

Herbal Antifungal Agents Used for the Treatment of Fungal Infections

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Abstract

Now a days, fungal infections of skin is one of the most common dermatological problems in world wide. It has been investigated that 40 million people suffer from fungal infections. Fungal diseases are infections caused by a fungus, a type of microorganism. Most commonly used antifungal drugs such as amphotericin B and other drugs like ketoconazole, fluconazole and clotrimazole are limited in their spectrum and may produce strain resistances. Major antifungal treatments have various drawbacks in terms of toxicity, efficacy as well as cost. Antifungal agents used clinically to treat fungal infections i.e., azoles, allylamines, griseofulvin. The review focus on the use of herbal treatment for fungal infections because herbal plants have less toxicity and no limits of treatment while synthetic treatment have limited criteria.

Keywords: fungal infections; herbs having antifungal activity

Introduction

Fungal infections are one of the deadliest infections accounting in excess of 1.5 million deaths annually worldwide. The main reason for fungal infection is neglected by the society. Over the past two decades, fungal infections have increased significantly in frequency and as causes of morbidity and mortality [1,2].

Fungal infections are also called mycosis, is a skin disease caused by a fungus and a type of microorganisms. There are millions of species of fungi, fungi can live in the air, soil, water, plants and also live-in human body. They can also lead to skin problems like rashes or bumps. Fungal infections come in different forms like ringworm, athletes' foot, yeast infections and jock itch. Some fungi like aspergillus can be dangerous and leads to life threatening disease. Fungal infections can be contagious and can be spread from one person to another person [3,4].

Common symptoms includes:

- ❖ Skin texture changes, including red and cracking or peeling skin
- ❖ Itching
- ❖ Swelling
- ❖ Irritation
- ❖ Scaly skin

Advantages of tropical treatment for fungal infections [5,6]:

- It includes targeting the site of infection
- Increases the efficacy of treatment

- Reduction in the systemic side effects
- Increase the patient compliance

Types of fungal infections:

- 1) Ringworms of the body (Tinea corporis)
- 2) Athlete's foot (Tinea pedis)
- 3) Jock itch (Tinea cruris)
- 4) Ringworm of the scalp (Tinea capitis)
- 5) Tinea versicolor
- 6) Cutaneous candidiasis

Ringworm of the Body (Tinea Corporis)

Ringworm is a common fungal skin infection and is highly contagious. It is caused by a fungus and not by a worm. Sometimes it can be found on the scalp.

Symptoms:

- Ring shaped rash with slightly raised edges
- Itching

2) Athletes Foot (Tinea Pedis)

It is a fungal infection that affects the skin on your feet and between your toes. This infection can spread to other area of the body like nails, groin or hands.

SYMPTOMS:

- Itching, burning
- Skin appears red, scaly, dry or flaky
- Cracked or blistered skin is observed

3) Jock Itch (Tinea Cruris)

It is a fungal skin infection that occurs in the area of groin and thighs. It is caused by fungus that can be spread from person to person. It is mostly seen in men and adolescent boys.

SYMPTOMS:

- Itching, red rashes occur in groin area and thighs
- Scaly, flaky or cracked skin is formed
- It can spread to the buttocks and abdomen

4) **Ringworm of The Scalp (Tinea Capitis)**

It is a fungal infection affects the skin of scalp and hair shafts. It is most common in young children.

SYMPTOMS:

- Scaling and itching
- Localized bald patches that may appear scaly or red

5) **Tinea versicolor:**

It is a fungal/ yeast skin infection that causes small discoloured patches to show up on the skin. It is most common in adults. This discoloured skin patches occurs on the back, chest and upper arms. It mostly occurs in summer or wet climate

SYMPTOMS:

- Itching
- Flaky or scaly skin

6) **Cutaneous candidiasis:**

It is a skin infection caused by candida fungi. It is naturally present inside the body. It occurs in areas that are warm, moist and poorly ventilated.

SYMPTOMS:

- Red rashes
- Itching
- Small red pustules

Herbal remedies to treat fungal infections [7,8]:

- 1) **Garlic:** It is one of the most potent antifungal and antimicrobial herbs. Those who take garlic regularly in their diet they are less susceptible to fungal infections. Crush garlic along with olive oil and make paste and apply to the infected area for 30 minutes. Apply daily until the problem resolve and it is very beneficial with the ringworm infections.

