

THE PHARMA INNOVATION

Natural Therapy of Fungal Nail Disease: Review

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Nails are the unique part of body, besides it's a dead tissue it also have role in serving the human beauty. It protects the fingertip and tissues from injuries and also enhances the precise movements of distal digits, but it has also been cursed with many diseases and ailments including serious infections. Most common types are of Fungal or Yeast infections resulting in Onychomycosis and if it is left untreated, the nail plate may separate from the nail bed. Other infections include Paronychia, Tinea Unguis, and Pseudomonas bacterial infection.

Different nail disorders are Onychatrophia resulting from injury, Leuconychia cause by trapping of tiny bubbles of air, Melanonychia known as nail moles and can be sometimes serious. For a physician physical appearance of nail is important which can reveals many disorders like Malnutrition, Liver disease, etc. Nail infections can be treated with natural products which are mainly Oregano oil, Lemongrass oil, Horopito. One of the latest and modern treatment to treat fungal infections of nails is Ozone treatment but it is not frequently used and quite costly. Like others body parts nails also required a good source of nutrients to maintain their complexions and healthiness, Vitamin A , Vitamin D and calcium help in maintaining moisture content of nails and avoid brittleness, Besides this Proteins and fatty acids like Linoleic acids are also essential.

Keyword: Nails, Fungal Infection ,Natural Treatment

INTRODUCTION: A nail is a horn-like envelope covering the dorsal aspect of the terminal phalanges of fingers and toes in humans, most non-human primates, and a few other mammals. Nails are similar to claws, which are found on numerous other animals. Fingernails and toenails are made of a tough protein called keratin, as are animals' hooves and horns. The

mammalian nail, claw, and hoof are all examples of unguis (plural ungues).

Human anatomy

The nail consists of the nail plate, the nail matrix and the nail bed below it, and the grooves surrounding it.

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Parts of the nail

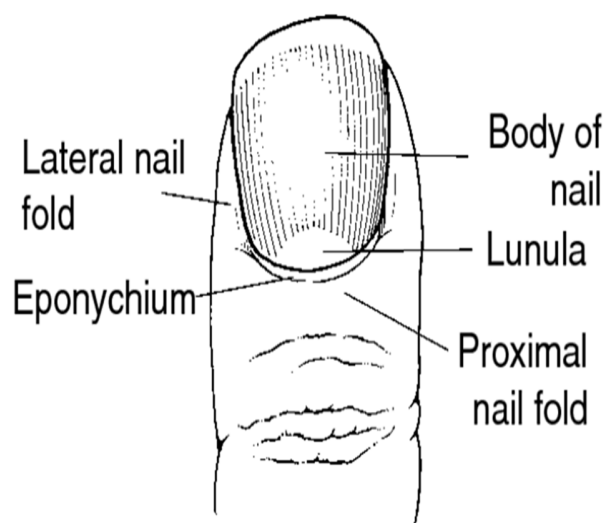


Fig.1

The matrix (synonyms: matrix unguis, keratogenous membrane, nail matrix, onychostroma) is the tissue (or germinal matrix) upon which the nail rests, the part of the nail bed that extends beneath the nail root and contains nerves, lymph and blood vessels. The matrix is responsible for the production of the cells that become the nail plate. The width and thickness of the nail plate is determined by the size, length, and thickness of the matrix, while the shape of the fingertip itself determines if the nail plate is flat, arched or hooked. The matrix will continue to grow as long as it receives nutrition and remains in a healthy condition. As new nail plate cells are incubated, they emerge from the matrix round and white to push older nail plate cells forward; and in this way yet older cells become compressed, flat, and translucent, making the pink color of the capillaries in the nail bed below visible.

The lunula (occasionally called simply "the moon") is the visible part of the matrix, the whitish crescent-shaped base of the visible nail. The lunula is largest in the thumb and often absent in the little finger.

The nail bed is the skin beneath the nail plate. Like all skin, it is composed of two types of tissues: the deeper dermis, the living tissue fixed to the bone which contains capillaries and glands, and the superficial epidermis, the layer just beneath the nail plate which moves forward with the plate. The epidermis is attached to the dermis by tiny longitudinal "grooves" known as the matrix crests or crests of nail matrix (*cristae matricis unguis*). During old age, the plate thins and these grooves are made evident in the structure.

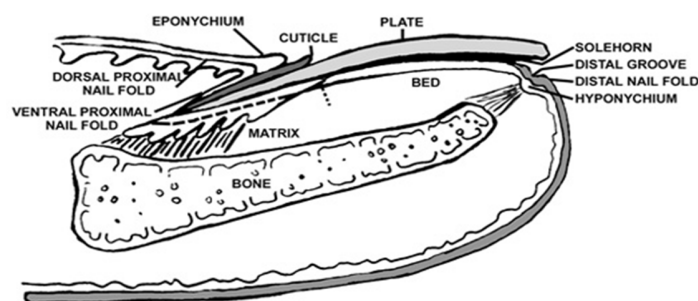


Fig.2

The nail sinus (*sinus unguis*) is the deep furrow into which the nail root is inserted.

The nail root (*radix unguis*) is the part of nail situated in the nail sinus, i.e. the base of the nail embedded underneath the skin. It originates from the actively growing tissue below, the matrix.

