



Exploring the Pharmacological Significance of *Artemisia nilagirica*

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Received: 2025-3-05

Revised: 2025-3-16

Accepted: 2025-3-23

ABSTRACT:

Artemisia nilagirica (Clarke) Pamp, a medicinal herb of the Asteraceae family, is widely distributed throughout the subcontinent of India and has been used for centuries in Ayurvedic and folk medicine. It comprises a variety of bioactive phytochemicals, such as flavonoids, terpenoids, sesquiterpene lactones, phenolic acids, and essential oils, contributing wholly to its different pharmacological activities. Phytochemical explorations suggested the presence of highly medicinally valuable chemicals, including camphor, eucalyptol, thujone, and borneol. *A. nilagirica* has shown antibacterial, antioxidant, anti-inflammatory, analgesic, anticancer, and neuroprotective activities in pharmacological studies. Besides, recent works propose possible effects in the management of neurodegenerative diseases and metabolic disorders. In spite of the therapeutic characteristics, extensive research is required to establish its safety and efficacy and elucidate the mechanisms by which it acts. Further pharmacological and toxicological analysis, supplemented with clinical trials, would maximize its medicinal application. This review will discuss phytochemistry and pharmacological activity of *Artemisia nilagirica* emphasizing potentiality as a rich natural source for drug investigation in traditional medicine.

Keywords: *Artemisia nilagirica*, phytochemicals constituents, pharmacological activity

1. INTRODUCTION:

Artemisia is one of the diverse genera of Asteraceae family with many important medicinally valuable essential oils and secondary metabolites. Essential oils of *Artemisia* spp. are being used widely for many medicinal purposes since ancient times. *Artemisia nilagirica* (Clarke) pamp more popularly known as Indian wormwood, is distributed widely in the hilly areas of India ^[1]. The plant has been reported to be useful in vitiated conditions of *vata* and *kapha*, cough, asthma, bronchitis, cephalagia, nervous and spasmodic affections, inflammations, leprosy, skin disorders, strangury, ammenorrhoea, dysmenorrhoea, anorexia, dyspepsia, flatulence, colic, intestinal worms, fever, hysteria, measles and anemia ^[2]. The phytochemical study of the plant reveals the presence of different phytoconstituents namely tannins, alkaloids, flavonoids, terpenoids, amino acids, glycosides, and quinines, etc ^[3]. *A. nilagirica* also has been reported to have efficiency against many neurological disorders, dermal infection and antifungal, antimicrobial, larvicidal, anti-inflammatory activities ^[4]. In this review, we have focused on the chemical constituents, traditional uses, diverse pharmacological importance of *A. nilagirica*.

Classification

Kingdom – Plantae

Family – Asteraceae

Order- Asterales

Genus – *Artemisia*

Species – *nilagirica* (Clarke) pamp



2. PLANT PROFILE:

The plant grows throughout the hilly regions of India. It is tall aromatic shrub. This medicinal herb is erect, hairy, often half-woody. The stems are leafy and branched. Leaves are alternate, large, ovate and lobbed, deeply pinnatisect with small stipule-like lobes at the base, pubescent above, ash grey or white-tomentose beneath; upper most leaves are smaller, 3-fid or entire, lanceolate. The flowers are small and stand in long narrow clusters at the top of the stem, subglobose heads, in spicate or suberect or horizontal paniced racemes. They are brownish yellow in colour. Leaves and flowering tops are bitter, astringent and aromatic. The fruit are minute, bracts ovate or oblong. The percentage of oil constituents and the yield of oil vary with the distribution of the plant and also depend on the growth phases ^[5].



FIGURE:1 *Artemisia nilagirica*

3. PHYTOCHEMICAL STUDY :

Phytochemical studies reported the presence of alkaloids, amino acids, carbohydrates, flavonoids, glycosides, tannins, phenol, terpenoids, saponins and essential oils in various extracts of *Artemisia nilagirica* ^[6].

4. PHARMACOLOGICAL USES:

4.1 ANTI ALZHEIMER ACTIVITY:

Pradeep pal, et al (march 2018) reported the anti-Alzheimer activity of the ethanolic extract of *Artemisia nilagirica*, which was administered intraperitoneally in Swiss albino mice. Their findings reported that the extract exhibits significant anti Alzheimer activity ^[7].

