

Comprehensive Review on Parijat (Nyctanthes arbor-tristis)

¹Tina W. Pandel, ²Shailju G. Gurunani, ³Aditya R. Kaikade

¹Research Scholler Priyadarshini JL College of Pharmacy, Nagpur

²Assistant professor JL College of Pharmacy, Nagpur

³Research Scholler Priyadarshini JL College of Pharmacy, Nagpur

Submitted: 08-05-2023

Accepted: 20-05-2023

ABSTRACT:

The current review's investigation and compilation of comprehensive data on Nyctanthes arbor-tristis Linn aim to highlight the importance of further research into the information already available by identifying some of the plant's medicinal benefits, therapeutic applications, chemical properties, pharmacological actions, and biological activities. A customary plant India is home to the extremely beneficial medicinal herb Nyctanthes arbor-tristis Linn. This plant can be profitably exploited because each portion has unique therapeutic qualities and values. Each component of the plant has some medical value and can thus be used for profit. The Nyctanthes arbor-tristis plant exhibits hepatoprotective, anti-leishmaniasis, anti-viral, anti-fungal, anti-pyretic, anti-histaminic, anti-malarial, anti-bacterial, anti-inflammatory, and anti-oxidant properties. Further exploration of the information is necessary to uncover the therapeutic potential and knowledge gaps that call for research involvement. The potential phytochemicals and anti-oxidant capabilities of plants are the main focus of the current review. A traditional herbal remedy called Nyctanthes arbor-tristis Linn, also referred to as Harsingar or Parijat, is used to treat inflammatory and rheumatic disorders. It also goes by the name "night jasmine." Night jasmine can be found abundantly throughout the sub-Himalayan region, all the way down to Godavari.

Keywords-Parijat, Harshingar, Nyctanthes arbor-tristis Linn, Sheoli, Night jasmine.

I. INTRODUCTION:

^[7,11]Nyctanthes Arbor-tristis In India and its neighbouring countries, the Linn "a night time flowering sad tree" of the Oleaceae (Nyctaginaceae) family is well known as one of the most adaptable medicinal plant lives with a wide spectrum of biological sports and is widely cultivated in tropical and subtropical areas around the world. It is a woody perennial terrestrial with a lifespan of five to twenty years. It is mostly a small

tree or shrub with beautiful, unbelievably fragrant plant life that blooms at night and fades before daylight, providing the ground below a lovely contrast of white and red. It is also known as Coral Jasmine, Harsinghar, Parijat, Queen of the Night, and Night Flowering Jasmine. It is also commonly referred to as a night jasmine. The world has taken an interest in therapeutic and fragrant flowers due to their secure and powerful energy principles. By the night flowering jasmine's flowering phenology, the local people of Tripura are able to predict changes in the weather and rainfall, which helps them plan their agroforestry activities and disaster avoidance. Since ancient times, every part of the tree has been employed as a traditional medicine for home cures for a wide range of human ailments.

Morphology:

^[24]Arbor-tristis Nyctanthes Large and up to 10 metres tall, Linn is a shrub with quadrangular branches and crumbly, challenging grey bark. The leaves are robust, hairy, and densely covered. opposite, simple, 7–11 cm long, 2–6 cm wide, and with the entire margin. The vegetation is arranged terminally at the tips of branches or within the axils of leaves, and stigma is somewhat bifid, and two stamens are inserted close to the pinnacle of the corolla tube. The snow-white petals, which are used in worship, have dewdrops resting on them. Fruits are heart-shaped to round pills that are flat, compressed, brown, and have 2 portions, each of which contains one unattached seed. Testa are thick, the outer layer of big transparent cells is densely vascularized, and the seeds are exalbuminous. The cotyledon is flat.



Fig 1: Leaves of Nyctanthes arbor-tristis



Fig 4: Flowers of Nyctanthes arbor-tristis



Fig 2: Seeds of Nyctanthes arbor-tristis



Fig 3: Stem of Nyctanthes arbor-tristis

Vernacular Names:

English: Night jasmine
 Hindi: Parjat, Harshing, Seoli, Shefali Nibari.
 Kannada: Parijata, Harashingar.
 Odia: Shingadahar, harashingar, gangaseuli, jharasephali.
 Tamil: Pavilammali, swetasarasa, paghada, karchia, karuchiya.
 Telugu: Pagadammali, Swetasarasa, paghada, karchia, karuchiya.
 Malayalam: Pavilamalli, parijatam, pavizhamalli, parijatakam.
 Marathi: Khurasli, Parijataka, purijat,

Classification of study drug:

Kingdom	Plant
Order	Lamiales
Family	Oleaceae
Genus	Nyctanthes
Species	Abortristis

^[11,28] **Chemical Constituents:**

^[28,37] **Leaves:** The leaves contain D-mannitol, β -sitosterol, flavanol glycosides, astragaloside, nicotiflorin, oleanolic acid, nyctanthic acid, tannic acid, ascorbic acid, methyl salicylate, an amorphous glycoside, an amorphous resin, trace of volatile oil, carotene, friedelene, lupeol, mannitol,

glucose, carbohydrate, iridoid glycosides, and benzoic acid.