The nail plate or body of nail (*corpus unguis*) is the actual nail, and like hair and skin, made of translucent keratin protein made of amino acids. In the nail it forms a strong flexible material made of several layers of dead, flattened cells. The plate appears pink because of the underlying capillaries. Its (transversal) shape is determined by the form of the underlying bone. In common usage, the word nail often refers to this part only.

The free margin (*margo liber*) or distal edge is the anterior margin of the nail plate corresponding to

the abrasive or cutting edge of the nail. The hyponychium (informally known as the "quick") is the epithelium located beneath the nail plate at the junction between the free edge and the skin of the fingertip. It forms a seal that protects the nail bed. The onychodermal band is the seal between the nail plate and the hyponychium. It is found just under the free edge, in that portion of the nail where the nail bed ends and can be recognized by its glassy, greyish colour (in fair-skinned people). It is not perceptible in some individuals while it is highly prominent on others.

The eponychium is the small band of epithelium that extends from the posterior nail wall onto the base of the nail. Often and erroneously called the "proximal fold" or "cuticle", the eponychium is the end of the proximal fold that folds back upon itself to shed an epidermal layer of skin onto the newly formed nail plate. This layer of non-living, almost invisible skin is the cuticle that "rides out" on the surface of the nail plate. Together, the eponychium and the cuticle form a protective seal. The cuticle on the nail plate is dead cells and is often removed during manicure, but the eponychium is living cells and should not be touched. The perionych is the projecting edge of the eponychium covering the proximal strip of the lunula.

The nail wall (vallum unguis) is the cutaneous fold overlapping the sides and proximal end of the nail. The lateral margin (margo lateralis) is lying beneath the nail wall on the sides of the nail and the nail groove or fold (sulcus matricis unguis) are the cutaneous slits into which the lateral margins are embedded.

The paronychium is the border tissue around the nail and paronychia is an infection in this area.

Function

A healthy (finger)nail has the function of protecting the distal phalanx, the fingertip, and the surrounding soft tissues from injuries. It also serves to enhance precise delicate movements of the distal digits through counter-pressure exerted

on the pulp of the finger. The nail then acts as a counterforce when the end of the finger touches an object, thereby enhancing the sensitivity of the fingertip, even though there are no nerve endings in the nail itself. Finally, the nail functions as a tool, enabling for instance a so called "extended precision grip" (e.g. pulling out a splinter in one's finger).

Growth

The growing part of the nail is the part still under the skin at the nail's proximal end under the epidermis, which is the only living part of a nail.

In mammals, the length and growth rate of nails is related to the length of the terminal phalanges (outermost finger bones). Thus, in humans, the nail of the index finger grows faster than that of the little finger; and fingernails grow up to four times faster than toenails.

In humans, nails grow at an average rate of 3 mm (0.12 in) a month (as they are a form of hair). Fingernails require 3 to 6 months to regrow completely, and toenails require 12 to 18 months. Actual growth rate is dependent upon age, sex, season, exercise level, diet, and hereditary factors. Nails grow faster in the summer than in any other season. Contrary to popular belief, nails do not continue to grow after death; the skin dehydrates and tightens, making the nails (and hair) appear to grow.

Evolution:

The nails of primates and the hooves of running mammals evolved from the claws of more basal animals. In contrast to nails, claws are typically curved ventrally (downwards in animals) and compressed sideways. They serve a multitude of functions — including climbing, digging, and fighting — and have undergone numerous adaptive changes in different animal taxa. Claws are pointed at their ends and are composed of two layers: a thick, deep layer and a superficial,

hardened layer which serves a protective function. The underlying bone is a virtual mould of the overlying horny structure and therefore has the same shape as the claw or nail. Compared to claws, nails are flat, less curved, and do not extend far beyond the tip of the digits. The ends of the nails usually consist only of the "superficial", hardened layer and are not pointed like claws.

With only a few exceptions, primates retain plesiomorphic (original, "primitive") hands with five digits, each equipped with either a nail or a claw. For example, all prosimians (i.e. "primitive" primates or "proto-primates", see also Plesiadapiformes) have nails on all digits except the second toe which is equipped with a so called toilet-claw (i.e. important for grooming activities). The needle-clawed bushbaby (Euoticus) have keeled nails (the thumb and the first and the second toes have claws) featuring a central ridge that ends in a needle-like tip. In tree shrews all digits have claws and, unlike most primates, the digits of their feet are positioned close together, and therefore the thumb cannot be brought into opposition (another distinguishing feature of primates). A study of the fingertip morphology of four small-bodied New World monkey species indicated a correlation between increasing small-branch foraging and

1. expanded apical pads (fingertips),
2. developed epidermal ridges (fingerprints),
3. broadened distal parts of distal phalanges (fingertip bones), and
4. reduced flexor and extensor tubercles (attachments areas for finger muscles on bones).

This suggests that whereas claws are useful on large-diameter branches, wide fingertips with nails and epidermal ridges were required for habitual locomotion on small-diameter branches. It also indicates keel-shaped nails of Callitrichines (a family of New World monkeys) is a derived postural adaptation rather than retained ancestral condition.

