

CHAPTER 4

Ecological, ethnomedicinal, and ornamental aspects of Blackboard tree: a medicinal tree of India

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Abstract

The authors presented the cultural, medicinal, and ornamental significance of Blackboard tree (*Alstonia scholaris*) along with photographs for easy identification. The botanical description is added with its ecological habitat. The chapter highlights the importance of tress in day-to-day life.

Keywords: Trees, medicinal, social, cultural

Introduction

Trees are the most important part of life and the environment. They give us a lot of stuff for life and sustainability. They have ecological, cultural, medicinal, food, and ornamental values. In the last few decades, the population of trees is going to decline due to several factors. A lot of invasive trees like *Acacia auriculiformis*, *Terminalia mantaly*, *Spathodea campanulata*, *Fernandoa adenophylla*, etc. are planted everywhere, and wild tree species are ignored. The wild trees are most perfect for a particular landscape. Therefore, there is a need to address them in a proper way. For identification, photos of trees should be given in communications. In this aspect, an attempt has been made to document the uses and significance of *Alstonia scholaris* through a literature survey (Singh et al., 2024). Photographs are taken from the field and presented in the chapter.

Morphology and habitat

It is a tree up to 50 m tall. Bark is gray. Leaves in whorls, 3-10, obovate to narrowly spatulate, leathery, cuneate base and rounded apex. Inflorescence cymes. Flowers white and scented. Ovaries are distinct and pubescent.



Figure 1: Leaves of *A. scholaris*

Fruits are woody, pendulous, two-lobed and dehiscent follicle. Seeds are oblong and hairs in ends (Figures 1-3). Flowering is June to November and fruiting is October to December. It usually grows in evergreen, deciduous, and mixed forest. Sometimes, it also grows near forest margins. It is distributed in India, Sri Lanka, China, Malesia, Queensland, Thailand, Vietnam, and Solomon Islands (Pandey et al., 2020; Present study).

Traditional uses

Traditionally, *A. scholaris* is used to treat several health problems. Whole plant is used to treat fever in cattle (Harsha et al., 2005), root paste is used to treat leucorrhoea (Bhandary et al., 1995), stem bark decoction is used in labor pain (Sharma and Kumar, 2011), leaves are used to cure intestinal parasites (Singh et al., 2003), latex is used to treat asthma (Saikia, 2006), flowers are used to cure respiratory problems (Anonymous, 1985), etc. It is noticed that the bark of *A. scholaris* is commonly used as a tonic and in the treatment of fevers. It is also very popular in Indian Ayurveda for the treatment of ulcers, asthma, tumors, skin infections, worm infections, and as a gastric stimulant (Chopra and Chopra, 1933; Pandey et al., 2020). It has a lot of popular formulations like Daptachchhadadi kvatha, Saptaparnaghana, Saptaparnasatvadi, Mahatikta ghrita, and Saptachchhadadi oil (Pandey et al., 2020).

Pharmacological uses

Many researchers have reported the pharmacological values of *A. scholaris*. It has anti-malarial activity (Pandey et al., 2020), anticancer activity (Baliga, 2010) and suppress the growth of tumours (Pandey et al., 2020).

Bioactive compounds

Several bioactive compounds are reported from *A. scholaris* like Alschomine (Abe et al., 1989), Scholaricine (Atta-ur-Rahman et al., 1985), E-Alstoscholarine (Cai et al., 2007), Alstorisine A (Chen et al., 2016), Alstonic acids (Wang et al., 2009) etc. TLC profiling and qualitative phytochemical screening was carried out by the Singh et al., (2024) and documented its bioactive compounds.

Ecological values

The flowers of *A. scholaris* attract different types of pollinators like *Apis dorsata*, *Apis cerana*, *Euploea core*, *Hypolimnas misippus*, *Barbo cinnara*, *Palpita vitrealis*, *Cephonodes hylas* etc (Solomon et al., 2021). It also provides nectar for birds like *Passer domesticus* (Solomon et al., 2021).

Avenue plantation

It is very common tree used in avenue plantation and for ornamental purposes. The flowers are very aromatic which make it more suitable for plantation as avenue tree.



Figure 2: Flowers of *A. scholaris*



Figure 3: Bark of *A. scholaris*

Future aspects

Alstonia scholaris is commonly known as Chitvan and Saptaparni in Indian traditional therapeutic practices. Several medicinal uses are reported but lack in ecological studies. Therefore, there is a need to do more exploration work in ecological aspects and bring attention towards its importance and conservation.

References

- Baliga MS. (2010). *Alstonia scholaris* Linn R Br in the treatment and prevention of cancer: past, present, and future. Integrative Cancer Therapies. 9(3): 261–269.
- Pandey, K., Shevkar, C., Bairwa, K. et al. (2020). Pharmaceutical perspective on bioactives from *Alstonia scholaris*: ethnomedicinal knowledge, phytochemistry, clinical status, patent space, and future directions. Phytochem Review. 19: 191–233.
- Singh B, Kavita, Aarti, Yadav N, Chauhan J, Jena N and Kumar S. (2024). Phytochemical screening and Thin Layer Chromatography (TLC) of bark of *Alstonia scholaris* (Apocynaceae). In: Plants & Secondary Metabolites, Volume 1, APRF Publishers, India.
- Solomon Raju AJ, Prathyusha K, Punny K, Sunanda Devi D, Venkata Ramana K. (2021). Indian Devil Tree, *Alstonia scholaris* (L.) R.Br. (Sub-family Rauvolfioideae: Family Apocynaceae): Pollination ecology and seed dispersal versus human health. Species. 22(69): 153-160.