Flowers:The flowers include carotenoids, glycosides such as -monogentiobioside—D monoglucoside ester of -crocetin and -digentiobioside ester of -crocetin, as well as essential oils, nyctanthin, D-mannitol, tannins, glucose, and crocin-3 (or crocin-1).

Seeds:Arbortristoides A and B, nyctanthic acid, 3,4-secotriterpene acid, glycerides of linoleic, oleic, lignoceric, stearic, palmitic, and myristic acids, as well as a water-soluble polysaccharide made of D-glucose and D-mannose, are all found in the seeds.

Bark: The bark contains mostly glycosides and alkaloids.

Stem:Stem: and β -sitosterol.

Flower oil: α -pinene, p-cymene, 1- hexanol methyl heptanone, phenyl acetaldehyde, 1-deconol.

Traditional uses:

^[27] Parts used: Leaves, flowers, seeds, bark.

- Leaves: The leaves of the Harsingar plant have been used to cure various fevers, coughs, worm infestations, arthritis, and more. The bitter juice from the leaves acts as a tonic. The kadha or decoction is fantastic for worm infestation, constipation, and arthritis. Ayurvedic physicians advise using Parijat leaf decoction to treat sciatica and arthritis. It treats a number of unpleasant fevers, including those caused by malaria, dengue, and chikungunya. It According to recent studies, Parijat leaf and bark extract is particularly effective at reducing fever quickly and helps to improve platelet count in cases of dengue and chikungunya fever.
- Flowers: Flowers are used as ophthalmic, stomachic, carminative and trichogenous, and are useful in inflammations, ophthalmopathy, dyspepsia, splenomegaly, flatulence, colic and greyness of hair.
- Seeds: Seeds are very useful in baldness, scurvy and affection of the scalp.
- Bark: Bark are used as expectorant.

ETHNOBOTANICAL STUDIES:

Studies on *Nyctanthes arbour-tristis*' ethnobotanical properties have shown that it is beneficial for treating conditions like fever,

coughing, and gastritis (ChiranjibiPattanaik and Rasmita Das,2007;BipulSaikiaet al,2008).

Leaf juices are utilised as digestion aids and antivenoms for reptiles (P.S. Varier et al,1995;Nadkerni etal,1982).

Additionally, leaves are employed in spleen enlargement (Kirtikar and Basu,2000).

Balasore, Orissa's indigenous people utilise a leaf decoction and honey to treat fever, malaria, and bleeding diarrhoea (R.D.Girachet al,1994).

The powdered seeds are used to treat skin conditions, piles, and scurfy infections of the scalp (Nadkerni etal,1982;Basu and Kirtikar,2000;R.D.Girach et al,1994).

Traditionally, oil is used for eye pain, stem bark is administered as a powder to treat rheumatoid joint pain, and Arjuna bark is used to the body to treat internal wounds (Basu and Kirtikar,2000).

Typically, a bark and flower decoction is administered for malaria fever (R.D.Girach et al,1994).

Its flowers have ophthalmic uses and are bitter, astringent, carminative, and stomachic. The decoction of the roots is used to enlarge the spleen and the roots are traditionally used as anthelmintics.Traditional uses for barks include anti-dysentric and anti-diarrheal properties. Corolla tubes were once employed in the dyeing of silk. Together with *Tagetuserecta*, *Nyctanthes arbour-tristis* flower extract has sunscreen action (Vaishali Bambal et al,2011).

Different dosage forms of its interaction with *Piper nigrum* have antipyretic effect (N.B.Ghiware and T.M.Nesari,2013).

TISSUE CULTURE STUDIES:

Studies on *Nyctanthes arbour-tristis* in plant tissue culture have been published by Champa Rani et al. (2012), S. Bansal, A. J. Bharti et al. (2012), G. R. Rout et al. (2007), and M. Anis and Anushi A. Jahan (2006). Using cotyledonary node explants treated with two cytokinins, namely thidiazuron (TDZ) and 6-benzyladenine (BA), to MS-medium, A.A. Jahan and M. Anis effectively devised an effective, quick, and reproducible plant regeneration strategy for *Nyctanthes arbour-tristis*. S.Sasmal and his team were successful in in-vitro propagating Harshringar from axillary buds explant on MS-medium. With their coworkers, Champa Rani and Sunaina Chawla reported on the micropropagation of Harshringar as well as its chemical make-up, biological activities of key components, pharmacological properties, and therapeutic uses.Using axillary meristems and MS

basal medium supplemented with 1.0-1.5 mg/l of 6-benzyladenine (BA), 50 mg/l of adenine sulphate, and 3% sucrose, G.R. Rout, A. Mahto, and S.K. Senapati also produced fast shoot multiplication.