Nail Diseases & Infection

Fungal or Yeast Infection

A fungal or yeast infection which results in Onychomycosis, can invade through a tear in the proximal and lateral nail folds as well as the Eponychium. This type of infection is characterized by Onycholysis (nail plate separation) with evident debris under the nail plate. It normally appears white or yellowish in colour, and may also change the texture and shape of the nail. The fungus digests the keratin protein of which the nail plate is comprised. As the infection progresses, organic debris accumulates under the nail plate often discolouring it. Other infectious organisms may be involved, and if left untreated, the nail plate may separate from the nail bed and crumble off.

Paronychia (Nail Infection)

Paronychia disease is an infection of the inflammation skin and soft tissue infections that surrounds a toenail or fingernail. It can start suddenly (acute Paronychia) or gradually (chronic Paronychia).

The etiology, infectious agent, and treatment are usually different for each form, and the 2 forms are often considered separate entities. Acute Paronychia develops over a few hours when a nail fold becomes painful, red and swollen. It is one of the most common hand infections.



Fig.3

Symptoms of Paronychia

A small collection of pus forms under the skin next to the nail, or underneath the nail itself. The area around the nail is tender, red and mildly swollen the cuticle is missing; and the skin around the nail feels moist or "boggy." Often, only one nail is affected. Acute Paronychia starts as a red, warm, painful swelling of the skin around the nail. In chronic Paronychia, the redness and tenderness are less noticeable than the acute infection. The nail may have a green discoloration due to *Pseudomonas* infection. It mainly occurs in people who have constantly wet hands, such as hairdressers, nurses, and bartender's etc.

Pseudomonas (The Greenies)

Pseudomonas bacterial infection can occur between the natural nail plate and the nail bed, and/or between an artificial nail coating and the natural nail plate. Many people have been led to believe that the classic 'green' discoloration of this type of infection is some type of mold. In actuality, mold is not a human pathogen. The discoloration is simply a by-product of the infection and is caused primarily by iron compounds. *Pseudomonas* thrives in moist places; it feeds off the dead tissue and bacteria in the nail plate, while the moisture levels allow it to grow.



Fig.4

The after effects of this infection will cause the nail plate to darken and soften underneath an artificial coating. The darker the discoloration, the deeper into the nail plate layers the bacteria

has travelled. If the bacteria have entered between the nail plate and the nail bed, it will cause the same discolorations and may also cause the nail plate to lift from the nail bed.

Tinea Unguis

Symptoms

The symptoms of Tinea include itchiness and foot odour. Sweat and water make the epidermis white and soggy, resulting in Tinea. There often is scaling, maceration and fissuring of the skin between the third and fourth toes.

Causes

Tinea or ringworm is caused mainly by *Trichophyton rubrum* and is the commonest type of fungal infection.



Fig.5

Cure

Tea Tree Ointment is an antiseptic and soothing ointment which contains tea tree and lavender essential oils blended with infused calendula oil. It is ideal for the healing of Tinea wounds, cuts rashes and for soothing insect bites. May also be used to alleviate Tinea and fungal infections.

Prevention of Tinea

1. Keep feet as clean and dry as possible.
2. Carefully dry feet, especially between the toes.
3. Remove flaky skin from beneath the toes each day with dry tissue paper or gauze.
4. Wearing light socks made of absorbent fibres, such as cotton and wool, to allow better circulation of air and to reduce sweating.
5. Avoid socks made with synthetic fibres.
6. Wearing open sandals or shoes with porous soles and uppers .
7. Going barefoot whenever possible.

Onychatrophia

Onychatrophia is an atrophy or wasting away of the nail plate which causes it to lose its lustre, become smaller and sometimes shed entirely. Injury or disease may account for this irregularity.
Nail Atrophy.

Hematoma

A Haematoma is the result of trauma (injury) to the nail plate. It can happen from simply trapping your finger or toe in the door, banging it and even from improperly fitting or 'too-tight' shoes.

The nail bed will bleed due to this trauma, and the blood is trapped between the nail bed and the nail plate. Sometime a haematoma may also indicate a fractured bone. It is common for sports men and women to experience haematoma because of the constant friction from the shoes against the toenails.

Haematoma may result in nail plate separation and infection because the blood can attract fungi

and bacteria. If several days have passed and the blood clot becomes painful, the nail plate may require removal so the nail bed can be cleansed.

Leuconychia

Leuconychia is evident as white lines or spots in the nail plate and may be caused by tiny bubbles of air that are trapped in the nail plate layers due to trauma. This condition may be hereditary and no treatment is required as the spots will grow out with the nail plate.

Vertical Ridges

These can also be characteristic of aging, this does not mean it is only limited to the aged or elderly. The nail plate grows forward on the nail bed in a 'rail and groove' effect, much like a train rides on its' tracks.

Melanonychia

Is a vertical pigmented band or bands, also known as "nail moles", which usually form in the nail matrix? If you suddenly notice these or see a change in the nail plate then you should see a GP or dermatologist immediately. Not always but it sometimes can be a malignant melanoma (cancer) or lesion. Dark streaks may be a normal occurrence in dark-skinned people.

Nail Patella Syndrome

Nail Patella Syndrome is a rare genetic disorder involving nail and skeletal deformities (among a host of other related anomalies) that occurs in approximately 2.2 out of every 100,000 people. It is transmitted as a simple autosomal dominant characteristic in the ABO blood group (Autosomal dominant means that you only have to inherit one copy of the gene to get it). It also

means that there is no such thing as an unaffected carrier, and NPS CAN NOT skip a generation.

