

Invitro Evaluation of Antifungal Property of Ethanolic extract of Rosa Indica

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ABSTRACT:

Introduction: Rose is a woody perennial flowering plant of Genus Rosa, within the family Rosaceae. Roses have a variety of health benefits. It acts as an antiseptic, antispasmodic, astringent, bactericidal (against typhoid, diarrhea, cholera, food poisoning), antiviral (cold or influenza). 80% of vital fatty acids and antioxidants are found in rose extract, which aids in skin cell regeneration. Rose extract is used to treat fungal infections, mainly candidiasis. Various studies have been conducted to establish the anti-fungal, anti-bacterial and anti-oxidant activities of rose. These activities were attributed to the presence of flavonoid and phenolic compounds, also known as bioactive agents. Phytochemical analysis showed the presence of flavonoids and tannin alkaloids and carbohydrates were found in R. indica. Rosa indica extract found antibacterial activity against Proteus sp. and E. coli, and antifungal activity against A. fumigatus strains. **Aim & Objective:** To elucidate the antifungal efficacy of rose petals (Rosa indica) on Aspergillus niger, Candida albicans, Penicillium spp. **Materials and Methods:** 10 gm of fresh flower sample was weighed and soaked in 100 ml of ethanol. The extract was allowed to stand overnight and filtered using sterile filter paper. The antifungal activity of the sample was determined by well diffusion method on Potato Dextrose agar (PDA) medium. Then the microbial growth was determined by measuring the diameter of the zone of inhibition. Ketoconazole is used as a control, the outcomes were then contrasted with a control against Candida albicans, Aspergillus niger, and Penicillium species. **Results:** The zone of inhibition of rose extract was found to be 12mm against Aspergillus niger, 10mm and 13mm against Candida albicans and 13mm, 16mm, 20mm and 23mm against Penicillium spp. This study shows the presence of antifungal activity in rose extract. **Discussion:** Rose petal extract possesses antifungal properties. Rose extract's zone of inhibition is less than that of the antifungal medication ketoconazole. The antifungal activity of rose extract is more efficient against Penicillium spp. when compared to Aspergillus niger and Candida albicans. **Conclusion:** It is true that rose has antifungal properties. Rose extract is more efficient against Penicillium spp. in the current investigation. This discovery makes rose a powerful antifungal that can be used to treat fungal infections.

Keywords: Antifungal Property, Ethanolic extract, Rosa Indica

INTRODUCTION:

Within the Rosaceae family, the Genus Rosa comprises woody perennial flowers that bloom. Many health benefits can be derived from roses. Rose extract, which supports skin cell renewal, contains 80% of essential fatty acids and antioxidants. Rose extract is used to treat fungal infections, mainly candidiasis. In 90% of cases, onychomycosis is caused by a

Trichophyton rubrum. Candida is also responsible for nail infections, which is accompanied by paronychia (inflammation of the proximal nail fold). (1) Various studies have been conducted to establish the anti-fungal, anti-bacterial and anti-oxidant activities of rose. The plant is a perennial, upright shrub with thorns. It contains essential oils (1%), acyclic monoterpene alcohols, geraniol (up to 75%),

citronellol (20%), nerol (20%), and long-chain hydrocarbons like nonadecane or heneicosane (up to 10%), among other distinctive elements (2). Phytochemical analysis showed the presence of flavonoids and tannin alkaloids and carbohydrates were found in *R. indica*. Rosa indica extract found antibacterial activity against *Proteus* sp. and *E. coli*, and antifungal activity against *A. fumigatus* strains. This study intended to evaluate the antifungal activity of rosa indica against *Aspergillus niger*, *Candida albicans*, *Penicillium* spp. In a previous study, levoglucosan (5.69%), pyrogallol (21.92%), 5-hydroxymethylfurfural (11.52%), quinic acid (43.12%) and 4H-pyran-4-one,2,3-dihydro-3,5-dihydroxy-6-methyl (8.31%) were the major identified components in methanolic extract of rosa indica petals(3) With reference to study published in the year 2012 proves that rose contain vitamin C ,It also contains vitamin B1, B2, B3, K, E, sugars(4) .) It acts as an antiseptic, antispasmodic, astringent, bactericidal (against typhoid, diarrhoea, cholera, food poisoning), antiviral (cold or influenza), antiphlogistic. It helps to remove scars and marks. (4) The most important of these

bioactive constituents of plants are alkaloids, tannin, flavonoid and phenolic compound. Higher plants for antifungal activity has declared that plant extracts have the potential to reduce or completely stop the growth of fungi.(5)