Pharmacological actions and medicinal use of Parijat:

- Antioxidant activity
- Anti- viral activity
- Anti- plasmodial activity
- Anti- allergy activity
- Sedative activity
- Anti- leishmanial activity
- Anti- microbial activity
- Anti- arthritic activity
- Antiparasitic activity
- Antimalarial activity
- Immunostimulant activity
- Hepatoprotective activity
- CNS depressant action

Pharmacological actions and medicinal use of various parts of Parijat:

- Anti- inflammatory activity
- Anti- diabetic activity
- Anti- Trypanosomal potential
- Antianemic activity
- Anti- Histaminic and Anti Tryptaminergic activity
- Anti- Aggressive Activity
- Anti- Filarial activity
- Treatment of Piles, Gout and Dry Cough
- Anti- bacterial activity
- Anti-fungal activity
- Anti- ulcerogenic and ulcer-healing property
- Hypoglycemic and hypolipidemic activity
- Antihyperlipidemic activity
- Anti- spasmodic activity

Anti-oxidant activity:

^[36] Recent studies have shown that *Nyctanthes arbor-tristis*' leaves and stem are a rich source of herbal antioxidants. The ethanolic extract of *Nyctanthes arbor-tristis*' leaves and stems was subjected to phytochemical screening, which revealed the presence of flavonoids, tannins, saponins, glycosides, alkaloids, steroids, and phenolic compounds. Phenolic compounds were discovered to be anti-oxidants that serve as free radical terminators. They are also recognised to have medical uses and demonstrate physiological effects. The positive results of *Nyctanthes arbor-tristis* in a variety of in vitro antioxidant assays

demonstrated the plant's effectiveness as a scavenger of hydrogen peroxide and free radicals. Its polyphenolic concentration and other factors may contribute to *Nyctanthes arbor-tristis*'s as an all-purpose antioxidant.

Anti- viral activity:

^[39] The ethanolic extract, n-butanol divisions, and normal combinations, arbortristiside A and arbortristiside C, isolated from *N. arbor-tristis*, shown in-depth inhibitory action against encephalomyocarditis infection (EMCV), and Semliki Forest Virus (SFV). The ethanolic extract and the n-butanol fraction protected mice against EMCV and SFV in vivo with a dose of 40 and 60%, respectively.

Anti- plasmodial activity:

^[51] Rengyolone, a cyclo-hexylethanoid extracted from *Nyctanthes arbor-tristis* vegetation's ethanolic concentration, and its acetic acid derivation were found to have in vitro anti-plasmodial activity against *Plasmodium falciparum* (KI. multidrug safe pressure). Moreover, the concentrate confirmed its efficacy in vitro against *Entamoeba histolytica* and *Leishmania donovani*.

Anti- allergy activity:

^[37] Preventing the development of hypoxia in guinea pigs exposed to histamine aerosol by administering a water-soluble portion of the alcoholic extract of *N. arbor-tristis* leaves was extremely effective. *Nyctanthes arbor-tristis* contains the anthristosides A and C.

Sedative activity:

^[41,42] The narcotic potential of a hot infusion of the blooms was tested in rats. During this test, male mice displayed a small amount of subordinate mindful narcotic whereas female rodents remained unaffected. At these points, neither blood nor the force or coordination of the muscles had been affected. even at the best portion, glucose levels can be affected. Yet, the small gut's ability to absorb glucose significantly decreased. The cancer preventative medication and the film's calming effect on the concentration were credited with some of the sedation.

Anti- leishmanial activity:

^[41] It has been suggested that the iridoid glucosides, arbortristisides A, B, and C, as well as six-b-hydroxyloganin, are responsible for *N. Arbor-tristis*' anti-leishmanial activity. In vitro and

in vivo antileishmanial activity was shown by the arbortristosides A, B, and C as well as by 6-beta-hydroxy-loganin against amastigotes in macrophage societies and hamsters investigating structures, respectively.

Anti- microbial activity:

^[11,21] A vast array of antibacterial action is present in the oil from the leaves, seeds, and bark in contrast to gramme poor and gramme sublime small organic entities, including streptomycetes lines. *Escherichia coli*, *Pseudomonas aeruginosa*, and *Staphylococcus subtilis* have been tested for bactericidal activities in the watery and methanol concentrates of the developing leaves of *N. Arbortristis*. Apart from *P. Aeruginosa*, which became resistant to the fluid concentrate, the two concentrates were active against microscopic organisms.

Anti- arthritic activity:

^[36,37] Arthritis is a degenerative disorder that worsens over time, first causing joint discomfort and then affecting the bones and joints. Rheumatoid arthritis aetiology largely involves cytokines. It has previously been demonstrated that abnormal tumour necrosis factor (TNF-) expression causes crippling arthritis in test animals. In collagen-induced arthritis, the occurrence of arthritis was markedly reduced in the absence of interleukin-1 (IL-1) (CIA). Animals lacking the interleukin-6 (IL-6) gene exhibited resistance to arthritis brought on by collagen and antigens. These investigations demonstrated that TNF-, IL-1, and IL-6, pro-inflammatory cytokines, play a function in rheumatoid arthritis and may serve as therapeutic targets.

