

# Evaluating Antimicrobial Activity of Extract from the Leaves of Parijat - *Nyctanthes Arborescens* on Gram Positive & Gram Negative Bacteria

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**Abstract:** Coral jasmine, Night Blossoming Jasmine, and Parijat are other similar names for *Nyctanthes arbor - tristis*. In this study, an effort was made to observe & check into anti bacterial characteristics of *Nyctanthes arbor - tristis*. The aforementioned plants' leaves were collected for the study and turned into a basic powder which later made extract using Soxhlet apparatus. The gram - negative bacterium *Klebsiella pneumonia* & gram - positive bacterium *Staphylococcus aureus* were utilised to carry out the antibacterial activities. The disc diffusion method also known as Kirby - Baur method was utilised to test antibacterial activity. Test extract in methanol solvent exhibited strong antibacterial activity against harmful bacteria. The data revealed that *Nyctanthes arbor - tristis* methanol extract displays maximum antibacterial activity.

**Keywords:** Antimicrobial activity, Gram +ve, Gram -ve, Amoxicillin, Effectiveness

## 1. Introduction

The frequencies of life - killing infections caused by pathogenic microorganisms has increased worldwide and is becoming an important cause of morbidity and mortality in immune compromised cases in developing countries and numerous contagious microorganisms are resistant to synthetic or artificial medicines; hence an alternative remedy is very much needed. Since periods, man has been dependent on nature for curing harmful body conditions. From ancient civilization different plants were used to kill pain, control suffering and offset complaint, many of the medicines used in primitive drug were attained from plants and are the foremost and top natural source of drugs. The plants used, as medicines are fairly inoffensive and fairly free from poisonous effects or were so poisonous that murderous effects were well known. The nature has handed the storage of remedies to cure all affections of humanity. There's no mistrustfulness that plants area force of potentially useful chemical composites which serve as medicines, are handed newer leads and suggestions for ultramodern medicine design by conflation Antimicrobials of factory origin have enormous remedial eventuality. They're effective in the treatment of contagious conditions while contemporaneously mollifying numerous of the side goods that are frequently associated with synthetic antimicrobials *Nyctanthes arborescens* Linn. generally known as Harsinghar or Night Jasmine is one of the well known medicinal plants. Different corridor of *N. arborescens* are known to retain colorful affections by pastoral substantially ethnical people of India (Orissa and Bihar) along with its use in Ayurveda, Sidha and Unani systems of drugs. Juice of the leaves is used as digestives, cure to reptile banes, mild bitter alcohol, laxative, diaphoretic and diuretic Leaves are also used in the blowup of spleen. Traditionally the pulverized stem dinghy is given in rheumatic common pain, in treatment of malaria and also used as an expectorant The claimed traditional medicinal uses have been proved on scientific base using in - vitro and in - vivo trials. The factory have been screened for antihistaminic exertion, CNS conditioning (viz. narcotic, lulling, original anesthetics),

analgesic, anti - inflammatory, antipyretic, antiulcer, amoebicidal, anthelmintic, antitrypanosomal to antidepressant, antiviral and immunomodulatory Leaves excerpts was set up to have antimicrobial exertion 8 but no report is available on the antimicrobial exertion on the stem dinghy part so the present study is aimed at the webbing of the antimicrobial exertion in the stem dinghy excerpts of the plant *N. arborescens* Linn.

## 2. Material and Methods

### Plant collection and identification:

Fresh leaves of Parijata after identification as *Nyctanthes arbor - tristis*, Linn., by taxonomists were collected in the early morning from Raja Balwant Singh College & Paliwal Park, Agra premises. Deceased and dry leaves were discarded. (Early morning specimens showed higher concentration of alkaloids in the leaves. (Chaudhury, 1955) The fresh young leaves weighing 300g were washed in running water to remove the dust and dirt from it. Then the leaves were wiped with a clean white cloth to remove the moisture in them. The leaves were dried in shade (various drying procedures prove that there is no difference in alkaloid content. (Chaudhury, 1953). The leaves were turned frequently to enhance quick drying.