AIM AND OBJECTIVES:

To Elucidate the antifungal efficacy of rose petals (*Rosa indica*) on *Aspergillus niger* , *Candida albicans*, *Penicillium* spp

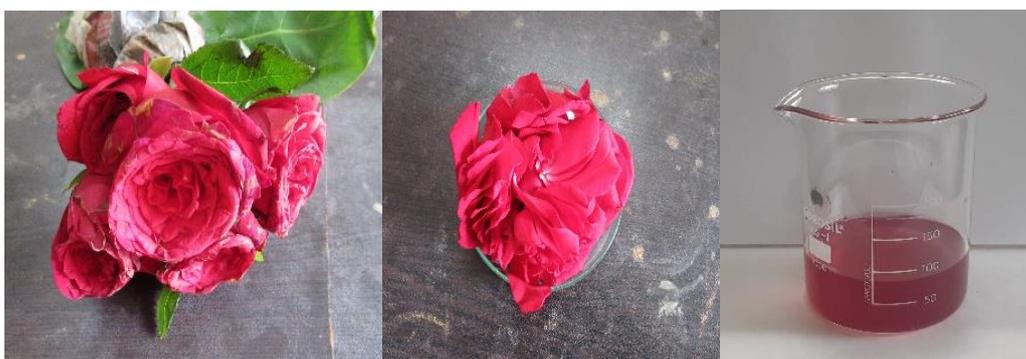
MATERIALS AND METHODS:

COLD EXTRACTION:

10 gm of fresh flower sample was weighed and soaked in 100 ml of ethanol. The extract was allowed to stand overnight and filtered using sterile filter paper. The filtrate was collected and incubated at room temperature for evaporation. Then measure the weight and find the yield by calculating.

Yield= initial weight - final weight

Extract yield= 0.2g



AGAR WELL DIFFUSION METHOD:

PREPARATION OF INOCULUM:

Stock cultures were maintained at 4°C on slant of potato dextrose agar. Active cultures for experiments were prepared by transferring a loop full of cells from the stock cultures to test tubes of nutrient broth for bacteria that were incubated at 24hrs at 37°C. The Assay was performed by agar disc diffusion method.

ANTIFUNGAL ACTIVITY:

Antifungal activity of sample was determined by well diffusion method on Potato Dextrose agar (PDA) medium. The Potato Dextrose Agar medium was

weighed as 4.4 gms and dissolved in 100ml of distilled water and add 1gm of agar. Then the medium is kept for sterilization. After sterilization the media was poured in to sterile petriplates and were allowed to solidify for 1hr. After the medium was solidified, the inoculums were spread on the solid plates with sterile swab moistened with the fungal suspension. Wells were made using cork borer. Sample (20,40,60,80µl) and Positive control ketoconazole (1mg/ml - 50 µl) loaded in respective wells. These plates were incubated for 24 hrs at 37°C. Then the microbial growth was determined by measuring the diameter of zone of inhibition.