Anti-parasitic activity:

^[37] At a concentration of 1000 Og/mL, a 50 percent ethanolic crude leaf extract was shown to have trypanocidal action. In vivo tests demonstrated that the extract had antitrypanosomal effects at dosages of 300 and 1000 mg/kg, i.p., and significantly increased the lifespan of *Trypanosoma evansi*-infected mice. Nevertheless it has been noted that once the extract therapy is stopped, the parasitaemia increases and the test animals perish.

Anti-malarial activity:

^[36,37] There was a clinical investigation done with 120 malaria patients. Ninety-two (76.7%) of the patients were treated with a fresh paste made from medium-sized five *N. arbortristis*

leaves that was given three times daily for seven days. The eight patients who did not respond to treatment were among the 20 patients who recovered within 10 days. No serious side effects were noticed, and the paste was well tolerated.

Immunostimulant activity:

^[36,37] When challenged with SRCs and heat-killed *Salmonella* antigens, oral treatment of ethanolic extract of NAT at dosages of 50, 100, 150, and 200 mg/kg significantly increased circulating antibody titres. The overall WBC count increased due to chronic therapy, which also considerably improved the DTH response. The extract included 21 immune-bioactive compounds, it was discovered.

Hepatoprotective activity:

^[37] It was found that aqueous extracts of the leaves and seeds of *Nyctanthes arbour-tristis* were effective antihepatotoxic agents against CCl₄-caused hepatotoxicity [26]. Hepatic illnesses have evolved into serious medical obstacles in the twenty-first century.

Because of the fast rate of tissue regeneration in the liver, damage is frequently severe before it manifests. When hepatocyte regeneration cannot keep up with damage, hepatocellular failure results, which leads to hepatic diseases.

CNS depressant action:

^[36,37] The CNS depressant activity of the ethanol extracts of seeds, leaves, and flowers is thought to be caused by a decrease in dopamine, as it was discovered that the leaves, flowers, seeds, and barks of NAT (600 mg/kg) significantly and dose-dependently prolonged sleep onset and duration and caused a decrease in dopamine and an increase in serotonin levels.

Anti- inflammatory activity:

^[37] In a study, NAT leaves' water-soluble ethanolic extract was utilised to check for the presence of anti-inflammatory activity. Rats' hind paws were affected by acute inflammatory edoema caused by carrageenin, formalin, histamine, 5-hydroxytryptamine, and hyaluronidase. NAT prevented this edoema from developing. It has been demonstrated that turpentine oil is useful in lowering acute inflammatory edoema in rats' knee joints.

Anti- diabetic activity:

^[23]Oral administration of chloroform and ethanolic leaf and flower extracts markedly increased superoxide dismutase (SOD) and catalase (CAT) levels in comparison to diabetic controls and markedly decreased liver lacto peroxidase (LPO), serum SGPT, SGOT, and alkaline phosphatase, cholesterol, and triglyceride levels. An ethanol extract of the stem bark showed notable anti-diabetic action when fed to diabetic rats receiving streptozotocin-nicotinamide treatment. Depending on the dosage, the extract reduces blood glucose levels.

Anti- trypanosomal potential:

^[37]An investigation was done into the crude 50% ethanolic extract of *N. arbour-tristis* leaves' in vitro and in vivo antitrypanosomal activities. The extract demonstrated trypanocidal effect at the highest tested concentration (1000 g/ml).

Anti-anaemic activity:

^[37]A dose-dependent increase in the haemoglobin content and red blood cell count in rats was shown in a haematological study employing ethanolic extracts of the plant's flowers, barks, seeds, and leaves.

The extracts also stop the deterioration of the hemogram profiles in anaemic rats.

Anti- histaminic and Anti- tryptaminergic activity:

^[37]Guinea pigs are successfully protected against hypoxia brought on by histamine aerosols (2 percent at 300 mm Hg) by the aqueous soluble extract of *N. arbour-tristis* leaves (4.0 and 8.0g/kg oral). *Arbortristosid A* and *Arbortristosid C* have been demonstrated to have anti-allergic properties in *N. arbour-tristis*.

Anti- aggressive Activity:

^[36]It has been demonstrated that the plant's fresh juice made from its leaves has antimalarial properties.

In a 50% ethanolic extract, the plant's seeds, leaves, roots, flowers, and stem were discovered to have antibacterial and antiallergic characteristics. It has been demonstrated that the plant's leaf extract has analgesic, antipyretic, anti-inflammatory, and allergic properties. It has been found that the plant's leaves, seeds, and flowers contain immunostimulant properties. For the water soluble portion of the ethanolic extract, sedative,

antihistamine, purgative, and tumour necrosis depletion properties have been demonstrated. When extracted from the seeds, *arbortristoside* shown anticancer effects.

