

Research Article**A Review on Medicinal Herbal Plant: *Nyctanthes Arbortristis* LINN.****Ashok Kumar Mobiya*¹, Shailesh M Kewatkar², Vidhi Jain³, Manmeet Singh Saluja⁴**¹Research Scholars, Department of Pharmacy, SunRise University, Alwar, Rajasthan.²Professor, Department of Pharmacy, SunRise University, Alwar, Rajasthan.³Professor & Principal, Maa Vaisnavi Education Institute & Research Sansthan, Baran, Rajasthan.⁴Professor, Department of Pharmacy, TIT- Pharmacy, Bhopal, Madhya Pradesh.**Article Info:** Received: 21-01-2023 / Revised: 01-02-2023 / Accepted: 20-02-2023**DOI:** <https://doi.org/10.32553/jbpr.v12i2.969>**Address for Correspondence** Ashok Kumar Mobiya**Conflict of interest statement:** No conflict of interest**Abstract:**

Night jasmine, often called Parijat, is the common name for *Nyctanthes arbortristis* Linn. The plant belongs to the Oleaceae family. The shrub is native to the tropics and subtropics of the globe. It may seem like a pretty shrub, but it really has a lot of useful medicinal and pharmacological characteristics. The plant's distribution, phytochemical make-up, and pharmacological actions are all covered in this review article.

Keywords: *Nyctanthes arbortristis* Linn., geographical distribution, phytochemical constituents, pharmacological activities.

1. Introduction

The oleaceae (Nyctaginaceae) family includes *Nyctanthes arbortristis* Linn. Common names for the plant include "Night Jasmine" and "Harsingar." The name *Nyctanthes* comes from the Greek terms "nykhta," which means night, and "anthos," which means flower (Vats M et al., 2009; Mesham M. M. et al., 2012). The smell of the flower is at its peak intensity and most enticing throughout the night (Siddiqui et al., 2006). The plant is well-known as an attractive shrub and is extensively grown in tropical and subtropical parts of the globe. Every portion of the *Nyctanthes arbortristis* Linn. plant has one or more therapeutic characteristics, and it is often used as a kind of traditional medicine by the indigenous

communities in the area (Champa Rani et al., 2012).

Classification: This Taxonomic Classification is according to the APG-IV (Angiosperm Phylogeny Group IV system) 2016.

- **Kingdom:** Plantae
- **Class:** Eudicots
- **Division:** Angiosperm
- **Order:** Lamiales
- **Family:** Oleaceae
- **Genus:** *Nyctanthes*
- **Species:** *arbor-tritis*

Vernacular Names: (Ruchita Srivastava et al., 2018)

- **English:** Coral jasmine, Night jasmine
- **Hindi:** Harshinghar, Sihau, Seoli
- **Sanskrit:** Parijata, Parijath, Sephalika
- **Gujarati:** Jayaparvati, Parijatak
- **Bengali:** Sephalika, Seoli.
- **Kannada:** Goli, Harsing, Parijata
- **Marathi:** Kharbadi, Kharassi, Khurasli, Parijatak
- **Tamil:** Manjhapu, Pavala-malligai
- **Telugu:** Kapilangadustu, Pagadamalle, Parijat

Geographical distribution

Nyctanthes arbortristis Linn. is native to Southern Asia, and is found in northern Pakistan and Nepal. It is also found available in Northern India and Southern Thailand. The plant is found to be growing on rocky grounds in dry hillsides and as undergrowth in dry deciduous forests. In India, it is commonly found to grow in the outer Himalayas and on tracts of Jammu and Kashmir, Nepal, East of Assam, Bengal, Tripura upto the Central region up to Godavari in the South (Champa Rani et al., 2012; Mathuram V et al., 1991).