In cases where there seems to be no previous family history of NPS, it is thought to be caused by a sporadic gene mutation (which is probably how it began in all families at one time or another). Once NPS is in a family, the risk of transmitting the disorder from parent to offspring is 50% for each pregnancy, regardless of the sex of the child, with females being affected approximately 10% more often.

Other Nails Disorders & Infections

Onychogryposis are claw-type nails that are characterized by a thickened nail plate and are often the result of trauma. This type of nail plate will curve inward, pinching the nail bed and sometimes require surgical intervention to relieve the pain.

Onychorrhexis are brittle nails which often split vertically, peel and/or have vertical ridges. This irregularity can be the result of heredity, the use of strong solvents in the workplace or the home, including household cleaning solutions. Although oil or paraffin treatments will re-hydrate the nail plate, one may wish to confer with a physician to rule out disease.

Koilonychias is usually caused through iron deficiency anaemia. These nails show raised ridges and are thin and concave.

Melanonychia are vertical pigmented bands, often described as nail 'moles', which usually form in the nail matrix. Seek a physician's care should you suddenly see this change in the nail plate. It could signify a malignant melanoma or lesion. Dark streaks may be a normal occurrence in dark-skinned individuals, and are fairly common.

Pterygium is the inward advance of skin over the nail plate, usually the result of trauma to the matrix due to a surgical procedure or by a deep

cut to the nail plate. Pterygium results in the loss of the nail plate due to the development of scar tissue. Cortisone is used to prevent the advancement of scar tissue. Never attempt to remove Pterygium -instead, consult a physician for advice and treatment.

Note: The 'true cuticle' is often referred to as Pterygium. If you have Pterygium, it can only be treated by a physician and should never be removed by a nail technician.

Pterygium inversum unguis is an acquired condition characterized by a forward growth of the hyponychium characterized by live tissue firmly attached to the underside of the nail plate, which contains a blood supply and nerves. Possible causes are systemic, hereditary, or from an allergic reaction to acrylics or solvents. Never use force to 'push back' the advancing hyponychium -- it is an extremely painful approach, and will result in a blood flow. Consult a physician for diagnosis and treatment.

Psoriasis of the nails is characterized by raw, scaly skin and is sometimes confused with eczema. When it attacks the nail plate, it will leave it pitted, dry, and it will often crumble. The plate may separate from the nail bed and may also appear red, orange or brown, with red spots in the lunula. Do not attempt salon treatments on a client with Nail Psoriasis. Consult with a dermatologist for diagnosis and treatment.

Brittle Nails are characterized by a vertical splitting or separation of the nail plate layers at the distal (free) edge of the nail plate. In most cases, nail splitting and vertical ridges are characteristic of the natural aging process. This nail problem is also the result of overexposure to water and chemical solvents such as household cleaning solutions. As we age, the nail bed's natural flow of oils and moisture is greatly reduced. This oil and moisture is the cement that holds the nail plate layers together and gives the plate its inherent flexibility. At the first signs of splitting or peeling, re-hydrate the nail plate layers with a good quality cuticle and nail oil that

contains Jojoba and Vitamin E as two of the botanical oils. Jojoba oil has a very tiny molecule which can penetrate the nail plate surface, open up the layers and draw the Vitamin E in after it. The molecular structure of Vitamin E is too large to penetrate the nail plate layers or the surface layer of the skin without the benefits of Jojoba oil. Oil the nail plate and surrounding cuticle at least twice daily; more if you have your hands in water a lot. Wear gloves whenever working with household cleaning solutions, and remember: water is considered the 'universal solvent', and is indeed a 'chemical'.

Physical appearance of nail:

Pale Nails

Very pale nails can sometimes be a sign of serious illness, such as:

- Anemia
- Congestive heart failure
- Liver disease
- Malnutrition

White Nails

If the nails are mostly white with darker rims, this can indicate liver problems, such as hepatitis. In this image, you can see the fingers are also jaundiced, another sign of liver trouble.

Yellow Nails

One of the most common causes of yellow nails is a fungal infection. As the infection worsens, the nail bed may retract, and nails may thicken and crumble. In rare cases, yellow nails can indicate a more serious condition such as severe thyroid disease, lung disease, diabetes or psoriasis.

Bluish Nails

Nails with a bluish tint can mean the body isn't getting enough oxygen. This could indicate an infection in the lungs, such as pneumonia. Some heart problems can be associated with bluish nails

Rippled Nails

If the nail surface is rippled or pitted, this may be an early sign of psoriasis or inflammatory arthritis. Discoloration of the nail is common; the skin under the nail can seem reddish-brown. Psoriasis is a skin condition that starts in the nails 10% of the time.

Cracked or Split Nails

Dry, brittle nails that frequently crack or split have been linked to thyroid disease. Cracking or splitting combined with a yellowish hue is more likely due to a fungal infection.

Treating Toenail Fungus

If you do have an infection, your best bet is to use a toenail fungus home treatment remedy.