Anti- filarial activity:

^[36]Both a purified component of the *N. arbortristis* plant and a chloroform extract of the flowers are larvicidal against the widespread floral vector *Culex quinquefasciatus*.

Treatment of Piles, Gout and Dry Cough:

^[36]The *Nyctanthes arbortristis* plant's seeds are used to treat piles, while its blossoms are used to treat gout. Leaf tea is used to treat dry cough. External use of leaf aqueous paste is used to cure skin conditions, including ringworm. Young leaves are used as a tonic for women.

Anti- bacterial activity:

^[36]K. Priya et al., 2007 looked at the antibacterial properties of flower, leaf, seed, and fruit ethyl acetate and chloroform extract against gramme-positive (*Staphylococcus aureus*) and gramme-negative (*E. coli*, *Klebsiella pneumoniae*, and *Pseudomonas aeruginosa*) bacteria. Significant antibacterial activity was seen in 300 l of both the ethyl acetate and chloroform extracts against the tested microorganisms. While leaf extract exhibited antibacterial action only against gramme-negative bacteria, flower ethyl acetate and seed chloroform extract shown broad spectrum antibacterial activity against both gramme-negative and gramme-positive bacteria. Fruit and seed ethyl acetate had an inhibitory impact only on *Pseudomonas aeruginosa* and *Klebsiella pneumoniae*, in contrast to flower and seed chloroform extract. Additionally, it was discovered that fresh plant pieces have higher antibacterial activity than dried ones. A phytochemical examination found phytosterols, phenolics, tannins, flavonoids, glycosides, and saponins in the sample. Tannin and phenolic compounds were discovered to have antibacterial activity. As a persistent and powerful antioxidant, astringent, and therapy for diarrhoea and dysentery, tannins have been found to form irreversible compounds with proline-rich proteins that limit cellular protein production.

Anti-fungal activity:

^[36]*Aspergillus niger*, *Penicillium*, and *Aspergillus flavus*, the three most common clinical pathogenic fungus, were tested for antifungal activity in various areas of the NAT plant.

Collected and dried fresh and mature leaves, seeds, stems, bark, and flowers were then extracted using distilled water, methanol, and chloroform. By using the well diffusion method, the antifungal activity of the extracts was evaluated in terms of the "zone of inhibition" of fungal growth. The findings showed that only a distilled water extract of NAT's stem and bark had antifungal action against *A. niger*, but a chloroform extract of its leaves had antifungal activity exclusively against *A. flavus*. The research demonstrated that methanolic extract of NAT's leaves, stem, and bark displayed the strongest antifungal effectiveness against both *Aspergillus* and *Penicillium*.

Anti-ulcerogenic and ulcer-healing property:

^[36]One of the most common gastrointestinal illnesses, peptic ulcers, are caused by an imbalance between defensive and offensive factors, particularly mucus-bicarbonate secretion and prostaglandins. Offensive forces include acid, pepsin, *H. pylori*, and bile salts. The two main treatment modalities for gastric ulcer condition are a decrease in stomach acid production and gastric mucosal protection. There have been claims that the NAT compounds arbortristoside-A and 7-O-trans-cinnamoyl-6-hydroxyloganin have anti-ulcerogenic and ulcer-healing properties. These two help to speed up gastric ulcer healing while also preventing the development of irritant-induced stomach ulcers.

Hypoglycemic and hypolipidemic activity:

^[37]Millions of individuals throughout the world suffer with diabetes mellitus, a serious illness. Because diabetes has a tendency to raise blood levels of low-density lipoprotein cholesterol and lower levels of high-density lipoprotein cholesterol, which cause coronary occlusions and blockages, it is crucial to maintain both blood glucose and lipid levels in people with diabetes. Plants are being explored as an alternative because it has been determined that the current method of treating diabetes with synthetic hypoglycaemic drugs may have unfavourable effects that result in hypoglycemia, gastrointestinal problems, renal toxicity, and hepatotoxicity. The hypoglycaemic and hypolipidemic effects of different doses of boiled aqueous extract of fresh NAT flowers were tested in mice. After giving mice doses of 200, 500, and 750 mg/kg of the extract, fasting and random glucose concentration were evaluated. The effect of the extract on glucose tolerance, gastrointestinal glucose absorption, liver and

skeletal muscle glycogen content, diaphragm uptake, serum lipid profile, and in-vitro amylase testing were investigated in mice after oral administration of the extract. The trial findings showed that 500 and 750 mg/kg of the extract considerably decreased the random blood glucose level by 32% after 4 hours after treatment, while 500 mg/kg of the extract dramatically dropped fasting glucose levels by 49% and 39%, respectively. The extract also considerably reduced total cholesterol and triglycerides by 44.8% and 53%, respectively, and boosted high-density lipoprotein cholesterol by 57%. It also greatly enhanced diaphragm uptake of glucose by 64%. Additionally, it shows a 16.66% suppression of the activity of the α -amylase enzyme. The extract's biochemical and toxicological effects over the treatment period did not result in any deaths, nor were there any indications of clinical toxicity, stress, or unpleasant behaviour. After extract therapy, further histopathological examination of the liver and kidney portions did not reveal any effects. According to experimental results, the fresh NAT flower's boiled aqueous extract has hypoglycaemic and hypolipidemic activity that can be utilised as an alternative diabetic treatment, and toxicological tests found it to be safe for oral consumption.