### Preparations of Extracts:

The plant material was powdered with stone mortar and extracted simultaneously with Distilled Water, Ethanol (95%), & Merhanol using Soxhlet apparatus. The extracts were filtered and allowed to evaporate in drying state. Each extract was transferred into clean and dried airtight vials for future use.

### Microorganisms

The test organisms were *Staphylococcus aureus* (MTCC 3160), *Klebsiella pneumonia* (MTCC 109), The microorganisms were availed from Lab of Department of Biotechnology, Raja Balwant Singh College, Agra. Identity of each test organism was confirmed using standard cultural, morphological and biochemical techniques. Stock cultures

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were maintained on nutrient agar slants at 4°C and then subcultures in nutrient broth at 37°C prior to each antimicrobial test.

**Evaluation of antimicrobial activity**

- 1) **Culture media** – Mueller Hinton Agar Media (TM MEDIA) was used as Culture Media for Bacteria.
- 2) **Chemicals for antimicrobial assay** - Amoxicillin (Central Drug House (P). LTD., New Delhi 110002, India) were used as positive reference standards (RA) for both bacterial strains.
- 3) **Assay method** - All the experimentation was done in aseptic area under laminar air - flow cabinet. The Disc Diffusion method or Kirby - Bauer method was adopted for the study. Suspend 38 gm of the medium in 1000ml

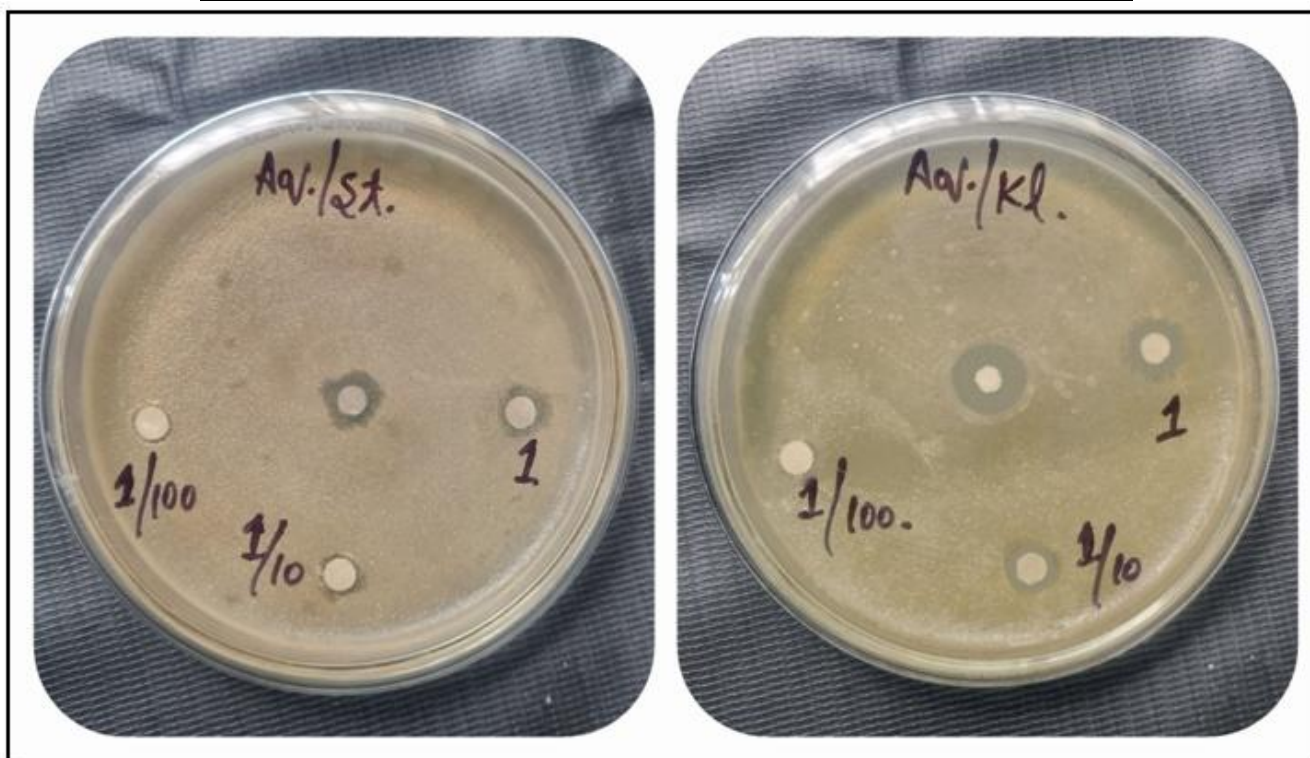
of distilled water. Heat with frequent agitation and boil for one minute to completely dissolve the medium. Autoclave at 121°C for 15 minutes. Cool to room temperature. Pour cooled Mueller Hinton Agar into sterile petri dishes on a level, horizontal surface to give uniform depth. Allow to cool to room temperature. Store the plates at 2 - 8 °C.

