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A REVIEW ON THE ANTIFUNGAL ACTIVITY OF SOME TRADITIONAL MEDICINAL PLANTS

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ABSTRACT

Herbs have long been used to treat a wide range of infectious and noninfectious illnesses. Plant-derived compounds are estimated to be present in 25% of commonly used drugs. Several plants may be able to give a large reserve for the development of infectious illness medications, especially at a period when the most advanced Separation techniques can be found On the one hand, the human population is endangered by a number of developing infectious diseases. Fungal infections, among other illnesses, pose a significant threat to humanity, because of developing fungal strain resistance, a vast number of individuals worldwide suffer from fungal diseases. Antifungal drugs now available are either excessively expensive or have numerous side effects. Importantly, a number of medicinal plants have shown promise in the treatment of a wide range of fungal diseases, with some displaying broad-spectrum antifungal activity.

KEYWORDS: Infectious Diseases, Non-infectious Diseases, Fungal infection, Fungal Strains, Broad Spectrum Antifungal Activity, Medicinal Plants.

INTRODUCTION

Medicinal plants are used in pharmaceuticals, cosmetics, and nutraceuticals. Because of the broad variety of compounds found in plants that have been used to treat both chronic and infectious disorders, medicinal plants are extensively used in the pharmaceutical industry. Fungal infections are the leading cause of death in both developed and poor countries. This is due to the use of immunosuppressive medicines, long-term antibiotic use, and the prolonged survival of immunocompromised persons. The emergence of antifungal resistance in microorganisms has major consequences for infection control. These antifungal agents also act on mammalian cell targets, which may cause toxicity or undesirable medication interactions.

Ketoconazole is an antifungal medication that is used to treat both superficial and deep-seated infections. However, in immunocompromised patients, it causes nausea, abdominal pain, itching, toxicity, a delayed therapeutic response, and poor efficacy. As a result, the development of innovative antifungals is critical. Several species of plant phytochemistry has revealed that phytochemicals may be a more effective source of therapy than synthetically generated drugs. Plants have been used for medical purposes since the dawn of humanity. For ages, traditional remedies based on medicinal plants have been used. As a result, one method for discovering antimicrobial compounds has been to evaluate plant extracts.

Individuals and communities benefit greatly from medicinal plants. This significance stems from their chemical constituents, which have a specific physiological function on the human body. Among the most important of these bioactive substances include alkaloids, tannins, flavonoids, and phenolic compounds. Flavonoids are anti-inflammatory, anti-allergic, hepatoprotective, antithrombotic, antiviral, and anticarcinogenic. Alkaloids have a variety of beneficial benefits, including anti-hypertensive and anti-tumor properties. Caffeine, quinine, nicotine, artemisinin, cholchicine, and amblyopia are all alkaloid-based medications. Corilagin and geraniin are tannins that have anti-human immunodeficiency syndrome action by blocking reverse transcriptase. In immunocompromised people, pathogen caused by fungi are the major cause of illness and mortality. Several of these pathogens are well-known, such as Aspergillus fumigatus. The most common cause of nosocomial fungal pneumonia and the second most common cause of fungal infections is Aspergillus fumigatus. Azole, an antifungal medicine, was once effective against this pathogen, however it has recently developed resistance. Candida spp. is the fourth

leading cause of nosocomial infections. Between 1980 and 1990, they were responsible for roughly 88% of infections in the United States. The most prevalent species recovered from clinical samples is Candida albicans, which accounts for 40-70% of candidiasis infections. According to epidemiological data, 5 to 10 of every 1000 high-risk persons may get Candida bloodstream infection, with approximately 35% of these patients dying as a result of infection and 30% dying as a result of an underlying illness.[1]

Approximately 80% of the world's population is dependent on plant-based alternative treatments. Around 70.000 plants are employed in medicine. Ayurvedic medicine in India employs around 2,000 herbs to treat a variety of diseases. These plants are a part of our common history, and their use for medicinal purposes gave rise to the concept of herbal medicine or phytotherapy. Every medicinal herb has a number of components that aid in healing. Some of these chemicals have been identified and produced on a large scale, including reserpine, taxol, and vincristine. The plant kingdom contains approximately 200,000 chemicals in total. Plants employ these substances for maintenance, reproduction, healing, defence, and offensive.

Table 1: Details about plants having antifungal activity.

SL. No	Name of the Plant	Part used for study	Extract used for study	Name of the Fungus	Ref.
1.	Balanites aegyptiaca Cymbopogon citratus Cassia occidentalis Portulaca oleracea	Whole Plant	Aqueous extract	Colletotrichum graminicola Phoma sorghina	[2]
2.	Syzygium cumini (L.) Skeels Eucalyptus citriodora Roxb. Azadirachta indica L. Melia azedarach L.	Leaf	Methanol extract Chloroform extract Ethyl Acetate extract	Macrophomina phaseolina	[3]
3.	Piper aduncum Peperomia pellucida	Leaves	Ethanol extract	Candida albicans	[4]
4.	Parkia Biglobosa	Bark Leaves	Aqueous extract Methanolic Extract	Candida Albicans.	[5]
5.	Acacia nilotica Achras zapota Datura stramonium Emblica officinalis Eucalyptus globules Lawsonia inermis Mimusops elengi Peltophorum pterocarpum Polyalthia longifolia Prosopis juliflora Punica granatum Sygigium cumini	Bulbs Clove Flower buds Rhizomes Leaves	Methanol extract Chloroform extract Ethyl Acetate extract Benzene extract Petroleum extract Ethanol extract	Aspergillus sp	[6]
6.	Curcuma longa L.	Rhizome	Aqueous extract	Penicillium panemun Penicillium citrinum Cladosporium oxysporum Cladosporium subliforme Aspergillus chevalieri. C. oxysporum C. subliforme	[7]
7.	Ficus Sycomorus L. (Moraceae)	Bark Stem	Aqueous extract Hexane extract Petroleum ether extract Chloroform extract	T. rubrum T. mentagrophytes M. gypseum A. niger A. flavus C. albicans	[8]
8.	Trachystemon orientalis Smilax excelsa Rhododendron ponticum Phytolacca americana Prunus laurocerasus	Flowers Leaves Root Fruit Shoot	Methanol extract	Alternaria solani Botrytis cinerea Rhizoctonia solani	[9]
9.	Solena Amplexicaulis (LAM.)	Leaf	Methanol extract	Aspergillus niger	[10]

