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# Exploring Antifungal Potential of Selected Medicinal Plants: A Review

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**ABSTRACT:**

The skin protects the body's organs by keeping harmful things like UV radiation out and keeping the body's temperature stable. But when germs get through the skin, they can hurt its ability to protect itself and cause a number of skin problems or infections. Microorganisms like bacteria, viruses, parasites, and fungi can all make you sick. Fungal infections are the worst; they kill more than 1.5 million people around the world every year. Fungal infections are very serious, but most people and the healthcare system don't know much about them or pay much attention to them. In the last few decades, fungal infections have become a major cause of illness and death. The purpose of this review is to provide information about the ethnomedicinal uses, phytochemicals, and pharmacological activities of two medicinal plants, Azadirachta indica (Neem) and Curcuma longa (Turmeric), that are commonly used in Ayurvedic medicine to treat fungal infections.

## Azadirachta indica

The Meliaceae family includes the neem tree, which grows in tropical and subtropical areas like India, Bangladesh, Pakistan, and Nepal. This type of plant grows quickly and can reach a height of 20 to 23 meters. The trunk is straight and has a diameter of about 4 to 5 feet. There are 5 to 15 leaflets on each leaf, and they are arranged in a compound and imparipinnate pattern. The tree makes green drupes that turn a golden yellow color from June to August.

**Taxonamical classification**

| | |
|---|---|
| Order | Rutales |
| Suborder | Rutinae |
| Family | Meliaceae |
| Subfamily | Melioideae |
| Tribe | Melieae |
| Genus | *Azadirachta* |
| Species | *indica* |

## PHYTOCHEMICAL REVIEW

There are a lot of different phytochemicals in neem, but oxidized tetranortriterpenoids are the most common. Azadirachtin A, also known as azadirachtin, azadirachtin B (3-tigloylazadirachtol), azadirachtin D (1-tigloyl-3-acetyl-11-hydroxy-meliacarpin), azadirachtin H (11-demethoxycarbonyl azadirachtin), and azadirachtin I (1-tigloyl-3-acetyl-11-hydroxy-11-demethoxycarbonyl meliacarpin) are some of these. Other

important derivatives include azadirachtanin, azadiriadione, azadirachtolide, deacetylnimbin, epoxyazadiradione, isoazadirolide, margosinolide, nimbin, nimbolin A, nimbandiol, nimocinol, nimbinene, nimbocinone, nimbocinolide, nimocin, nimbolide, salannin, and others [3,11,12,13].

A lot of these chemicals are very important for the plant's health, especially when it comes to keeping it safe from UV radiation, herbivores, microorganisms, and insect pests. People have taken out more than 135 phytocompounds from different parts of the neem tree. It's interesting that at least nine of these are triterpenoid limonoids. Azadirachtins A–G, which are mostly found in neem leaves, are the most studied of these because they are very good at killing insects. Neem bark is also very high in lignans [3].

Neem oil has a lot of bioactive compounds that make it work in a lot of different ways. Here are some of the chemicals that are in it: Salannin, nimbin, meliantriol, meliacin, tignic acid, gedunin (which is also found in leaves), nimbidin, nimbidic acid, nimbidinin, nimbolide (which comes from leaves), valassin, linoleic acid, stearic acid, palmitic acid, oleic acid, azadiradione, hexadecanoic acid, caryophyllene oxide, linalool oxide, mahmoodin, margolone, azadirone, nimbolin, nimbinene, and nimbosterol. Neem seeds contain 30–50% oil, which is used to make drugs, soaps, and biopesticides [3,11,12,13].

There are many different phytoconstituents in neem that are not isoprenoid. These include proteins (including amino acids), sulfur-containing compounds, carbohydrates (especially polysaccharides), and polyphenolic compounds like flavonoids and their glycosides, such as rutin, dihydrochalcone, quercetin, carotenoids, catechin, ferulic acid, and β-sitosterol. There are also steroids in the leaves and bark, coumarins and tannins in the bark, and other chemicals like aliphatic compounds, ellagic acid, lupeol, saponins in leaves, alkaloids in leaves, resins, gums, margisine, cyclic trisulphides, and different ketones [3,4,13,14].

These secondary metabolites are often used in cosmetics and topical products because they are said to have healing properties. Table 1 lists the main chemicals found in these kinds of products and how they affect living things.

## ANTI FUNGAL ACTIVITY

For a long time, people have known that neem is a good way to fight off many fungi that can get into the body. It works really well for treating fungal infections like athlete's foot, which affects the hair, skin, and nails, and ringworm, which usually affects the skin and toenails. Neem is also good at stopping fungi from growing in the lungs, bronchi, intestines, and mucous membranes. It also stops fungi that are normally in the body from growing too much, which can lead to problems like vaginal infections and oral thrush. Neem leaf extracts and neem seed oil have been shown to kill a number of harmful fungi, including Trichophyton, Epidermophyton, Microsporum, Trichosporon, Geotrichum, and Candida.