**3. Result**

The result shows that, Parijat leaves extract showed antimicrobial activity against the organisms *Staphylococcus aureus*, *Klebsiella pneumonia*.

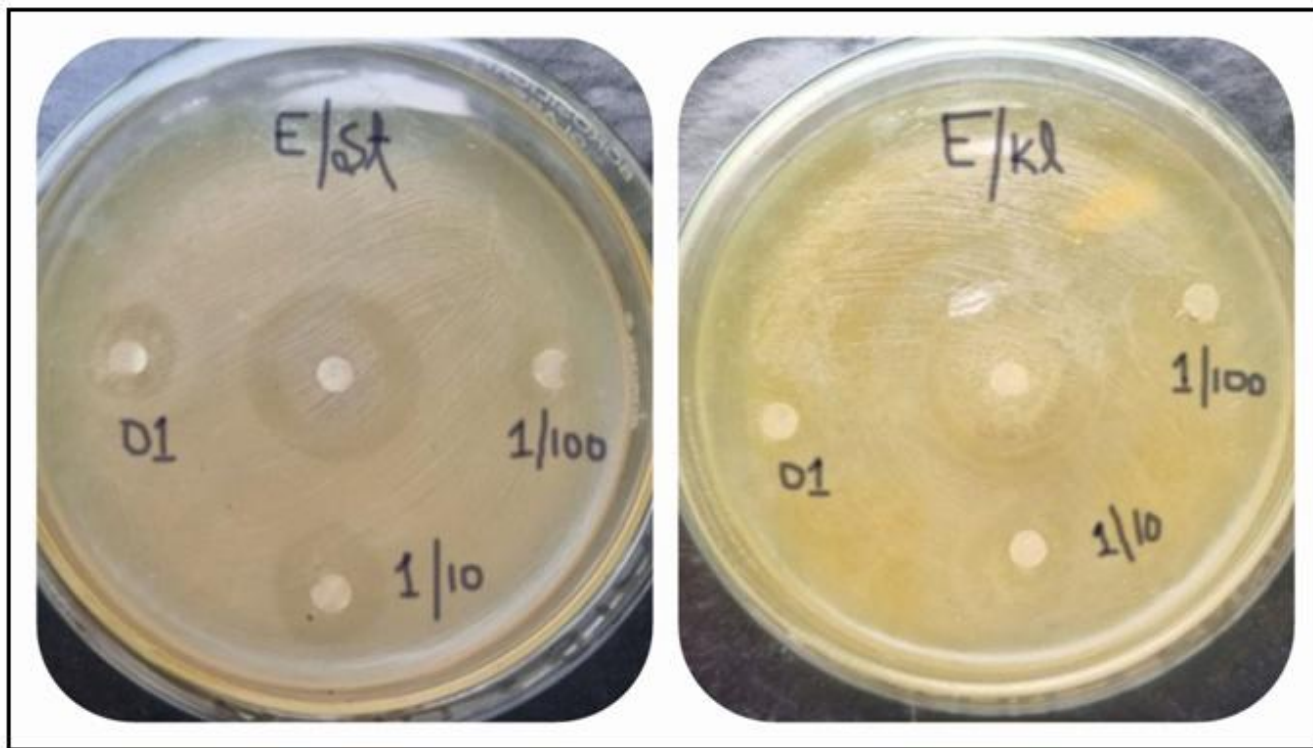
**Table 1: Anti - Microbial Susceptibility Test Report (Aqueous); -**