Toenail Fungus Home Treatment

There are also several home remedies that you can use for toenail fungus. These include daily applications of such products as tea tree oil, vinegar, Vicks VapoRub, or oregano oil. Of these methods, the best toenail fungus home treatment is a natural supplement called Mycozil. Mycozil contains several powerful anti-fungal ingredients that wipe out fungus from the inside out.

Of course, the best toenail fungus home treatment is prevention. If you have ever contracted a toenail fungus infection, you should consider yourself at risk for developing another one. If this is the case, be meticulous about your foot hygiene to prevent re-infection.

Wash and dry your feet thoroughly at least once every day. Keep your toenails clipped short so

that they match the contour of your toes. Cut the nail straight across to prevent ingrown toenails. Wear flip-flops or rubber clogs in public showers and locker rooms.

When choosing footwear, look for shoes that fit properly, allowing enough room at the toes for air to move. Select shoes made of natural materials that breathe and wear socks that are made to wick moisture away from the feet. (Cotton and other natural materials make a good choice for socks.). Change your socks every day and wash them thoroughly in hot water between wearings. If you are fond of getting pedicures, be sure to go to a licensed nail salon and take your own tools.

Most importantly, your toenail fungus home treatment should include keeping your feet clean and dry and protecting them with shoes and socks that fit properly. These simple steps will help prevent toenail fungus. And if a toenail fungus infection does occur, use Mycozil as your toenail fungus home treatment to eliminate fungus quickly, safely and effectively.

Effective Treatment for Toenail Fungus

A toenail fungus can affect the appearance of one's toenails, making them appear gnarled and unsightly. An estimated 11 million Americans suffer from a toenail fungus infection, or onychomycosis. And up to 48 percent of individuals have at least one affected toe by fungus by the time they reach the age 70.

For those people who suffer from toenail fungus, wearing sandals or flip-flops, or just walking around barefoot, can be a major embarrassment as their nails may be thick, crumbly or discolored. Some people with toenail fungus infections use nail polish to cover up their embarrassing toenails, but this is not an effective treatment for toenail fungus.

Remedies for the effective treatment of toenail fungus

Prevention: If you are prone to developing toenail fungal infections, it is a good idea to take preventative measures against these infections.

Keep your feet clean by washing them with soap and water daily and drying them thoroughly. If you must shower in a communal area, be sure to wear rubber shoes, flip flips, or shower clogs. For day-to-day use, choose shoes that fit properly, with sufficient space around the toes. Also make sure the shoes are well ventilated, allowing the feet to breathe. Steer clear of shoes that are made from synthetic materials. If possible, alternate your footwear so that your shoes have a chance to air out between wearings. If for some reason your shoes should get wet, be sure to take them off immediately.

As for your socks, choose products that are made of cotton or materials that "wick" moisture away from your toes. If your feet are prone to sweating, change your socks throughout the day and wash both your feet and socks each time. Drying powders can also help to keep your feet dry.

Prescription

Medications

Expensive prescription medications are still recommended by some doctors for the treatment of toenail fungus, although these remedies are not effective treatment for toenail fungus. In addition, each is associated with potentially adverse side effects. Prescription medications that are currently used to treat toenail fungus include itraconazole (Sporanox®), terbinafine (Lamisil®), fluconazole (Diflucan®), and ciclopirox (Penlac™ Nail Lacquer).

Natural

Anti-Fungal

Agents

There are a number of natural anti-fungal supplements that can be used for the effective treatment of toenail fungus. Here's a closer look at some of the best:

Pau D' Arco: This natural herb is endemic to the rainforests of the Amazon and in South and Latin America. It is well known in herbal medicine for its strong anti-fungal, anti-viral, anti-bacterial and anti-parasitical properties.

Oregano Oil: Oregano is a woody plant that is found mostly in the Mediterranean. According to the latest research, oregano oil has potent antiviral, antibacterial, and anti-fungal properties thanks to its primary component, carvacrol.

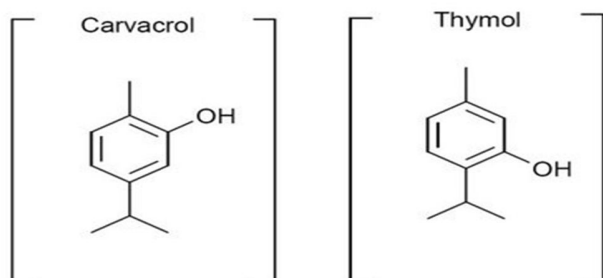


Fig.6

Lemongrass: Lemongrass is an herb found in Southeast Asia, East and West India, South America, Africa, Australia, and the United States. It is widely used as an insect repellent and for its anti-fungal and anti-bacterial properties.