Botanical description

Nyctanthes arbortristis Linn. may grow up to ten meters in height (Sasmal D et al., 2007). The bark of the plant has a rough texture and a dark grey or brown tint, depending on its age. The surface of the bark has become pitted as a result of the circular barks flaking off, and it is uneven as a result of the grey and brown colour areas. The inner bark has a creamy white colour, and it is soft. There are collapsed and non-collapsed phloem zones that are clearly evident (Biswas et al., 2011). The leaves are opposite one another and may be oval or acuminate in shape, and their margins can either be whole or serrated. The petioles range in length from 5-7 to 7.7-10 mm and have an axial concavity. They are lengthy and hairy. A unicostate and reticulate venation is present. The lamina has an ovate shape and an acute or acuminate point at its apex. The flowers are

tiny and aromatic, and the cymes are slender, hairy, and relatively short. Trichotomous flowers are present. The bracts are widely oval, apiculate, and hairy on both sides, while the calyx is narrowly campanulate and is 6-8 millimetres in length. Corolla is glabrous, and the tube of the corolla has an orange colour (Madhuri kumari et al., 2018). The flowers that have six petals are quite easy to see, while blooms with five, seven, eight, or nine petals are very uncommon (Sandip Pal, 2019). The fruits have the form of a heart, are flat and brown, and are divided into two portions, with each half housing a single seed. The soil should be loamy for optimal growth. The seeds are hard and exalbuminous, and they have a substantial testa coating. Large, see-through, and densely vascularized, the outermost layer is amorphous (Jain PK et al., 2016).

Phytochemical constituents

Roots: The root part of the plant is composed of alkaloids, tannins, glycosides, beta-sitosterol and oleanolic acid (Sunil Ashokrao Nirmal et al., 2012).

Stems: The stems contain the glycoside naringenin-4''-O-βglucopyranosyl-α-xylopyranoside and β-sitosterol (Sandhar HK et al. 2011; Iyer RI et al. 1999; Sasmal D et al. 2007)

Leaves: Arborside-A, Arborside-B, C and D, nyctanthine, amyryl, hentriacontane D-mannitol, flavone glycosides, β-sitosterol, astragalol, oleanolic acid, nyctanthic acid, tannic acid, ascorbic acid, methyl salicylate, lupeol, volatile oil, glucose, fructose, carotene and benzoic acid are present in leaves (A.V Bhosale et al., 2009).

Flowers: Cyclohexylethanoid, rengyolone, 6-O-transcinnamoyl-7-O-acetyl-6-beta-hydroxylogan, essential oils, nyctanthin, D-mannitol, tannins, glucose, carotenoids, glycosides including β-monogentiobioside, ester of α-crocetin, β-monogentiobioside-β-D-monoglucoside and β-digentiobioside are present in the flowers.

Seeds: D-Glucose & D-Mannose, Arbutin, A, B, D and E, Nyctanthoside, Nyctoside. glycerides of linoleic, oleic, lignoceric, stearic, palmitic, myristic, nyctanthic acid and 3,4- secotriterpene acid.

Common medicinal uses

Leaves: A variety of painful conditions, including sciatica and rheumatism, may be alleviated by eating the plant's leaves. Moreover, a persistent fever and worms found within may be cured by using the leaves. The leaves include active components that include those that are laxative, diaphoretic, and diuretic. The juice of the leaves, combined with honey, is a traditional remedy for coughs and fevers. The juice that is extracted from the leaves is used both as a treatment for digestive issues and as an antidote for venom produced by reptiles. Crushing the leaf of this plant combined with the leaves of *Hygrophila auriculata* and *Achyranthes aspera* and consuming the mixture on a regular basis has been shown to provide relief from spleen enlargement in certain patients (Sunil Kumar et al., 2020).

Stem bark: The bark of the stem is used in the treatment of rheumatic joint discomfort, pneumonia, and snakebites. Rubbing the crushed stem bark all over the body is an

effective treatment for internal injuries as well as fractured joints. In order to cure malaria, stem bark is often cooked before being combined with *Zingiber officinale* and *Piper longum*.

Flowers: A stomachache may be alleviated by using the flowers. Being a carminative, an astringent, an antibiotic, an expectorant, and a hair tonic, they are also used in the treatment of piles and a variety of skin conditions. Ophthalmic treatment has been accomplished with the help of the flowers (Shandhar H. K. et al., 2011). **Seeds:** The powdered seeds are effective in treating scurfy disorders of the scalp, piles, and skin illnesses. Alopecia treatment also involves the usage of the seeds. They are beneficial in alleviating the symptoms of the bilious fever. When dealing with issues such as dandruff and lice, the seed paste is administered to the areas that are afflicted (Sunil Kumar Sen et al., 2020). The paste made from the seeds is mixed with water and eaten to relieve constipation and gastrointestinal disorders. The seeds themselves contain qualities that are expectorant (Shandhar HK et al., 2011).