Anti-hyperlipidemic activity:

^[37]Increased blood lipid levels, or hyperlipidaemia, are the primary cause of many disorders, including atherosclerosis, coronary heart disease, ischemic cerebrovascular disease, hypertension, obesity, and type 2 diabetes. Wistar albino rats were used to test the anti-hyperlipidemic effect of NAT leaf methanolic extract. The extract significantly reduced triglycerides, total cholesterol, low density lipoproteins (LDL), very low density lipoproteins (VLDL), and low density lipoproteins (LDL) while significantly increasing high density lipoprotein (HDL) at dosages of 200 and 400 mg/kg body weight. Plant sterols (β -stigmasterol and β -sitosterol) that lower cholesterol absorption and enhance steroid excretion in the faeces may be responsible for the impact of decreasing blood lipid levels. We came to the conclusion that the methanolic extract of NAT leaves exhibited specific and non-specific anti-hyperlipidemic activity, which may have been caused by the presence of phytochemicals such as phenol, triterpenoids, and flavonoids in the extract.

Anti- spasmodic activity:

^[24,28]Using guinea pig ileum preparation against the spasmodic substance acetylcholine, NAT was studied for its potential antispasmodic properties. Based on the reduction of acetylcholine's contractile impact by various extract dilutions, the antispasmodic efficacy of several plant parts' ethanolic extracts was calculated; flower and seed extracts were the most effective. 72mg of flower extract and 90mg of seed extract suppressed the contractile response to 0.0002mg of acetylcholine, which was less effective than 16mg piperazine citrate

Toxicity of Nyctanthesarbor-tristis:

^[50]Rats have been shown to be adversely affected by the ethanolic concentrate of Nyctanthes arbour-tristis leaves. It has been determined that sixteen gm/kg is the intermediate lethal dose (LD50) of the water-soluble part of the alcoholic concentrate of the leaves in rodents. At a dose of 2 gm/kg, there was no mortality while at a dose of 32 gm/kg, there was a 75% fatality rate. Rats with gastric ulcers were given ethanol concentrates of the leaves (1, 2 and 4 gm/kg/day) orally for six consecutive days. This concentrate also produced aggravation effects because it, when administered to mice with pale skin, caused semi-liquid, collagenous pale stools to form. It also caused conjunctival clogs and oedema when administered to the bunny's eyes, and people who crushed dried leaves developed vesicles on their palms.

II. CONCLUSION –

Nyctanthesarbor-tristis is one of the most significant sources of medicinally significant ingredients that have been the subject of much research by scientists is the plant Nyctanthesarbor-tristis. The Nyctanthesarbor-tristis plant has primarily been the subject of scientific research on its leaves and seeds, although there are rumours that the plant's bark powder and root extract are used in traditional treatments. The primary goal of this review was to assemble various applications for all plant parts. The main applications for Nyctanthesarbor-tristis leaf extract so far range from bitter tonic to digestive laxative diuretic in spleen enlargement, as anti-oxidant anthelmintic expectorant bronchiodialatory, and other purposes.even as a venome antidote for reptiles. plants have a wide range of pharmacological properties that could be therapeutically advantageous for population health and well-being. All pharmacological research to date has been

preliminary, including studies on anticancer, antiparasitic, antimalarial, immunostimulant, hepatoprotective, anti-inflammatory, anti-diabetic, anti-allergy, anti-histaminic, anti-tryptaminergic, anti-aggressive, anti-filarial, anti-leishmanial, antioxidative, and anti-arthritic activity. These investigations must identify the bioactive chemical and define its molecular mechanism of action. The infused seeds have been used to treat skin conditions, piles, and scalp conditions. As astringents, carminatives, etc., flowers. According to the study mentioned above, the Nyctanthesarbor-tristis plant's leaves were extensively used for the study but the blossoms and stem also needed to be taken into consideration.

