



REVIEW ON ETHANOBOTNICAL IMPORTANCE OF NYCTANTHES ARBOR-TRISTIS LINN.

Pharmacology

Miss. Nikita V Mahalle

S.N. Institute Of Pharmacy, Pusad (Student)

Dr. Rajesh J Mandade

S. N. Institute Of Pharmacy, Pusad (HOD Of Pharmacology Department)

ABSTRACT

parijatha is perhaps the most popular therapeutic plant which holds more prominent significance in ayurvedic works of art. This plant broadly distributed in sub-Himalayan area and towards the south to Godavari. The plant is fortified with various bioactive constituent; especially leaves consist of tannic acid, methyl salicylate, linoleic, palmitic acid. Three new benzoic ester of loganin & 6 β hydroxyloganin, namely arbortristoid-A, arbortristoid-B arbortristoid-C is found in leaves which show anti-arthritic activity. Thus, the phyto-constituents are reflecting pharmacological properties and reported as anti-inflammatory, anticancer, anti-diabetic, hepatoprotective activity. Leaf extract is effective in sciatica and rheumatoid arthritis. The goal of this review is highlight the ethanobotany, phytochemical and pharmacological information of this plant.

KEYWORDS

Nyctanthes arbortristis; arbortristoid-A; Rheumatoid arthritis.

INTRODUCTION

Oleaceae also known as the olive family is a taxonomic family of mesophytic flowering trees, shrubs, and lians in the order lamiales. As, shrub, members of this family may be twine climber or scramblers. It is consisting of 28 genera and more than 700 species are reported in which cartrema genera are extinct in resurrected in 2012. (Wikipedia distributors) Nyctanthes arbor-tristis is one of the genes of Nyctanthes family commonly known as Harsinghar and night jasmine. The plant is cultivated in many parts of world owing to its beneficial property. In plant flora 25,000 phytoconstituents are identified to continue living and 10,000 are expected to be alkaloid and 4000 flavonoids are reported having medicinal and pharmacological property.

According to literature survey these plant has been traditionally use in piles, liver disorder, malaria, snake bite. Present review focus to illustrate and compile the total up-to-date information on various aspects of Nyctanthes arbor-tristis Linn.

Synonyms – Nyctanthes dentate blume (1849),

Pariaticu Adans,
Omolocarpus Neck,
Bruschia Bertol, etc.

Vernacular names

Ayurveda – Paarijaata, shephaali
English – Tree of sorrow, Night jasmine
Hindi – Harsinghar
Indonesia – Srigading (undanese)
Malaysia – Seri gading
Laos – Salikaa
Thailand – Kannikaa
Vietnam – Dzahoa



Fig 01. Plant of NAT.

Taxonomical classification (USDA)

Table no 01. Taxonomical classification of NAT.

Kingdom	Plantae
Subkingdom	Viridiplantae
Infrakingdom	Streptophyta
Superdivision	Embryophyta
Division	Tracheophyta
Subdivision	Spermatophytina
Class	Magnoliopsida
Order	Lamiales
Family	Oleaceae
Genus	nyctanthes
Species	nyctanthes arbor-tistis

Botanical Description

NAT is a small tree or large shrub of about 10m height having scaly, grey color bark. The leaf is simple, rough, opposite and ovate shape, 6-12 cm long and 2-6.5 cm broad with entire margin and is scabrous above with bulbous based hair and pubescent beneath having acute apex.

The flower of NAT is white in color, having fragrance, with 5-8 lobe contain orange center and are 5-15 mm long. Flowering occurs during July to Oct.

The brown color fruit is cordate to orbicular flattened, almost rounded capsule measuring about 2cm across with 2 seeded which opens transversely from the apex.

Microscopy of NAT Leaves

Pharmacognostic study of NAT leaves shows the anomocytic stomata, pelate quadripartite glandular trichomes, non-glandular trichomes with smooth or rough surface (speculates or waxy flaked), occasional oval or flask shaped epidermis cells, cuticular striation on subsidiary. (Irani biswas et.al 2011)

Geographical Distribution

NAT is official flourish of the southern Asia, extended across northern Pakistan and Nepal through northern India to southern Thailand (Nadkarni et.al 1982)

In India it distributed in the outer Himalaya is found in Jammu Kashmir, Nepal to east Assam, Bengal, Tripura stretching towards the central region up to Godavari in south. (Bansal et.al 2015)

Ethanobotanical description

The plant NAT have been used by the tribes and cultivated in various parts of the world, owing to its ornamental and medicinal properties. The plant extraction is given by the decoction, maceration and by soxhlet extraction method. In caribbean region of united state the fresh leaves of NAT are boiled in mustard oil and used externally for treating

ringworm, intestinal worms. Leaves are mostly used as antidote for snake bite.

Therapeutic uses of some important jasmine species.

- Jasminum grandiflorum also called as jati reported to possess anti-inflammatory, anti-arthritic, wound healing activity and also use for ulcer of oral cavity, erectile dysfunction and eye disease.
- Jasminum sambac having anti-depressant, antiseptic, cicatrisant, aphrodisiac, expectorant, anti-spasmodic, galactagogue, sedative, parturient, uterine, etc
- Jasminum humile are the astringent and tonic for heart and bowels. Juice of root is used in treatment of ringworm.