Pharmacological activities: The pharmacological activities are shown in Table 1

Table 1: List of pharmacological activities.

Sr.No	Activity	Plant part	Solvent	Organisms/ Assays	Reference
1.	Anthelmintic	Leaves	Acetone	Pheritima posthuma	Ansari Imtiyaz Ahmed et al.,2016
2.	Anti-inflammatory	Leaves	Alcoholic	Rats	Das S et al., 2008
3.	Antioxidant	Leaves	Ethanollic	DPPH assay	KushumS Akki et al., 2009
		Stalk	Methanolic	DPPH assay	Padma S. Vankar,2008
4.	Anticancer	Stem Bark	Methanolic	Swiss albino Rats	Khatune NA et al., 2003
		Leaves	Ethanollic	Human cells	David Benrfit, 2019
5.	CNS depressant	Leaves	Alcoholic	Rats	Suresh V et al., 2010
6.	Antidiabetic	Stem Bark	Ethanollic	Rats	Sharma V

					et al., 2011 Pattanayak C et al., 2012
7.	Antimicrobial	Leaves	Ethanollic	Pseudomonas aeruginosa, Salmonella typhi	Anshuman Singh et al., 2018
8.	Antimalarial	Leaves	Aqueous	Human beings	Prashad MP et al.,2014 Vats M et al., 2009
9.	Anti-Allergy	Leaves	Alcoholic	Guniea Pigs	Rathee JS et al., 2007
10.	Anti-Filarial	Flowers	Chloroform	Culex quinquefasciatus	Khatune NA et al., 2001
11.	Anti-Trypanosomal	Leaves	Ethanollic	Mice	Talakal TS et al., 2000
12.	Anti-Viral	Leaves	Ethanollic	Mice	Paul BN et al., 1997 Saxena RS et al., 2002
13.	Anti-Nociceptive and Anti-Pyretic	Leaves	Ethanollic	Rats	Champa Rani et al., 2012
14.	Anti-Depressant	Leaves	Hydroethanol	Mice	Sumeet Gupta et al., 2021
15.	Anti-Spermatogenic	Stem Bark	Methanollic	Rats	R.S Gupta et al., 2006
16.	Hepatoprotective	Leaves	Alcoholic	Rats	Kusum S. Akki, 2006

Conclusion

The ornamental plant known as *Nyctanthes arbortristis* has a number of pharmacologically active components. The plant is an abundant source of phytochemicals, and almost every component of the plant, including the roots, stems, leaves, and flowers, exhibits pharmacological capabilities. The plant is native to the southern part of Asia, where it is famous for the night-blooming blooms it produces. This review is valuable for additional references in scientific and industrial developments since it includes categorization, vernacular names, geographical distribution, botanical description, phytochemical ingredients, common medicinal applications, and pharmacological activity.

References

- Bhosale AV, Abhyankar MM, Pawar SJ, Shoab K and Patil N., *Nyctanthes arbortristis*: A Pharmacognostic review, *Research Journal of Pharmacognosy and Phytochemistry*, 1(2): 91-97.
- Ansari Imtiyaz Ahmed, Patil Javesh K., Kamora Kunal Rajeshlal, Mandhan Priyanka Mahesh, Poptani Taruna Hareshlal and Girase Ananda Narayan, Anthemintic activity of *Nyctanthes arbortristis* leaves on Indian earth worms, *Indian Journal of Drugs*, 2016; 4(2): 63-68.
- Anshuman Singh and Bhupendra Vyas Night Jasmine (*Nyctanthes arbortristis*), *Research Journal of Pharmacognosy and Phytochemistry*, 2018; 10(4): 324-330.
- Bansal S, Bharati AJ and Bansal YK, In vitro callogenesis and Phytochemical Screening of Harsingar (*Nyctanthes arbortristis*) a Multipotent Medicinal Tree, *International Journal of PharmTech Research*, 2013; 74(3): 243-246.
- Champa Rani, Sunaina Chawla, Manish Mangal, AK Mangal, Subhash Kajla and AK Dhawan, *Nyctanthes arbortristis* Linn. (Night Jasmine) A sacred ornamental plant with medicinal potential, *Indian Journal of traditional knowledge*,