## CURCUMA LONGA

Turmeric, or Curcuma longa Linn., is a member of the Zingiberaceae family. For a long time, many traditional systems of medicine have used it to treat illnesses. C. longa has been used in Unani and Ayurvedic medicine for a long time to treat liver obstruction and jaundice. It is also used to treat ulcers and inflammation on the skin. People often use it to treat a lot of different problems, like coughs, colds, dental issues, indigestion, skin infections, asthma, piles, bronchitis, tumors, wounds, and liver problems. People also know that it can kill germs and clean the blood. Curcumin, the main active ingredient in C. longa, is well-known for being able to help with many different health issues.

**taxonamical classification**

| | |
|---|---|
| Kingdom | Plantae |
| Subkingdom | Tracheobionts |
| Super division | Spermatophyta |
| Division | Mangoliophyta |
| Order | Zingiberales |
| Family | Zingiberaceae |
| Genus | Curcuma |
| Species | longa |
| Scientific name | *Curcuma longa* |

## Phytochemical Review

*Curcuma longa*, commonly known as turmeric, is a rhizomatous herbaceous plant that is widely used for its culinary, cosmetic, and medicinal properties. The powdered form of turmeric comprises approximately 60–70% carbohydrates, 6–13% moisture, 6–8% protein, 5–10% fat, 3–7% dietary minerals, 3–7% essential oils, 2–7% dietary fiber, and 1–6% curcuminoids. The characteristic golden-yellow color of turmeric is primarily attributed to curcumin, the principal curcuminoid pigment.

Turmeric is rich in a diverse array of phytochemicals, most notably diarylheptanoids, particularly the curcuminoids, which include:Curcumin (the most abundant and biologically active component),Demethoxycurcumin,Bisdemethoxycurcumin

Curcumin typically constitutes an average of 3.14% by weight in standard commercial turmeric powder, whereas curry powders contain significantly less, averaging about 0.29%.

In addition to curcuminoids, turmeric contains a wide variety of volatile essential oils, with around 34 identified components. The major essential oils include:Turmerone,Germacrone,Atlantone,Zingiberene

These compounds contribute not only to turmeric's aroma and flavor but also to its pharmacological properties, including antimicrobial, anti-inflammatory, antioxidant, and antifungal activities.

Other notable phytochemicals found in *Curcuma longa* include:Monoterpenes and sesquiterpenes Phenolic compounds,Triterpenoids,Flavonoids,Sterols (such as β-sitosterol),Alkaloids,Tannins,Saponins

Together, these bioactive constituents underline the significant medicinal value of *Curcuma longa*, making it a prominent herb in traditional and modern therapeutic systems.

## Antifungal activity

People have always been able to use substances and extracts from a wide range of natural sources, especially plants, to get rid of fungal infections and spoilage. A lot of research has been done on how turmeric and curcumin can help stop fungi from growing and food from going bad because turmeric is often used in cooking. Scientists have discovered that extracts from the rhizome of Curcuma longa can stop the growth of several types of fungi, including Penicillium sp., Fusarium sp., and Aspergillus sp. Different phytochemicals, like curcuminoids, are responsible for the antifungal properties.

**REFERENCE**

1.Singh, R.P. and D.A. Jain, 2012. Evaluation of antimicrobial activity of curcuminoids isolated from turmeric. Int. J. Pharm. Life Sci., 3: 1368-1376

2.. Alzohairy, M.A., 2016. Therapeutics role of Azadirachta indica (Neem) and their active constituents in diseases prevention and treatment. Evidence-Based Complementary and Alternative Medicine, 1–10.

3.Limonoids from seeds of Azadirachta indica A. Juss. and their cytotoxic activity Acta Pharmaceutica Sinica B, 8 (4) (2018), pp. 639-644

4. Jayaprakasha G. K., Negi P. S., Anandharamakrishnan C., Sakariah K. K. (2001). Chemical Composition of Turmeric Oil-Aa Byproduct from Turmeric Oleoresin Industry and its Inhibitory Activity against Different Fungi. Z. Naturforsch C J. Biosci. 56 (1-2), 40–44. 10.1515/znc-2001-

5.Kalim H., Handono K., Khalasha T., Pratama M., Dantara T. I., Wulandari A., et al. (2017). Immune Modulation Effects of Curcumin in Pristane-Induced Lupus Mice. Indian J. Rheumatol. 12 (2), 86. 10.4103/injr.injr_95_16

Saleem, S.; Muhammad, G.; Hussain, M.A.; Bukhari, S.N.A. A comprehensive review of phytochemical profile, bioactives for pharmaceuticals, and pharmacological attributes of Azadirachta indica. Phyther. Res. 2018, 32, 1241–1272.

Mossini, S.A.G.; Kemmelmeier, C. A árvore Nim (Azadirachta indica A. Juss): Múltiplos Usos. Acta Farm. Bonaer. 2005, 24, 139–148.

Kumar S, Vandana UK, Agrwal D, Hansa J. Analgesic, Anti-inflammatory and Anti-pyretic Effects of Azadirachta indica(Neem) Leaf Extract in albino rats. International Journal Scientific Research. 2015;4: 713–721.

Mahima AK, Verma A, Kumar A, Rahal R, Deb SK. Immumomodulatary Therapeutic Potential of Herbal, Traditional and Ethnovertinary Medicine. Pakistan Journal of Biological Science. 2013;15: 754-774.