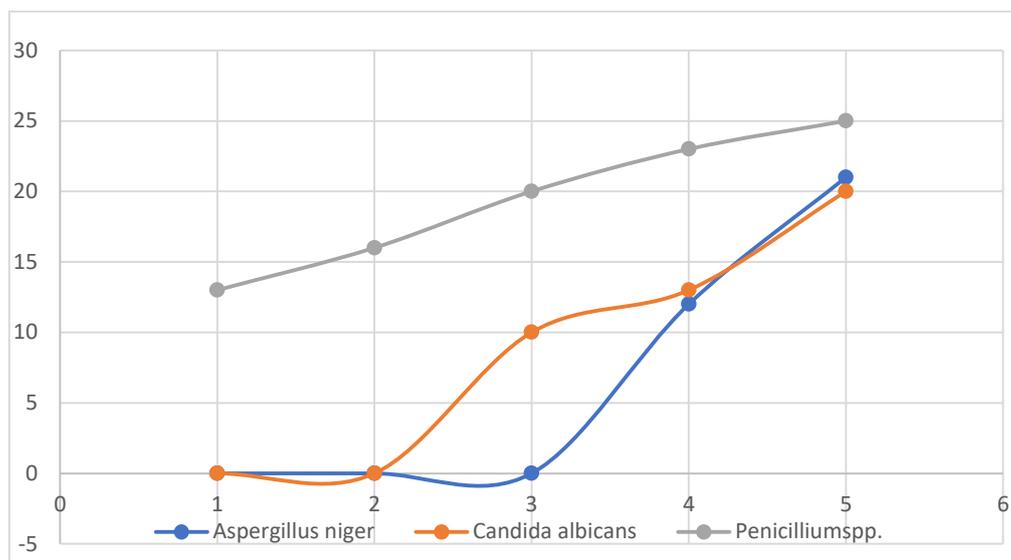


Aspergillus niger

Candida albicans

Penicillium sp.

Microorganism	Zone of inhibition in mm				
	1	2	3	4	5 (Ketocanzole)
<i>Aspergillus niger</i>	-	-	-	12	21
<i>Candida albicans</i>	-	-	10	13	20
<i>Penicillium spp.</i>	13	16	20	23	25



DISCUSSION:

The rose extract exhibited antifungal activity with the zone of inhibitions measuring 12mm against *Aspergillus niger*, 10mm, and 13mm against *Candida albicans*, and 13mm, 16mm, 20mm, and 23mm against *Penicillium spp.* Rose petal extract possesses antifungal properties. Rose extract's zone of inhibition is less than that of the antifungal medication ketoconazole. The antifungal activity of rose extract is more efficient against *Penicillium spp.* when compared to *Aspergillus niger* and *Candida albicans*. *Penicillium* has been isolated from patients with keratitis, endophthalmitis, otomycosis, necrotizing esophagitis, pneumonia, endocarditis, peritonitis, and urinary tract infections(7). *Penicillium marneffeii* are commonly as contaminants but may cause infections, particularly in immunocompromised hosts. *Penicillium*

verrucosum produces a mycotoxin, ochratoxin A, which is nephrotoxic and carcinogenic.



Structure of Penicillium:

Aspergillus, a type of filamentous fungus, can indeed cause various fungal infections Like Allergic Bronchopulmonary Aspergillosis (ABPA), Aspergilloma, Invasive Aspergillosis (8) In the previous study, the antibacterial and antifungal effects of *Rosa indica* were compared and were found that it

has better antifungal property than its antibacterial property. *Candida albicans* can cause a range of infections collectively known as candidiasis. Types of candidiasis include: Vaginal candidiasis, Invasive candidiasis, Oral thrush, Esophageal candidiasis. Global Emergence of *Candida auris*: An emerging, multidrug-resistant type of *Candida* that poses a serious global health threat(9).

CONCLUSION:

It is true that rose have antifungal properties. Rose extract is more efficient against *Penicillium* spp in the current investigation. This discovery makes rose a powerful antifungal that can be used to treat fungal infections so that it can become an alternative to the antifungal drugs. Even though these drugs cure fungal diseases it also cause adverse effects during its consumption. *Rosa indica* have been found everywhere and can become an easy source for patients with opportunistic infections and other infections. Mostly, roses are known for its beauty but have got therapeutic applications too. *Rosa indica* could serve as an alternative to antifungal drugs(10). While these medications effectively treat fungal diseases, they often come with adverse effects during consumption. *Rosa indica*, found abundantly, could be a convenient resource for patients dealing with opportunistic and other infections. Beyond their aesthetic appeal, roses hold therapeutic potential. However, additional pharmacological studies are necessary to fully establish their medicinal value

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