- 2) **Turmeric:** It is a potent antimicrobial and anti-inflammatory agent which consists of curcuminoids. Curcuma longa rhizome is used as insect repellent. Mixture of curcumin with other antimicrobial agent is used for the development of skin gels and emulsions with improved skin protection and wound dressing properties which are used for the fungal infections on the body.
- 3) **Aloe Vera:** It is a natural remedy to cure any skin infections. It is not only used for the treatment of infections but also repairs skin damage. It is mainly beneficial for the skin and face.
- 4) **Ginger:** It has very good anti-fungal properties. Adding ginger in the tea helps to prevent and treat fungal infections like candida albicans. It is scientifically called as Zingiber officinale which belongs to the family Zingiberaceae.
- 5) **Neem Leaves:** It have antifungal properties and are extremely good for the skin. The infected area is washed with neem water to treat fungal infections. To make neem more effective it is boiled in water and then it is used for bath.
- 6) **Apple Cider Vinegar:** It has antifungal properties you could mix two tablespoons in warm water and drink it or dip a cotton ball and apply it on infected area. Apply thrice a day to show better results.
- 7) **Oregano Oil:** Mix few drops with normal oil and apply on the infected area. Even oregano oil capsules are available which can be taken orally. Oregano oil is a good antifungal agent.
- 8) **Coconut Oil:** It is simple agent which is used for skin soothing effect. It also has antifungal properties which is mostly used for the treatment of scalp ringworm.
- 9) **Tea Tree Oil:** It is naturally used as antifungal and antibacterial agents. It is mixed with coconut oil or olive oil and applied on the infected area for three to four times a day. It is most effective in treating fungal infections.
- 10) **Yogurt:** It contains high amount of lactobacillus which has strong antifungal properties which is used to treat different fungal infections.

Herbal plants for the treatment of fungal infections [9,10]:

Scientific Name	Local Name	Family	Uses
Azadirachta indica	Neem	Meliaceae	Antifungal, antimalarial, antiviral, antioxidant and also used in ulcers and eczema
Allium sativum	garlic	Liliaceae	Used as rubefacient in skin disease, used in treatment of atonic dyspepsia
Ocimum sanctum linn	Tulsi	Labiaceae	Fresh leaves bruised and applied externally for curing ringworm and skin diseases
Coccinia indica	Ivy gourd	cucurbitaceae	Used for ringworm, psoriasis, smallpox, scabies and ulcers
Datura metel	Datura	solanaceae	Used as antimicrobial activity and antifungal activity
Moringa olifera	Sajina	Moringaceae	Used as purgative and for cough
Psidium guajava	peyara	Myrtaceae	Used as a gargle for mouth wash in swollen gum and locally applied to the ulcers

Herbal antifungal agents [11,12]:

Many of the pharmaceuticals presently available have a long history of use as herbal remedies including opium, aspirin, digitalis and quinine while their purification and quantification makes them more predictable. Herbal remedies tend to have a more complex and subtle mix of chemicals and can sometimes can offer access the drugs that the pharmaceutical industry has not yet exploited. Some of the antifungal drugs most recently introduced are derived from natural products which has showed good effect to the individuals with fungal infections. There is a need to develop more antifungal agents with lesser side effects, fewer dose limiting and which are

economic. Herbal formulations always have attracted considerable attention due to their good activity and comparatively lesser side effects when compared to synthetic drugs.

Marketed preparation [13,14].

Himalaya V-gel: Himalaya V-gel consists of Persian rose, triphala and cardamom. Himalaya V-gel is indicated for vaginal candidiasis (fungal yeast infection), vaginal trichomoniasis (parasitic vaginal infection) and nonspecific bacterial vaginitis.



Himalaya Hiora Mouth Wash: It kills germs, tones gums and refreshes mouth. It contains meswak, beteland bibhitaki. Belleric myrobalan (Bibhitaki) is an antimicrobial and antifungal agent that keeps infections away [15].



Conclusion:

The last 20 years has shown an increase in number of fungal infections. Presently worn drugs in treatment of fungal infections are having many side effects and development of resistance is very common against these drugs. Plants have been considered as traditional source of antifungal medicines for past many years. Plant bioactive with antifungal activity can be contemplate as an option for development of new and improved backup formulations in antifungal therapy. Development of improved formulations with plant phytochemicals is the need of the hour for efficient treatment of fungal diseases. Further research on this field can provide us with increased number of options in treatment of fungal diseases that will give the patients with a better quality of life.

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