REFERENCE –

- [1]. Alamgir M & Uddin SJ, Recent advances on the ethnomedicinal plants as immunomodulatory agent Ethnomedicine. In: A Source of Complementary Therapeutics, edited by Chattopadhyay D, Research Signpost, Kerala, India 2010; 227-244
- [2]. alternate (Fr.) Kessler, IndBotRep, 1982; 1(2): 164-165.
- [3]. Anis M. Jahan A 2006 Rapid Multiplication of Nyctanthesarbor-tristis 1. through in-vitro Axillary Shoot Proliferation, World Journal of Agricultural Sciences, 2(2), 188-192
- [4]. arbor-tristis L.)-A less known medicinal plant in Unani medicine, Hamdard Med, 1994; 37(2): 60-66.
- [5]. Bambal Vaishali Mishra Manisha, Turasker Ashish 2011 Study of Sunscreen Activity of Herbal Cream Containing Flower Extract of Nyctanthesarbor-tristis and Tagetes erecta L., 11(1)
- [6]. Bansal S Bharti AJ Bansal YK 2012 Efficient In-vitro Regeneration of a Medicinal Plant Harshringar, Bangladesh Journals Online 22(2), 137-142
- [7]. Bapalal G Vaidya, Nighantu Adarsha, 1st edition, Vol- I, Jatyadi Varga, Page No.- 838, Chawkhamba Vidya bhavan, (1968).
- [8]. Bhowmick BN & Choudhary BK, Antifungal activity of extracts of medicinal plants on Alternaria
- [9]. Chandra G, Chemical composition of the flower oil of Nyctanthesarbor-tristis Linn., Indian Perfumer, 1970; 14(1): 19.
- [10]. charya Sharma PV, Priya Nighantu, 1st edition, Haritakyadi Varga, Verse 190-92,

- Page-42/192,
ChowkhambaSurabharatiPrakashana,
Varanasi, (2004).
- [11]. Chatterjee SK, Bhattacharjee I & Chandra G, Bactericidal Activities of Some Common Herbs in India, *Pharmaceutical Biol*, 2007; 45(5): 350-354.
- [12]. Devasagayam TPA & Sainis KB, Immune system and antioxidants, especially those derived from Indian medicinal plants, *Indian J Exp Biol*, 2002; 40:639-655.
- [13]. extract, *Food Chem*, 2007; 103: 1350–1357.
- [14]. Ghaware NB and Nesari TM 2010, Anti-Pyretic Activity of Piper nigrum and Nyctanthes arbor-tristis in Different Doses Forms, *Research Journal Pharmacy and Technology*.3(1)
- [15]. Girach R.D., Aminuddin, 1994, *Ethnomedicinal Studies on Harshringar-A Less Known Medicinal Plant in Unani Medicines*, *Hamdard Med* 37(2):60-66
- [16]. Girach RD, Aminuddin SA, Siddiqui PA & Khan SA, *Ethnomedicinal studies on Harsinghar (Nyctanthes*
- [17]. Gupta P, Bajpai SK, Chandra K, Singh KL & Tandon JS, *Antiviral profile of Nyctanthes arbor-*
- [18]. Hara H, Chater AO, Williams LHJ. An enumeration of the flowering plants of the Nepal, 1978-1982.
- [19]. Jain S.K., 1991 *Dictionary of Folk Medicines and Ethnobotany*, Deep Publication. pp:132
- [20]. Jain SK, *Dictionary of Indian Folk Medicines and Ethnobotany* (Deep Publications, New Delhi), 1991;132.
- [21]. Khandelwal KR, Kadam SS & Singham, *Antibacterial activity of the leaves of Nyctanthes arbor-Tristis Linn.*, *Indian JN at Prod*, 1999; 15: 18-20.
- [22]. Kirtikar K.R. Basu B.D. 2000, *Indian Medicinal Plants*, vol. VII Sn Satguru Publication, New Delhi. pp.2110-2113.
- [23]. Khatune N.A., Islam M.E., Rahman M.A., Mosaddik M.A. and Haque M.E. In-vivo cytotoxic evaluation of a new benzofuran derivative isolated from *Nyctanthes arbortristis L.* on ehrlich ascite carcinoma cells
- [24]. (EAC) in mice. *J Med Sci*. 2003; 3(2):169-173. Lucas D.S. and Sekhar R.A.R. A review of experimental studies on anti-hepatoprotective activity of certain medicinal plants used in Ayurveda. *Phytomedicine. Supplement-II*. 2000; 23.
- [25]. Lucas DS & Sekhar RAR, A review of experimental studies on anti-hepatoprotective activity of certain
- [26]. Malkangiri District Orissa India, *Natural Product Radiance*, 6(5):430-435
- [27]. Medicinal plants used in Ayurveda, *Phytomedicine, Supplement-II*, 2000; 23.
- [28]. Nadkarni A.K., 1982, *Indian Materia Medica* (Dr.K.M. Nadkarni), vol. I edition-III; 857-858.
- [29]. Nadkarni AK, *Indian Materia Medica*, Vol. I, 3rd edition., (Popular Prakashan Pvt. Ltd., Bombay & Dhootapapeshwar Prakashan Ltd, Panvel), 1954; 857-858.
- [30]. Omkar A, Jeeja T & Chhaya G, *Evaluation of anti-inflammatory activity of Nyctanthes arbor-tristis and*
- [31]. *Onosmaechioides*, *PharmacogMag*, 2006; 2(8): 258-
- [32]. *Parts of Nyctanthes arbor-tristis Linn*, *Research Journal of Phytochemistry*, 1,61-67.
- [33]. Pattanaik Chiranjibi. Das Rasmita 2007, *Traditional Medicinal Practices Among The Tribal People of Plant With Immense Medicinal Potentials*, *Indian Journal of Traditional Knowledge*, 11(3), 427-435
- [34]. Priya K. Ganjewala Deepak 2007, *The Anti-Bacterial Activities and Phytochemical Analysis of Different Plant Parts of Nyctanthes arbor-tristis Linn*. *Research Journal of Phytochemistry*, 1:61-67
- [35]. Rahman JMF, Shahriar M, Chakraborty P, Sattar M & Choudhuri MS, *Acute metabolic and chronic toxicity study of Nyctanthes arbor-tristis L.*, *Hamdard Med*, 2000; 43(2): 19-23.
- [36]. Rani C., Chawla S., Mangal M., Mangal A.K., Kajla S. and Dhawan A.K. *Nyctanthes arbortristis Linn. (Night Jasmine): A sacred ornamental plant with immense medical potentials*. *Indian journal of traditional knowledge*. 2012; 11(3): 427-435.
- [37]. Rina Kumari, Rahul Nayan, Dharmshila Kumari., *An updated review on Nyctanthes arbortristis plant: A medicinal* Volume 6 Page no-84-87 value and Antioxidant property