No.	Organism	Susceptibility	Reference	Zone of Inhibition (mm) (Diameter)		
				(1)	(1/10)	(1/100)
1.	<i>Staphylococcus aureus</i>	<b>Sensitive</b>	<b>11.0</b>	08.0	06.0	07.0
2.	<i>Klebsiella pneumonia</i>	<b>Sensitive</b>	<b>15.0</b>	10.0	09.0	07.0



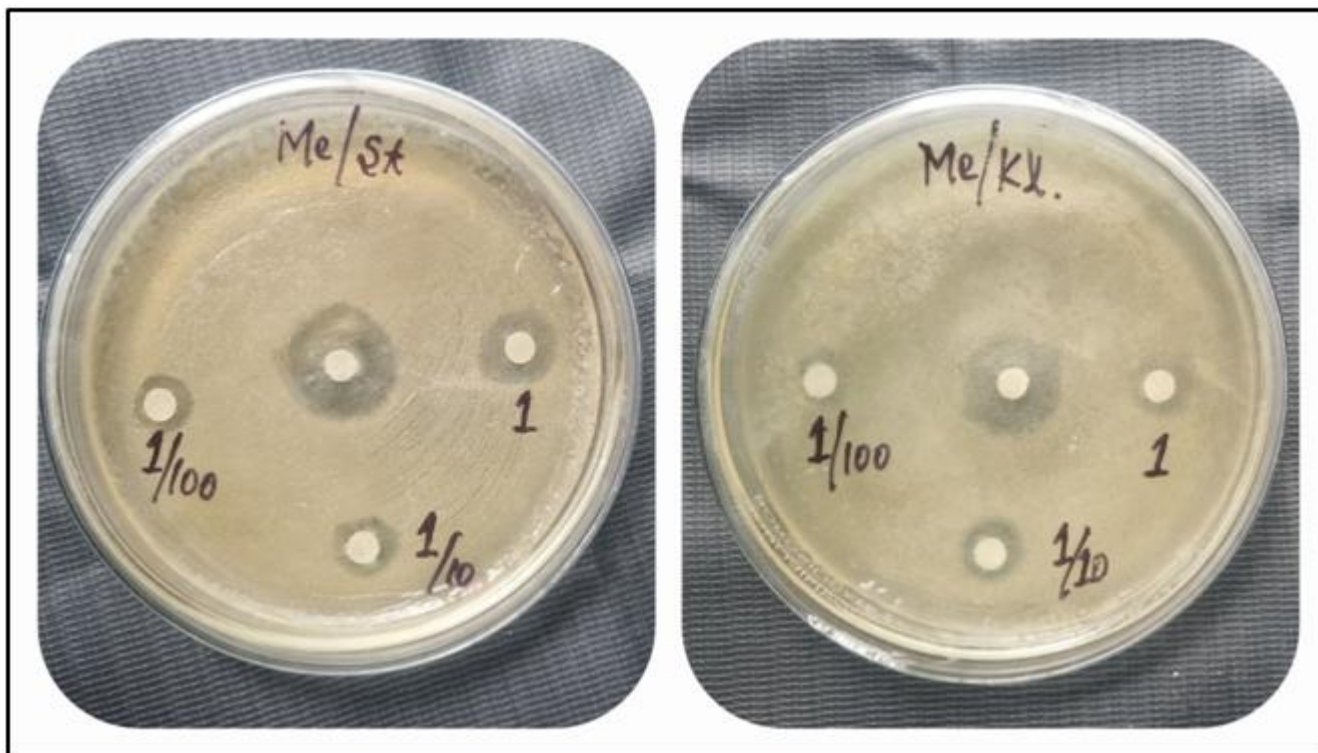
**Table 2: Anti - Microbial Susceptibility Test Report (Ethanol); -**