4.2 ANTI PARKINSON ACTIVITY:

Pradeep pal, et al (march 2018) reported the anti-Parkinson activity of the ethanolic extract of *Artemisia nilagirica*, which was administered intraperitoneally in Swiss albino mice. The study shows the extract exhibits significant anti Parkinson activity ^[7].

4.3 ANTI CONVULSANT ACTIVITY:

A.Vijayalakshmi, et al (Jul 2011) reported that the anti-convulsant activity of the methanolic extract and ethyl acetate extract of *Artemisia nilagirica*, which was administered orally in mice. This study shows the ethanolic extract of *Artemisia nilagirica* exhibit significant effect of anti-convulsant activities ^[8].

4.4 CNS DEPRESSANT:

Pal Pradeep, et al (march 2015) reported the comparative evaluation of *Artemisia nilagirica* on experimental CNS model, the ethanolic extract of *A.nilagirica* was administered in Swiss albino mice which exhibit CNS depressant activity ^[9].

4.5 ANTI ULCER ACTIVITY:

J. Suresh, et al (Jun 2013) reported that gastric anti-ulcer effect of *Artemisia nilagirica* . The study shows the ethanolic extract of *A.nilagirica* was administered orally in rat which exhibits the anti-ulcer activity ^[5].



4.6 ANTI CANCER ACTIVITY:

J. Suresh, et al (Jun 2013) reported that anti-cancer activity of ethanolic extract of the *Artemisia nilagirica* was administered in mice, which reveals the significant anti-cancer activity ^[5].

4.7 ANTI ASTHMATIC ACTIVITY:

Suresh, et al (Jun 2013) Reported that the anti-asthmatic activity on aqueous extract of aerial parts of *Artemisia nilagirica* shows the significant anti asthmatic activity on Wistar rats ^[5].

4.8 ANTI MALARIAL ACTIVITY:

Suresh, et al (Jun 2013) reported the anti-malarial activity of the ethanolic extract from root of *Artemisia nilagirica*, which was administered in mice. This study reveals the significant anti-malarial activity ^[5].

4.9 HEPATOPROTECTIVE:

Shalini Thakur et al (Feb 2024) reported the hepatoprotective effect of *Artemisia nilagirica* methanolic leaf extract on *E. coli* challenged broiler chicken, which possess the potential hepatoprotective effect ^[10].

4.10 WOUND HEALING ACTIVITY:

Darsana Udayan, et al (Jul 2020) reported the wound-healing activity of the ethanolic extract of *Artemisia nilagirica* in Wistar albino rats. The study concluded that the ethanolic extract of *A. nilagirica* enhanced wound healing in an excision wound model ^[11].

4.11 ANTIOXIDANT ACTIVITY:

Dev Devmurari VP, et al (2013) reported the antioxidant activity of ethanolic extract of *Artemisia nilagirica* in Swiss albino mice. This study reveals the ethanolic extract of *A. nilagirica* had exhibited very good antioxidant activity ^[12].

5.CONCLUSION:

The Asteraceae family member *Artemisia nilagirica* has demonstrated exceptional pharmacological potential because of its diverse phytochemical profile, which includes phenolic chemicals, flavonoids, terpenoids, and essential oils. Recent research has further validated its antibacterial, antifungal, anticancer, antiulcer, antimalarial, and hepatoprotective qualities. It has long been used to treat a variety of illnesses, including epilepsy, neurological disorders, inflammation, and skin conditions. The plant is a useful natural therapeutic agent because of its anti-inflammatory, antioxidant, and anti-asthmatic properties as well as its capacity to fight off infections that are resistant to antibiotics. Additionally, its bioactive components show great promise for use in pharmaceutical applications, especially in the creation of medications based on herbs.

ACKNOWLEDGEMENT:

We are very thankful to the Department of Pharmacology, Principal, and Management of C.L. Baid Metha College of Pharmacy for providing the facilities to conduct the research.

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How to cite this article:

S. Divya et al. *Ijppr.Human*, 2025; Vol. 31 (3): 394-397.

Conflict of Interest Statement: All authors have nothing else to disclose.

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