Phytochemistry

The members of oleaceae are wealthy of phytoconstituents. A reported study on various taxa shown that various pharmacologically important phytoconstituents like alkaloids, glycosides, tanins, carbohydrates, saponins, proteins, phytosterols, terpenoids, phenols and flavonoids were present in leaves and stem. As the secondary glycosides having correlation with biological activities such as anti-inflammatory, antioxidant, anti-osteoarthritic, analgesic, anti-diabetics, antimicrobial and hepatoprotective (Madhuri kumari, et.al 2018; sunil kumar sen, et.al 2020)

I. Glycosides

The remarkable amount of glycosides are found in NAT such as iridoid glycosides; recently 3 glycosides are found in NAT i.e arbortristiside-A, B, C. other glycosides present in NAT are 6- β -hydroxyloganin, desrhamnosylverbaciside, 6-O-transcinnamoyl, 7-O-transcinnamoyl.

II. Alkaloid and steroid

Steroid like β -sitosterol and alkaloid like nycanthine are found in NAT.

III. Flavonoids

Nicotiflorin, Quercetin, Kaemferol, Apigenin, Anthocynin are present in NAT.

IV. Other constituents

Mannitol, tanic acid, ascorbic acid, volatile oil, amopous resin these constituent are obtain in trace amount in plant.

Pharmacological relation with bioactive constituents.

Iridoid glycosides are the pharmacologically important constituent effective against various pathological conditions. Iridoid glycosides reported to possess anti-inflammatory, anti-arthritic, anti-oxidant, anti-cancer activity. the potent anti-inflammatory activity is exerted by inhibiting the inflammatory mediators. Different plant families like rubiaceae, scrophulariaceae and verbenaceae, etc having iridoid glycoside as major constituent and thus proved as pharmacologically superior (Haidiat Hussain, et.al 2019). The GC-MS analysis of NAT revealed presence of iridoid glycosides. ()

NAT shows the antioxidant and hepatoprotective activity in rat model induced by anti-tubercular agent. This may be due to presence of β -sitosterol and asbortristiside-A, B, C. (Amit Kumar; et.al 2018).

Pharmacological properties.

1. Analgesic activity.

The analgesic efficacy of aqueous and ethanolic leaves extract of NAT, it was observed from % inhibition index that ethanolic extract demonstrated superior analgesic than aqueous extract when compare with conventional drug aspirin. (Nirmal et.al 2012). Sitosterol from NAT petroleum ether extract shows analgesic activity. (saxena et.al 1987).

2. Anti-diabetic activity.

Ethanolic extract of stem bark of NAT shows significant anti-diabetic activity in streptozotocin-nicotinamide rat model. The extract is responsible for lower the blood glucose level in a dose dependent manner. (Sah and Verma, 2012). The dried extract of NAT root was used for the assessment of hypoglycemic activity. It reduce blood glucose level after 7 days at the 500mg/kg in rat compare to standard drug. (Bharti and saxena, 2011; Sharma et.al 2011).

3. Anti-cancer activity.

N. crassa fruit, leaf, and stem methanol extracts In vitro anticancer properties of arbor-tristis were investigated. Moderate At 30mg/ml conc, activity was seen. Dry N was inhibited by 71 percent. methanol extract of arbor-tristis leaves and At 10mg/ml conc, the least inhibitory

action was seen. Breast cancer cell lines free of pathogens were inhibited by 86 percent. The phytochemicals extracted from NAT.

CONCLUSIONS

The present study reveals that common weed plant Nyctanthes arbor-tristis Linn is a potentially useful medicinal plant with pharmacological properties. The plant have been used by various tribes and cultivated for various purpose in different part of the world. Traditionally, the plant have been used against the inflammation, sciatica, arthritis, piles, hepatitis. The plant is also grown as ornamental. The plant shows the presence of many phytochemicals which may responsible for various pharmacological activities. The reported pharmacological studies showed analgesic, anticancer, anti-diabetic activities. On the basis of study it can concluded that NAT has leading capacity to prove as effective source for treatment and control of various disease in future.

REFERENCES:

- 1) Dr. Madhuri Thokala (2010) A literary review of Nyctanthes arbortristis Linn (Parijatha) Linn in ayurvedic classics, world journal of pharmaceutical research, ISSN 2277 7105.
 - 2) Dr. Poonam Bijalwan (2009), Review article on Nyctanthes –arbortristis Linn (Harshringhar), European journal of biomedical and pharmaceutical sciences, ISSN 2349-8870.
 - 3) Pushpendra Kumar Jain, (2016) The wonder of Ayurvedic medicine- Nyctanthes arbortristis, International journal of herbal medicine, E-ISSN 2321-2187.
 - 4) Smita Parekh, (2019) Nyctanthes arbor-tristis: Comprehensive review on its pharmacological, antioxidant and anticancer activities, Journal of applied biology & biotechnology.
 - 5) Nisha Verma, (2020) Nyctanthes arbor-tristis – A Review, JETIR, ISSN 2349-5162
- Hetal Bhalakiya, (2019) Traditional medicinal uses, phytochemical profile and pharmacological activities of Nyctanthes arbortristis, Research journal of life sciences, Bioinformatics, Pharmaceutical and chemical sciences, ISSN 2454-6348.