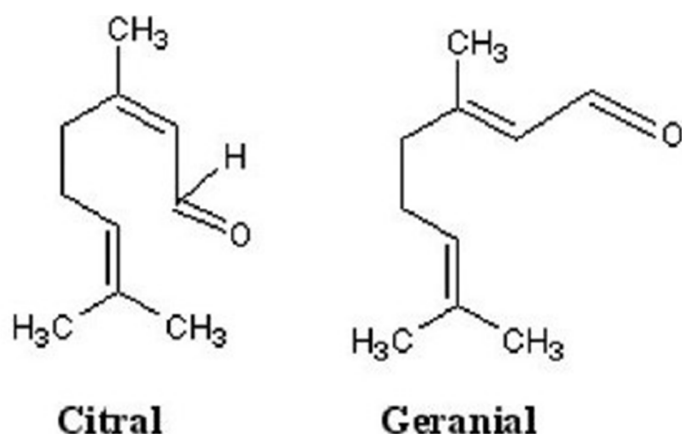


Fig.7

Horopito: Horopito is a unique plant that is found only in New Zealand. This plant contains an active component called polygodial that is an effective treatment for toenail fungus and yeast infections. Horopito also contains the powerful antioxidant flavonoids - quercetin and taxifolin. The main biologically active chemical constituent of *P. colorata* is the sesquiterpene dialdehyde polygodial 2,3.

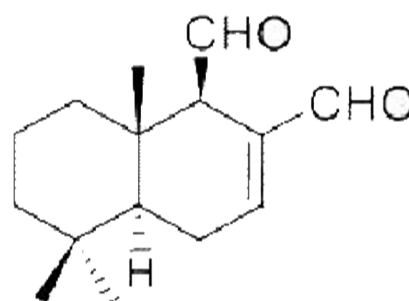


Fig.8

Antifungal Profile

Polygodial has been shown to possess strong antifungal activity, comparable to amphotericin B, against yeast-like fungi *Candida albicans*, *Candida krusei*, *Candida utilis*, *Cryptococcus neoformans*, *Saccharomyces cerevisiae* and also filamentous fungi *Trichophyton mentagrophytes*, *Trichophyton rubrum* and *Penicillium mameffeii*⁸. The antifungal activity of polygodial was

generally not reduced by several susceptibility-testing conditions such as medium type, incubation temperature, inoculum size, and medium pH. Polygodial's antifungal activity was strongly increased in acidic conditions, however. Fungal environments in the human host, such as the mouth, vagina and skin, are often acidic and their colonisation usually creates a microenvironment with even lower pH. Under these circumstances, polygodial can be expected to act as an effective antifungal agent.

In vitro studies by the Cawthron Institute, Nelson, New Zealand, show that dried *P. colorata* was twice as powerful at killing *Candida albicans* (i.e. can kill at half the concentration) as sodium caprylate (an alternative natural antifungal).

Table.1

Ingredient	Minimum Bacteriocidal Concentration %w/w
<i>P. colorata</i>	0.15
Sodium caprylate	0.30

Anise Seed: Also known as *pimpinella asisum*, anise seed is a native plant of Greece and Egypt that is derived from the parsley family. Anise seed is a grayish brown seed that tastes like licorice and is used commercially to scent perfumes and soaps and to flavor toothpastes and mouthwashes. Anise has been recognized for thousands of years for its medicinal properties. Throughout the years it has been used to fight infections, aid in digestion, stimulate the immune system, enhance milk production, and improve the symptoms of menopause. The chemical components of anise seed are also powerful against fungus, bacteria, viruses, parasites, and insects.

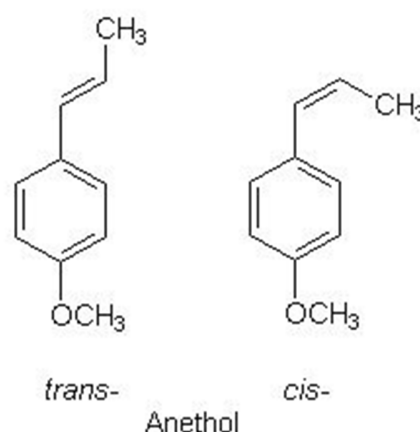


Fig.9

Bacillus Laterosporus: This healthy bacterium is an effective treatment for toenail fungus as it works to reestablish a healthy balance of microorganisms in the colon. These healthy organisms then compete with the fungus that has infected the toenail, robbing it of essential nutrients.

Home Remedy for Toenail Fungus - Olive Leaf Extract

For centuries the olive leaf has provided a natural way to heal many ailments of the body. This is due to the active agent in olive leaf extract known as oleuropein. This bitter substance is an element of the compound that is used by the olive tree to ensure that the plant is vigorous and resistant to harsh weather conditions, bacterial damage and insect attack. The antimicrobial characteristic of olive leaf extract occurs when the oleuropein breaks down in the body into elolenic acid. This acid interferes with a pathogen's ability to replicate. A beneficial byproduct of this reaction is that a jump start is given to the immune system, which begins to fight bacteria and infection on its own as well.

In addition to this powerful antimicrobial characteristic, olive leaf extract improves circulation by increasing blood flow to the coronary arteries and relieve arrhythmias. It has been found to combat yeast infections by balancing the amount of candida in the system.

Warts have also been known to be vulnerable to olive leaf extract as is toenail fungus. Olive leaf extract is a great home remedy for toenail fungus.

Toenail fungus is a common, contagious condition that strikes many people. Typically it occurs when the immune system is down and once contracted is difficult to eliminate from the system. Also referred to as onychomycosis, this widespread condition accounts for a large proportion of nail disorders and can become quite unsightly and painful. Beginning as discoloration or a light colored spot under the tip of the toenail, this fungus will continue to spread until the entire nail becomes thick and yellow with rough and crumbling edges.