- [38]. Rathee JS, Hassarajani SA & Chattopadhyay S, Antioxidant activity of Nyctanthes arbor-tristis leaf
- [39]. Rathore A, Srivastava V, Srivastava KC & Tandon JS, Iridoid glucosides from Nyctanthes arbor-tristis, Phytochemistry, 1990; 29(6): 1917-1920.
- [40]. Ratnasooriya WD, Jayakody, JRAC, Hettiarachchi, ADI & Dharmasiri, MG, Sedative effect of hot flower infusion of Nyctanthes arbor-tristis on Rats, Pharmaceut Biol, 2005; 43(2): 140-146.
- [41]. Saha R.K. Acharya Srijan 2012, Biochemical Investigations and Biological evaluations of the Methanolic Extract of the Leaves of Nyctanthes arbor-tristis in vitro Asian Pacific Journal of Tropical Biomedicines, 3(2), 1534-1541.
- [42]. Saikia Bipul Saikia N. 2008 Medico-Ethnobotany of Bodo Tribals in Gohpur of Sonitpur District, Assam Indian Journal of Traditional Knowledge, 9(1), 52-54
- [43]. Sasmal D, Das S & Basu SP, Phytoconstituents and therapeutic potential of Nyctanthes arbor-tristis Linn., Pharmacog Rev, 2007; 1(2): 344-349. 9. Anonymous, The Wealth of India: A Dictionary of Indian Raw Materials and Industrial Products, Vol. VII. (National Institute of Science Communication. CSIR, New Delhi), 1997; 69-70.
- [44]. Saxena RS, Gupta B & Lata S, Tranquilizing, antihistaminic and purgative activity of Nyctanthes arbor-tristis leaf extract, J Ethnopharmacol, 2002; 81: 321-325.
- [45]. Saxena RS, Gupta B, Saxena KK, Singh RC & Prasad DN, Study of anti-inflammatory activity in the leaves of Nyctanthes arbor-tristis Linn. – An Indian medicinal plant, J Ethnopharmacol, 1984; 11: 319-330.
- [46]. Saxena RS, Gupta B, Saxena KK, Srivastava VK & Prasad DN, Analgesic, antipyretic and ulcerogenic activity of Nyctanthes arbor-tristis leaf extract, Ethnopharmacology, 1987; 19: 193-200.
- [47]. Shahidi F & Wanasundara PK JPD, Phenolic antioxidants, Crit Rev Food Sci Nutr, 1992; 32: 67-103.
- [48]. Singh AK. Acta Botanica Hungarica. 1983; 29(1-4): 281-92.
- [49]. Singh UK, Sen AB & Tandon JS, Antileishmanial activity of traditional plants against Leishmania donovani in golden hamsters, Int J Pharmacog, 1992; 30: 289-295.
- [50]. Sofowora A, Medicinal plants and traditional medicine in Africa, (Spectrum Books Ltd, Ibadan, Nigeria), 1993; 289.
- [51]. Talakal TS, Dwivedi SK & Shamra SR, In Vitro and In Vivo antitrypanosomal potential of Nyctanthes arbor-tristis Leaves, Pharmaceut Biol, 2000; 38(5): 326-329.
- [52]. Vats M, Sharma N & Sardana S, Antimicrobial Activity of Stem Bark Extract of Nyctanthes arbor-tristis Linn. (Oleaceae), Int J Pharmacog Phytochem Res, 2009; 1(1): 12-14.
- [53]. Vishwanathan M & Juvekar AR, Hepatoprotective effect of Nyctanthes arbor-tristis Linn. On acetaminophen induced oxidative damage in rats, Int J Pharm Tech Res, 2010; 2(2): 1291-1297.
- [54]. Wealth of India, A Dictionary of Indian Raw Materials and Industrial Products, VII, (National Institute of Science Communication, CSIR, New Delhi, 1997) 69-70.