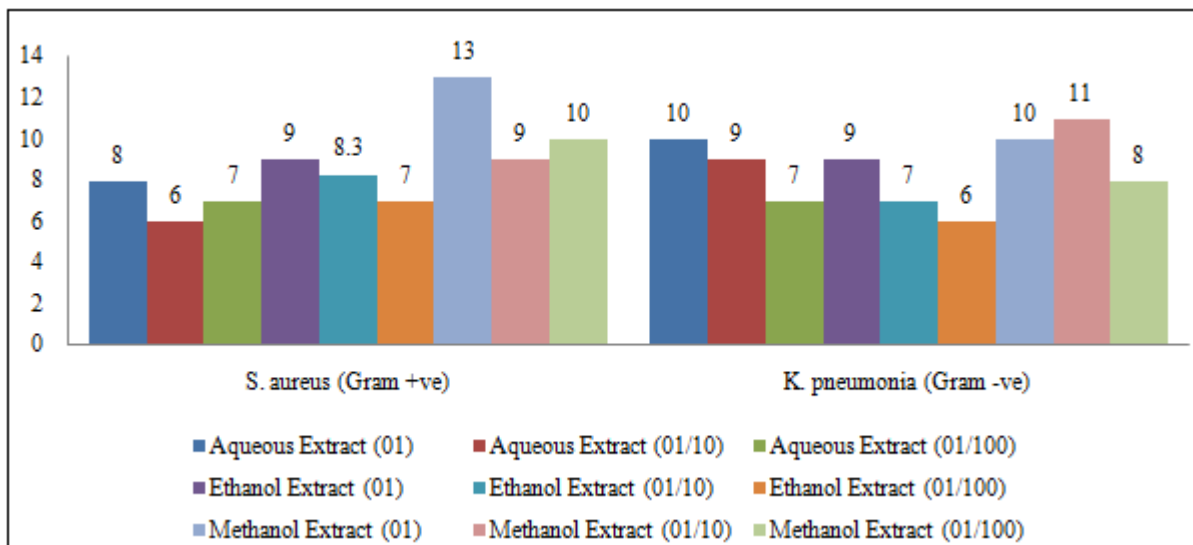
No.	Organism	Susceptibility	Reference	Zone of Inhibition (mm) (Diameter)		
				(1)	(1/10)	(1/100)
1.	<i>Staphylococcus aureus</i>	<b>Sensitive</b>	<b>13.0</b>	09.0	08.3	07.0
2.	<i>Klebsiella pneumonia</i>	<b>Sensitive</b>	<b>12.0</b>	09.0	07.0	06.0



**Table 3:** Anti - microbial susceptibility test report (Methanol); -

No.	Organism	Susceptibility	Zone of Inhibition (mm) (Diameter)			
			Reference	(1)	(1/10)	(1/100)
1.	<i>Staphylococcus aureus</i>	<b>Sensitive</b>	<b>20.0</b>	13.0	09.0	10.0
2.	<i>Klebsiella pneumonia</i>	<b>Sensitive</b>	<b>19.0</b>	10.0	11.0	08.0





**Graph 1:** Antimicrobial activity (zone of inhibition) of leaves extracts of *N. arbortristis* Linn. at different concentrations i. e., 01, 01/10, 01/100.

#### 4. Discussion & Conclusion

Table 01, 02, 03 shows the results of antimicrobial activity against the tested bacteria. All extracts showed varying degrees of inhibition against all the bacterial stains Graph 1 shows the comparison of the different extracts at different concentrations i. e., 01, 01/10, 01/100. Methanol extract showed higher zone of inhibition as compared with the Aqueous and Ethanol extracts and it is found to be more active against *Staphylococcus aureus* as compared in comparison with *Klebsiella pneumonia* bacteria. The Minimum Inhibitory Concentration (MIC) values of the extracts against tested microorganisms were shown in Table 1. Overall Methanol extract of the leaves of *N. arbortristis* Linn. exhibited significant activity, & Overall *Staphylococcus aureus* i. e., Gram +ve bacteria showed better results of getting resisted against extracts of the leaves of *N. arbortristis* Linn.

Conclusion this study, these results definitely portraits Parijat (*Nyctanthes arbor - tristis*) as a bacteriostatic & fungistatic agent. Apart from its antimicrobial potential, Parijat is well known of its health benefits so there is no harm to use Parijat plant for medicinal properties for a better health. Finally, we can conclude that parijat possess antimicrobial properties and could serve as source for future researches. Further studies will be done for new properties for the promised future of Mankind.

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#### Ethics Statement

This study does not contain studies with human participants or animals performed by any authors. All the research work

is conducted in a suitable scientific manner and does not harm or affects human population.

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