If no action is taken to destroy the fungus, the condition will worsen and eventually the toenail will have a distorted shape, the color may become green, brown, or black, and the toes may begin to emit a foul odor. If the toenail fungus becomes particularly severe, the toenail may be lost, causing considerable pain and making the toe even more vulnerable to additional infection.

Fortunately, toenail fungus does not have to be accepted as a distasteful part of life. There are many natural products that can be used as a home remedy for toenail fungus. Utilizing the natural healing potential of olive leaf oil is a safe and natural way to get rid of this unsightly and difficult ailment. When purchasing olive leaf extract, it is important to buy from a reputable company as the processing of the plant must be done carefully to ensure that the extract is potent and effective. This product may be purchased in tincture, capsules, or salves that are made from the extract. In the form of a salve it should be used as directed based on the potency of the active ingredient of oleuropein.

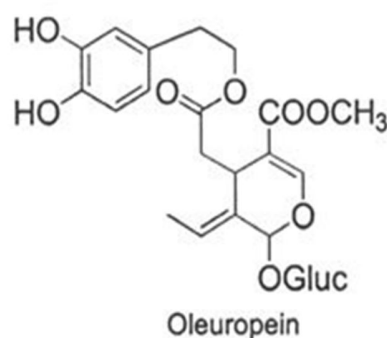


Fig.10

When ingesting olive leaf extract as a home remedy for toenail fungus, it is important to begin slowly to prevent what is known as Herxheimer reaction or "die-off." this is a reaction caused by the detoxification process that presents flu-like symptoms such as fatigue, muscle aches, headaches, diarrhea and vomiting. Typically this effect only happens when large doses are taken without introduction. If the treatment begins slowly and is gradually increased, this reaction to detoxification is rarely seen.

A wise course of treatment for toenail fungus is to take one to three capsules two times per day with meals. The olive leaf extract should always be taken with meals to prevent stomach upset and plenty of water, at least six to eight glasses daily. It is essential to complete this therapy until the toenail fungus is completely eradicated from the system. Even as the fungus dies and the toenail

begins to clear it is vital to continue the treatment until the infected portion of the toenail has completely grown out.

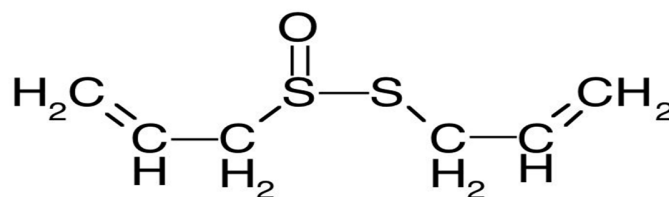
Once the fungus has been eliminated and the nail is completely healthy, it is vital to take steps to ensure that the fungus does not return. Keeping toenails clean and trim is important because fungus can make a home under the nail, especially after contacting fungus that may reside on other toenails or toenails because of the contagious nature of the fungus. If you have exceptionally sweaty feet, give them ample time to dry out during the day, if possible. Wear socks that allow the feet to breathe, such as those made from natural fibers like cotton. If you are suffering from toenail fungus, it may also be necessary to discontinue using nail polish as it can trap moisture under the polish and encourage the growth of fungus.

Garlic: A Natural Solution to Toenail Fungus

The benefits of garlic as a natural health remedy, once considered to be mere folklore, have been proven by the scientific community in recent years. From lowering cholesterol to preventing cancer and boosting the immune system, this wonder food continues to show its promise in the field of health and wellness because of the over 100 biologically useful chemicals it contains. By encouraging white blood cells to fight infections and promoting other immune cells to combat bacterial and viral infections and scavenge for cancer cells it supports immune system vitality. Garlic is also a powerful antimicrobial, meaning that it eliminates or slows the growth of harmful microbes. One of these potentially harmful microbes is fungus such as tinea pedis.

One in every five people will be infected with fungus in their life. Fungi are molds and yeasts that can live in the top layer of the skin and toenails. This fungal infection can become quite unsightly and painful. Fungal growth at the toenail begins as a light colored spot under the tip of the nail in addition to a loss of the nail's natural luster. As the fungus grows, it will continue to

spread until the entire toenail becomes thick and yellow with crumbling edges. If no treatment is given to destroy the fungus, the condition will worsen and eventually the toenail will have a distorted shape, the color may become green, brown, or black, and a foul odor may be present.



Allicin

Fig.11

There are many treatments available to eradicate the fungus that causes this unpleasant condition. Interestingly, one of the most effective cures for this condition also happens to be one of the least expensive. And you probably have it in your kitchen already. Garlic has been shown over the years to be a great way to fight even the most persistent cases of toenail fungus.

Treating toenail fungus with garlic is easy and painless. There are several methods that work well and depending on the severity of your fungal infection, you may wish to try one or more of them. Its ability to eliminate the fungus makes it a natural choice and one that is easy to attain and use. In the beginning stages of the infection it is useful to place several chopped cloves in the toes of your socks at night. Or, for a more targeted approach, simply crush some fresh cloves and place them in contact with the affected area for 30 minutes. The skin should be washed before and after both of these applications. Garlic powder can also be used to combat toenail

fungus. A light dusting of it is an easy way to get a healthy dose of this powerful natural remedy.



