

Extracts have shown inhibitory effects against several bacteria and fungi, supporting some of its traditional applications.

Anti-inflammatory Activity

Research indicates that plant extracts possess anti-inflammatory properties that may contribute to reducing swelling and pain.

Importance in Rural Healthcare

The rural communities surrounding Getalsud Dam continue to rely on medicinal plants because they are easily available and inexpensive. *C. roseus* serves as an accessible household remedy for common ailments while also representing an important link between traditional medicine and modern pharmacology.

Traditional knowledge regarding the cultivation, preparation, and medicinal use of the plant is generally transferred orally from older generations to younger family members. However, increasing urbanization and changing lifestyles threaten the preservation of this valuable knowledge.

Conservation and Sustainable Utilization

Despite being widely cultivated, conservation of *C. roseus* remains important due to its pharmaceutical significance. Conservation strategies should include: Promoting household cultivation, establishing medicinal plant gardens in schools and villages, conducting awareness programmes on safe medicinal use, documenting indigenous ethnobotanical knowledge. Encouraging scientific validation of traditional practices and Supporting community-based conservation initiatives.

CONCLUSION

C. roseus is an important medicinal plant that plays a significant role in the traditional healthcare practices of rural communities around Getalsud Dam. The study indicates that villagers use the plant primarily for managing diabetes, treating wounds,

skin problems, fever, and digestive disorders. Modern scientific research further supports its importance through the discovery of pharmacologically active compounds such as vincristine and vinblastine, which are used in cancer therapy. The integration of traditional ethnobotanical knowledge with scientific research can contribute to improved healthcare, biodiversity conservation, and sustainable utilization of medicinal plant resources. Preserving indigenous knowledge while promoting evidence-based use of medicinal plants will benefit both local communities and future generations.

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