



Analytical Aspects of *Nyctanthes arbor-tritis* (Prajakta) Leaves

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Abstract:

The leaves of plant Prajakta was extracted with water. It shows presence of alkaloids tannins and flavonoid. The plant leaves extract shows good antibacterial activities

Key Words: TLC, Water Extraction, Ether Extraction, Ash Value, U.V.

Introduction: Medicinal plants are the source of great economic value in the Indian subcontinent. Nature has bestowed on us a very rich botanical wealth & large number of diverse type of plant in different parts of the country [1]. Herbs have been always the main principle form of medicine since the tradition in India. Now a day it becomes most popular throughout the world. Man has been dependent on the nature for curing many diseases. From ancient civilization various parts of different plant were used to eliminate many diseases [2]. In Ayurvedic & Unani system of medicine, Decoction of the leaves of *Nyctanthes Arbor-tristis* (prajakta) Linn is used in the treatment of sciatica, chronic fever, rheumatism, intestinal worm, laxative, diuretic, diaphoretic, expectorant and antimoebic purpose[3]. *Nyctanthes arbor-tristis* is commonly known as Night-flowering Jasmine, Coral Jasmine and Parijat, Prajakta, Har Singar. It is used for its antibacterial, anthelmintic, anti-inflammatory, hepatoprotective, immunopotential, anti pyretic, antioxidant and anti fungal activity [4]. *Nyctanthes Arbor-tristis* linn is native to India and distributed widely in the sub-Himalaya region and southward to Godavari. It is also distributed in Bangladesh, Indo-Pak subcontinent and south East-Asia. It grows in an Indo-Malayan region and distributed across Burma as well as cylon [5]. Local people of India use the whole tree for cancer, root for fever, sciatica, anorexia, and bark as expectorant. Other researcher into the leaf extract of *Nyctanthes Arbor-tristis* have shown considerable immunological activity and water soluble ethanol extract from the leaves are reported to possess anti-inflammatory activity[6]. *Nyctanthes Arbor-tristis* Linn is a large shrub growing to 10 m tall with a flaky grey bark. The



flower are fragrant with a five to eight lobbed, corolla glabrous is more than 13 mm long and its tube is 6-8 mm long and tube is orange colour and lobes are white. The leaves are opposite, simple, 6-12 cm long and 2-6.5 cm broad [7]. *Nyctanthes Arbor-tristis* (prajakta) linn belonging to family Oleaceae and division is Magnoliophyta, and its class is Magnoliopsida & order is Lamiales. It is a well known medicinal plant. *Nyctanthes* means “Night Flowering” and *Arbor-tristis* mean “the sad tree” as it loses its brightness during day time. The plant has been extensively used in Ayurvedic system of medicine for various ailments and it shown to possess significant anti-inflammatory wound healing and antimicrobial, hepatoprotective, property [8]. The leaf of *Nyctanthes arbor-tristis* are extensively used in tribal and Ayurvedic medicine for the treatment of various diseases such as Chronic fever, rheumatism, internal worm infection, asthma, inflammation, dyspepsia, dermatography, bronchitis, cough, constipation, hepatopathy [9]. *Nyctanthes arbor-tristis* mainly used in traditional medicine as carminative, piles, biliousness, hair tonic and various skin diseases [10]. Leaf Extract Possessed good in vitro antioxidant activities [11]. It has been suggested that aqueous and ethanolic extract from plant used in allopathic medicine are potential sources of antiviral, antitumoural, and antimicrobial agent [12]. *Nyctanthes Arbor-tristis* possess anti-histaminic, anti-filarial, anti-viral, anti-oxidant, immunoprotective activities of phytochemical [13].

Material and Method:

Collection of plant: Fresh leaves of *nyctanthes arbor-tristis* were collected from healthy plant early in the morning from Himayatbagh Fruit research centre, Dist: Aurangabad, Maharashtra. Name of the collected plant was authenticated by the department of Botany, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad. The collected leaves were gently washed to remove dust. Then leaves were dried at room temperature for about 15 days and were crush into fine pieces and grinded to get the finest powder of uniform size.



Flower of Nyctanthes arbor-tristis



Leaves of Nyctanthes arbor-tristis



Chemical Analysis: The physico-chemical parameters of plant extract were determined which include percentage (%) of total ash, acid soluble ash, acid insoluble ash, water extract, ether extract, colour detection and antimicrobial activity.

Determination of total ash: Accurately weighed 10 gm powdered sample were transferred to a silica crucible, heated at a temperature of about 500⁰ c until it become ash in a muffle furnace. Crucible was cooled in a desiccators, weight of the total ash was calculated. Ash was used for further chemical analysis

Determination of acid insoluble ash: 0.60 gm of ash was taken in a beaker and 50 ml of 2N Hcl was added into the beaker and it was well mixed and filtered through whatmann filter paper no.41. It is washed with hot water until the filtrate is neutral. Filter paper containing insoluble matter was transferred to the crucible. Then it was ignited and cooled in a desiccators and weight of the ash was calculated.

Determination of acid soluble ash: 0.60 gm of ash was taken in a beaker and 50 ml of distilled water was added into the beaker and it was well mixed and filtered through whatmann filter paper no.41. Filtrates of above were transferred to the crucible. Then it was ignited and cooled in a desiccators and weight of the ash was calculated.

Preparation of water extraction: 5 gm sample was taken in a round bottom flask (R.B.F) and 50 ml of distilled water was added into the round bottom flask. It was refluxed for 1 hr and cooled. Then filtrate was collected in a beaker and residue obtained above was collected. Again 50 ml of distilled water was added into the round bottom flask and procedure was repeated twice. And total filtrate was collected in a same beaker. This filtrate was evaporated by heating till Syrupy extract form. It was kept in oven for 6-8 hrs to dry.