Garlic powder
Garlic scapes

Fig.12

Using garlic is a highly effective, not to mention inexpensive, way to fight even the most persistent cases of toenail fungus. Another product that makes garlic treatment easy is known as garlic oil

ointment. You may be able to find this effective formula in health food stores, where it would be sold chilled. If not, it is simple to make and can be stored in your refrigerator for up to one month. It is made by combining one tablespoon of fresh chopped garlic cloves, three tablespoons of coconut oil and one tablespoon of olive oil

When using garlic or any other treatment for your toenail fungus, the success of the treatment depends entirely on your willingness to faithfully treat the toenail every day and to continue your chosen course of therapy for a considerable amount of time. It is best to treat toenail fungus or nail fungus from the inside out. Taking fresh garlic cloves, garlic pills or a super concentrated spagyric formula is most effective. Unfortunately, because the cure for toenail fungus can take six months or more, many people choose to live with it rather than take measures to combat it. The treatment of toenail fungus is lengthy due to the fact that the treatment must continue even after the fungus has died and the toenail begins to clear. The fungus is not completely cured until the infected portion of the toenail has completely grown out. Treatment internally and externally should then continue for at least 3-4 weeks to make sure it does not come back.

Once the fungus has been taken care of and the toenail is completely healthy, it is vital to take steps to ensure that the fungus does not return. Keeping toenails clean and trim is important because fungus can make a home under the toenail. Wear socks that allow the feet to breathe, such as those made from natural fibers such as cotton. If you have exceptionally sweaty feet, give them ample time to dry out during the day, if possible. When doing any type of treatment for toenail fungus or athlete's foot make sure to throw away old infected socks as washing may not kill the fungus.

Ozone for Treating Nail Fungus

Ozone therapy for nail fungus is a modernistic and new age treatment, which has been used with success by some people. Perhaps, many have not

heard about the use of ozone nail fungus treatment.

However, many of us know that the ozone layer, which is part of the atmosphere, filters out a lot of the UV rays and protects people from harmful rays from the sun. Ozone gas is used to purify the drinking water of major cities since it acts as a primary stage disinfectant because of its capability to destroy fungus and bacteria.

Ozone (O₃) is a naturally occurring highly reactive gas, which is composed of three atoms of oxygen. The ozone molecule contains one extra oxygen atom, thus it acts as a powerful oxidation agent. Many people use ozone for nail fungus due to its anti-fungal properties. Thus, taking into account the anti-fungal and oxidizing properties of ozone, chemists have manufactured ozonized topical treatments for curing nail fungus.

Theory behind Ozone Nail fungus Treatment

The use of ozone as a nail fungus treatment is based on the theory that it breaks down and eradicate toxins from the body through the process of oxidation process. The oxygen-releasing effect of ozone or oxidative therapy brings about improvement in the nail fungus. The immune system of the body also gets improved by the yield of the white blood cells.

Thus, the key to using ozone for nail fungus treatment be connected with the availability of ozone to the fungus.

Ozone 'bagging' and the topical application of ozonated olive oil, are some of the ways to use ozone therapy for nail fungus.

Bagging is done by putting the infected fingers in a bag, which is already filled with ozone gas. This method is equivalent to soaking your infected nails in an anti-fungal solution to cure nail fungus.

Ozonated Olive Oil: It is prepared when ozone is bubbled in olive oil for many days until it slowly

begins to solidify. Ozonated olive oil can be applied 2 -3 times a day for several weeks to cure nail fungus.

Nutrition for healthy nails

Vitamin A is an essential micronutrient for vision, reproduction, cell and tissue differentiation, and immune function. Vitamin D and calcium work together in cases of maintaining homeostasis, creating muscle contraction, transmission of nerve pulses, blood clotting, and membrane structure. A lack of vitamin A, vitamin D, and calcium can cause dryness and brittleness. Sources of these micronutrients include fortified milk, cereal, and juices, salt-water fish, fish-liver oils, and some vegetables. Vitamin B12 is mainly found in animal sources such as liver and kidney, fish, chicken, and dairy products and therefore can cause intake issues in vegan populations. Not enough B12 vitamin can lead to excessive dryness, darkened nails, and rounded or curved nail ends. Insufficient intake of both vitamin A and B, as previously described, results in fragile nails with horizontal and vertical ridges. Protein is a building material for new nails, therefore low dietary protein intake may cause white nail beds. Dietary sources of this macronutrient include eggs, milk, cheese, meat, beans and legumes. A lack of protein combined with deficiencies in folic acid and vitamin C produce hangnails. Essential fatty acids play a large role in healthy skin as well as nails. As touched upon previously, essential fatty acids can be obtained through consumption of fish, flaxseed, canola oil, seeds, leafy vegetables, and nuts. Splitting and flaking of nails may be due to a lack of linoleic acid. Iron-deficiency anemia can lead to a pale color along with a thin, brittle, ridged texture. Iron deficiency in general may cause the nails to become flat or concave, rather than convex. Iron can be found in animal sources, called heme iron, such as meat, fish, and poultry, and can also be found in fruits, vegetables, dried beans, nuts, and grain products, also known as

non-heme iron. Heme iron is absorbed fairly easily in comparison to non-heme iron, however both types provide the necessary bodily functions.

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