- 2012; 11(3): 427-435.
6. Chaya Gadgoli and Sandeep Shelke, Crocetin from the tubular calyx of *Nyctanthes arbor-tristis*, *Natural Product Research*, 2010; 24(17): 1610-1615.
 7. D.Sasmal, Sanjita Das and S.P.Basu, Phytoconstituents and therapeutic potential of *Nyctanthes arbortristis* Linn., *Pharmacognosy Reviews*, 2007; 1(2): 344-349.
 8. Das S, Sasmal D and Basu SP, Anti-inflammatory and antinociceptive activity of arbortristoside-A, *Journal of Ethnopharmacology*, 2008; 116(1): 198-203.
 9. David Benwefit, Anticancer activity of *Nyctanthes arbortristis*, *International Journal of Advance Research, Ideas and Innovation in Technology*, 2019; 5(3): 84-87.
 10. Irani Biswas, Sushobhan Ukil and Ambarish Mukharjee A., Determination of n-alkane constituents and their phenological variation in the epicuticular wax of mature leaves of *Nyctanthes arbortristis* L., *Natural Product Research*, 2014; 28(5): 330-332.
 11. Jain PK and Pandey A, The wonder of Ayurvedic medicine - *Nyctanthes arbortristis*, *International Journal of Herbal Medicine*, 2016; 4(4): 09-17.
 12. Khatune NA, Haque ME and Mosaddik MA, Laboratory evaluation of *Nyctanthes arbor-tristis* Linn. Flower extract and its isolated compound against common filarial vector, *Culex quinquefasciatus* say (diptera: culicidae) Larvae, *Pakistan Journal of Biology Sciences*, 2001; 4(5): 585-587.
 13. Khatune NA, Islam ME, Abdur Rahman MA, Mosaddik MA and Haque ME, In vivo cytotoxic evaluation of new Benzofuran derivative isolated from *Nyctanthes arbortristis* L. on Ehrlich Ascite Carcinoma Cells (EAC) in mice, *Journal of medicinal sciences*, 2003; 3(2): 169-173.
 14. Kusum S Akki, Phytochemical investigation and in vitro evaluation of *Nyctanthes arbor-tristis* leaf extract for antioxidant property, *Journal of Pharmacy Research*, 2009; 2(4): 752-755.
 15. Kusum S. Akki, Hepatoprotective activity of the leaves of *Nyctanthes arbor-tristis* linn., *Pharmaceutical Sciences*, 2006; 68(4): 542-543.
 16. Madhuri kumari, V.bhagyalakshmi, V.sravanthi, K.Nagajyothi, R.B.Desi Reddy and K.Sravanthi, A Review on *Nyctanthes arbortristis*, *World Journal of Pharmaceutical Research*, 2018; 7(7): 429-435.
 17. Mathuram V and Kundu AB, Occurrence of two new ester of 6-hydroxyloganini in *Nyctanthes arbortristis*, *Journal of the Indian Chemical Society*, 1991; 68 (10): 581-584.
 18. Meshram MM, Rangari SB, Kshirsagar SB, Gajbiye S, Trivedi MR and Sahane RS, *Nyctanthes arbortristis*: A herbal panacea. *International Journal of Pharmaceutical Sciences and Research*, 2012; 3(8): 2432-2440.
 19. Pattanayak C, Datta PP, Chauhan AS, Firdoush KA, Prasad A and Panda P, Hypoglycaemic effect of *Nyctanthes arbortristis* leaf extract on alloxan induced diabetic rats, *American Journal of PharmTech Research*, 2012; 2(6): 380-387.
 20. Paul BN, Saxena AK, Depletion of tumor necrosis factor- α in mice by *Nyctanthes arbortristis*, *Journal of Ethnopharmacology*, 1997; 56(2): 153-158.
 21. Prasad MP and Shekhar S, In-Vitro Phytochemical and Antimicrobial activity of *Nyctanthes arbortristis* Linn against human pathogens, *International Journal of Pure & Applied Bioscience*, 2014; 2(1): 1-5.
 22. R.Indira Iyer, V.Mathuram and P.M.Gopinath, Establishment of callus cultures of *Nyctanthes arbortristis* from juvenile explants and detection of secondary metabolites in the callus, *Current Science*, 1998; 74(3): 243-246.

