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Antifungal activity show by Justicia adhatoda

[1]Prabas Nand Raut, [2]Dr. Prasanna Purohit

[1, 2]Dr. A. P. J. Abdul Kalam University Indore M.P.

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ABSTRACT:

Indian medicinal herb Justicia adhatoda L. has long been utilized in Ayurvedic and Unani medicine treatments for respiratory conditions. Throughout the Indian subcontinent, it is widely used. Plant leaves have several well-known pharmacological effects, such as their antibacterial and antifungal characteristics. Two of its main bioactive components, vasicine and vasicinone, have been shown in studies to have antibacterial properties. However, not much has been done to change the direction of research in microbiology. In the current investigation, the plant's potential as a potent antifungal agent was therefore examined.

If the plant extract J. adhatoda L. has any anti-fungal qualities against A. niger that is something we would like to know. Every study finding in SCA media has demonstrated antifungal action against challenging infections. The test results showed that at 1000 mg concentration, A.Niger exhibited a higher inhibitory zone (17 mm) than the other microorganisms under investigation. The extract sample that contained chemicals had a stronger antibacterial effect. The results of the experiment have led to the discovery that the chemical present in the extract sample has significant therapeutic potential, particularly in relation to its antifungal properties.

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Keyword: Anti-Fungal,*A.Niger.*

1. Introduction:

The leaves of a shrub known as Justicia adhatoda are 8–9 cm long and 4 centimeters wide, with 10–20 lance-shaped leaves. They are borne on short petioles, have smooth margins, and are orientated oppositely. They have a bitter taste. When a leaf is examined under a microscope after being cleaned with chloral hydrate, the oval stomata are visible. Two crescent-shaped cells that are perpendicular to the ostiole surround them. Simple one- to three-celled warty hairs and tiny glandular hairs are present in the epidermis. On the underside of the blade, directly beneath the epidermis, are cystoliths [1]. Antibacterial, antifungal, anti-inflammatory, anti-ulcer, anti-oxidative, anti-tubercular, anti-tussive, larvicidal, anti-Alzheimer, and hepatoprotective qualities are among the many studies that have demonstrated the effectiveness of J. adhatoda [2]. Effective inhibitors include isotine and vasicoline from Pemirolast and Justicia adhatoda. All three of these chemicals are currently marketed as medications, therefore conducting a preliminary clinical trial to tackle the epidemic is likely to be beneficial. We suggested different drugs for different goals and stages of viral infection [3]. J. adhatoda has been traditionally used for a variety of ailments, including oral issues, tumors, painful eyes, bronchitis, leprosy, leucoderma, thirst, fever, memory loss, heart problems, jaundice, and venereal illnesses [4]. J. adhatoda is a well-known plant remedy in herbal and homeopathic therapy [5]. It has certain medicinal properties and is used by doctors of Ayurveda. It has been used to treat many different diseases and ailments, especially those of the respiratory system. Because of this, it is a significant herb in the Ayurvedic system and is used to treat asthma, bronchitis, and common cold symptoms [6].

2. Material and Method:

2.1 Plant Collection and Identification:

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All of the collected and preserved plant pieces are contained in a dried plastic bag. After all of the cleaning and washing was done, the plant pieces were assembled in another beaker.

2.2 Media Preparation:

2.2.1 SCA:

Sbouraud Dextrose Agar is a ready-to-use solid medium in a glass bottle. Since the medium has already been sterilised, there is no need to sterilise it. The liquid in the bottle can be melted using any technique, including a warm water bath. Loosen the cover a little before melting. Once the medium has melted entirely, distribute it as needed and let it to solidify. The cultures will become visible after the medium has melted and been transferred into sterile petri plates. Incubating the plates with the test organisms for seven days at 25°C is known as inoculation.

2.3 Culture Enumeration:

Readymade culture ***is*** used or culture enumeration activity.

2.4 Zone of Inhibition method:

Move the SCA agar medium plates to the biosafety cabinet. After removing the *A.Niger* culture tubes, carry out the spare plate process. Utilize two SCA plates for testing, and on each plate, use a cork borer to form a single cup with an 8.0 mm diameter. Fill a petri dish with 100 microliter of each sample solution for the extracts. Keep the plates in this position for one hour to allow for diffusion of the solution. Gently place the plates in an incubator heated to 20-25 °C so that no dilution seeps into the cups. Incubate the Petri dishes at 20-25°C for a whole day. Same procedure follow to all organism.

3. Results and Discussion:

***A.Niger*:**

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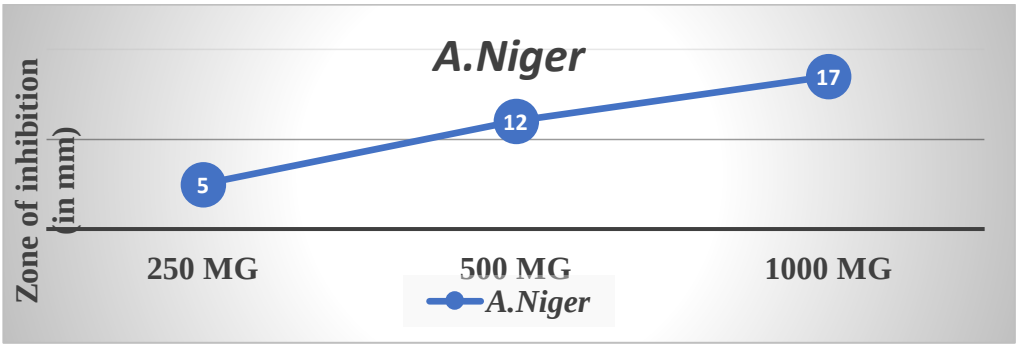
To determine its antibacterial efficacy, the zone of inhibition method's area diameter of sample extracts on 250 mg, 500 mg, and 1000 mg concentration solutions was examined. The extract sample proved effective against *A.niger i.* It was found that a sample's average zone inhibition measured in millimeters in solutions of 250 mg, 500 mg, and 1000 mg concentrations was 05 mm, 12 mm, and 17 mm, respectively**.**

This study is similar to, methanolic extract of J. adhatoda showed positive antibacterial activity against *P. aeruginosa, S. aureus, and B. subtilis* but failed to inhibit E. coli [7].

Table No.01: The anti-Fugal action of *Justicia adhatoda*

Sample	**Zone of inhibition (in mm)**
Concentratuion	***A.Niger***
250 mg	5
500 mg	12
1000 mg	17

Graph No.01: The anti-Fungal action of *Justicia Adhatoda*



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4. Conclusion:

Several significant bioactive substances, such as oils and quinazoline alkaloids, have been found in various J. adhatoda sections. Consequently, J. adhatoda extract may be the best choice for creating cutting-edge natural medicines. Major phytoconstituents active components, such as vasicine and vasicinone, which are present in both alcoholic and aqueous extracts of vasaka, demonstrate effective therapeutic activity.

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