Preparation of Ether extract: 10 gm powders were extracted by using diethyl ether in a soxhlet apparatus. Then extractive value was calculated in percentage (%). It was found to be 3%.

Thin Layer Chromatography: TLC of Ether and Water Extraction were done.

Determination of Antimicrobial Activity: Antimicrobial activity of *Nyctanthes arbor-tristis* was determined against bacterial strain, *Salmonella typhi*, *Escherichia coli*, and *Staphylococcus aureus* *Bacillus subtilis* by well diffusion assay on agar plate. The bacterial cultures were grown on nutrient broth for 24 hrs. The activity grown cultures were spread on nutrient agar plate by



spread plate method. Well was prepared by borer. 20 micro lit. Sample was poured in the well. Streptomycin antibiotic is used as a standard 100 micro gm/ml concentration.

Table No.1: The phytochemical profile of the leaf extract:

Phytochemical	Presence/Absence
Alkaloids	+
Tannins	+
Flavonoid	+
Glycoside	+
Terpens	-
Saponin	-

Table No.02 Profile of the leaf extract:

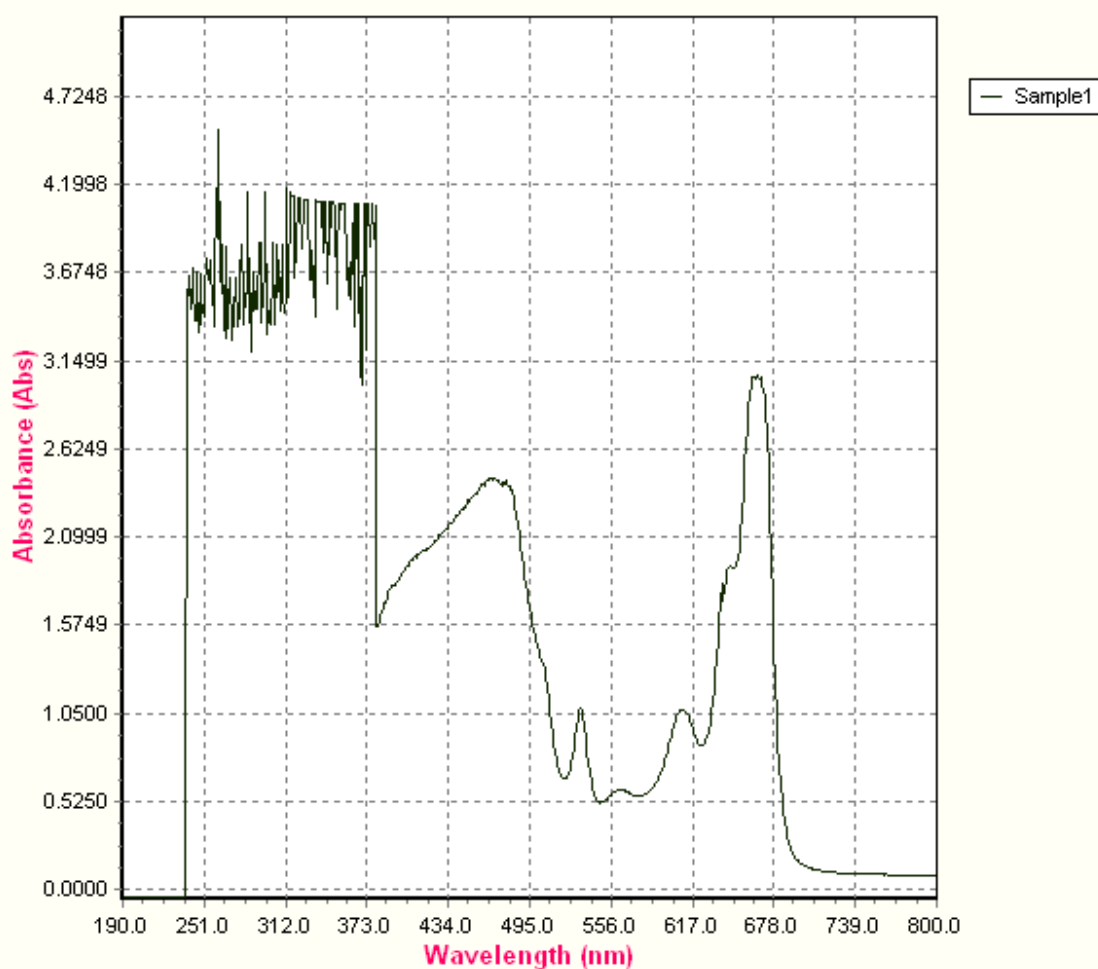
Sr.No.	Extraction	Percentage (%)
01	Water Extraction	85%
02	Ether Extraction	3%

Table No.03 Colour Detection Test

Sr. No.	Chemical used	Observation
01	H ₂ SO ₄	Light Green
02	HNO ₃	Light Chocolaty
03	5% KOH	Dark Green
04	Hcl	Yellowish Green
05	1N NaoH	Dark Green
06	Picric Acid	Light Green
07	Conc.HNO ₃	Orange
08	Conc.H ₂ SO ₄	Red
09	Conc.Hcl	Dark Green
10	Acetic Acid	Light Green

Table No.04 Ash Value

Sr. No.	Ash	Percentage(%)
01	Total Ash	12.00%
02	Acid Soluble	6.67%
03	Acid Insoluble	93.33%



Spectra of Ether Extraction



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