23. R.S.Gupta, J.B.S.Kachhawa and Rakhi Sharma, Antispermatogenic effects of *Nyctanthes arbortristis* in male albino rats, *Pharmacologyonline*, 2006; 2(1): 261-273.
24. Rathee JS, Hassarajani SA and Chattopadhyay S, Antioxidant activity of *Nyctanthes arbortristis* leaf extract, *Food Chemistry*, 2007; 103 (4): 1350-1357.
25. Rout GR, Mahato A and Senapati SK, In vitro clonal propagation of *Nyctanthes arbor-tristis*, *Biologia Plantarum*, 2008; 52(3): 521-524.
26. Ruchita shrivastava and Ajay Kumar Bhardwaj, *Nyctanthes arbortristis* an Important Medicinal Plant of Madhya Pradesh State – A Review, *UK journal of Pharmaceutical and Biosciences*, 2018; 6(6): 10-11.
27. Sah AK and Verma VK., Phytochemicals and Pharmacological potential of *Nyctanthes arbortristis*: A comprehensive review, *International Journal of Research in Pharmaceutical and Biomedical Sciences*, 2012; 3(1): 420-426.
28. Sandhar HK, Kaur M, Kumar B and Prasher S., An update on *Nyctanthes arbortristis* Linn, *Internationale Pharmaceutica Scientia*, 2011; 1(1): 77-86.
29. Sandip Pal, Study of variation in petal number and relative abundance of *Nyctanthes arbortristis* L. flowers, *Current Life sciences*, 2019; 5(1): 15-18.
30. Saxena RS, Gupta B and Lata S., Tranquilizing, antihistaminic and purgative activity of *Nyctanthes arbortristis* leaf extract. *Journal of Ethnopharmacology*, 2002; 81(3): 321-325.
31. Sharma V, Pooja and Marwaha A., Hypoglycaemic activity of methanolic extract of *Nyctanthes arbortristis* Linn. root in Alloxan induced diabetic rats, *International Journal of Pharmacy and Pharmaceutical Sciences*, 2011; 3(3): 210-212.
32. Siddiqui, Anis M and Jahan AA., Rapid multiplication of *Nyctanthes arbortristis* through in-vitro auxiliary shoots proliferation, *World Journal of Agricultural Sciences*, 2006; 2(2): 188–192.
33. Sumeet Gupta, Priyanaka Kashyap, Mohammed Asad, Ipsita Chattopadhyaya and Randhir Dahiya, Anti-depressant activity of *Nyctanthes arbortristis* in mice, *Bangladesh Journal of Pharmacology*, 2016; 11(3): 634-645.
34. Sunil Ashokrao Nirmal, Subodh Chandra Pal and Subhash Chandra Mandal, Pharmacognostic Evaluation of *Nyctanthes arbortristis* bark, *Asian Pacific Journal of Tropical Biomedicine*, 2012; 2(2); 494-500.
35. Sunil Kumar Sen and Lalit Mohan Behera, Ethno –medicinal uses of *Nyctanthes arbor-tristis* L. in Bargarh district, Odisha, *International Journal of Herbal Medicine*, 2020; 8(2): 22-24.
36. Suresh V, Arunachalam V and Jaikumar S., Anticancer activity of ethanol extract of stem bark of *Nyctanthes arbortristis* Linn., *Research Journal of Pharmaceutical, Biological and Chemical Sciences*, 2010; 1(4): 306-311.
37. Talakal TS, Dwivedi SK and Sharma SR., In vitro and In Vivo Antitrypanosomal Potential of *Nyctanthes arbortristis* Leaves, *Pharmaceutical Biology*, 2000; 38(5): 326- 329.
38. Tim Mosmann, Rapid colorimetric assay for cellular growth and survival: Application to proliferation and cytotoxicity assays, *Journal of immunological Methods*, 1983; 65(1-2): 55-63.
39. Vats M, Sharma N and Sardana S., Antimicrobial activity of stem bark extracts of *Nyctanthes arbortristis* Linn. (Oleaceae). *International Journal of Pharmacognosy and Phytochemical Research*, 2009; 1(1): 12-14.