	GANDHI	Stem	Hexane extract Benzene extract Chloroform extract	Mucor sp. Candida albicans Trichoderma viride Aspergillus fumigatus Penicillium sp.	
10.	Pinus Merkusii	Bark	n-hexane extract	Phanerochaete chrysosporium	[11]
11.	Cupania glabra and Neolitsea dealbata Quercus insignis Drymonia conchocalyx Ardisia revoluta (acetone bark extract), Cedrela tonduzii (chloroform bark extract), Psychotria parviflora Camellia sinensis Bocconia frutescens Diospyros digyna Grevillia hilliana Polysoma alangiacea Xanthophyllum octandrum	Bark Leaf	Dichloro methane Extract Ethanol Extract Acetone Extract Choloform Extract	Aspergillus niger Rhizopus stolonifer	[12]
12.	Trachyspermum ammi Lin.	Seed		Fusarium oxysporum	[13]
13.	Citrus limon Persea americana Carica papaya Dyospiros ebenaster Mangifera indica Pouteria sapota Spondias purpurea Tamarindus indicus	Leaves Stems	Aquesous extract	Colletotrichum gloeosporioides	[14]
14.	Ficus Septica	leaves	Methanol extract	Colletotrichum Acutatum	[15]
15.	A. calamus L. Camara	Rhizomes Leaves	Ethanol extract Petroleum ether extract	Sclerotium rolfsii sacc.	[16]
16.	Amaranthus viridis Chenopodium album Solanum nigrum Carica papaya Euphorbia hirta	Leaves Stems Flowers	Aqueous extracts	Fusarium oxysporum Macrophomina phaseolina Rhizoctonia solani	[17]
17.	Datura metel Ruellia tuberosa Jatropha carcus	Whole Plant	Ethanolic extracts	Mycelium	[18]
18.	Aegle marmelos, Azadirachta indica, Terminalia chebula, Mangifera indica Ocimum sanctum	Leaves Fruit	Aqueous and ethanol	Cladosporium cucumerinum and C. albicans	[19]
19.	Zingiber officinale Rosc Piper nigrum Linn Azadirachta indica A. Juss Nicotiana tabacum Linn Carica papaya Lam	Seeds Rhizomes Leaves	Aqueous extract	Penicillium Expansum	[20]
20.	Lonicera japonica Baccharis trimera Zea mays Cynara scolymus Salvia sclarea Salvia officinalis Rosmarinus officinalis Schinus mole Aloe vera Lippia alba	Leaves Flowers Seeds	Aqueous extract Saline Buffer extract Acid extract	Alternaria sp	[21]

21.	Azadirachta Indica Linn	Leaves	Methanolic extracts Ethanolic extract	Aspergillus flavus Alternaria solani Cladosporium	[22]
22.	Annona muricata Linnaeus	Aerial parts		Aspergillus fumigatus	[23]
23.	Azadirachta indica	Leaves Seeds	Aqueous Extract Ethanolic Extract Ethyl Acetate Extracts	Aspergillus flavus Aspergillus fumigatus Aspergillus niger Aspergillus terreus Candida albicans Microsporum gypseum	[24]
24.	Lawsonia inermis L Mimosa pudica L Phyllanthus niruri L Tephrosia purpurea Pens Vinca rosea L	Leaves	n-butanol extract Methanol extract Aqueous extract	Pythium debaryanum	[25]
25.	Aloe secundiflora Bulbine frutescens Vernonia lasiopus Tagetes minuta	Leaves	Methanol extract	Candida albicans	[26]
26.	Alhagi maurorum Medic, Capparis spinosa L. Punica granatum L.	Roots Bark	Ethanol extracts	Alternaria alternata Fusarium oxysporum Phoma destructive Rhizoctonia solani Sclerotium rolfsii	[27]
27.	Callicarpa macrophylla Vahl.	Leaves	Aqueous extracts	Alternaria alternata Aspergillus flavus Aspergillus niger, Cladosporium cladosporidies Drechslera halodes Fusarium moniliforme	[28]
28.	Aloe barbadensis Miller	Leaf Gel	Ethanol Extract	Candida albicans	[29]

CONCLUSION

Finally, numerous studies on the effectiveness of antifungal herbal plant extracts have indicated that certain solvent extracts have antifungal efficacy against bacterial and fungal infections in people. Several herbal specialists' findings also suggested that scientific studies on therapeutic plants with traditional efficacy claims could yield positive results. These plants have the potential to be exploited to develop new antifungal medicines.

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DATA AVAILABILITY

It has not been confirmed.

CONFLICT OF INTEREST

The authors state unequivocally that they have no conflicts of interest. There is no financing source, and no external money has been declared.

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