

# Medical Herbalism

## Journal for the Clinical Practitioner

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## *Allium sativum*: Antibiotic and Immune Properties

by Paul Bergner

Bergner, Paul. The Healing Power of Garlic. Rocklin, CA: Prima Publishing, 1995

### Garlic

The previous herbs I have described have primarily worked to strengthen the body's natural defenses against infection rather than attacking microorganisms themselves. Garlic also does this, but with garlic, we have a plant that is a true antibiotic. It can effectively kill bacteria, viruses, parasites, fungi, yeasts, and molds, including many that cause serious disease in humans.

### Garlic as an antibiotic

Garlic is a broad spectrum antibiotic, killing a wide variety of bacteria. Many pharmaceutical antibiotics kill only a narrow range of these germs. Dr. Tariq Abdullah, a prominent garlic researcher stated in the August 1987 issue of Prevention: "Garlic has the broadest spectrum of any antimicrobial substance that we know of — it is antibacterial, antifungal, antiparasitic, antiprotozoan and antiviral." Table 16.1 shows some of the organisms that researchers have found garlic to be effective against. This property belongs to the garlic constituent allicin, which is released when you cut a garlic clove. This is the chemical that gives fresh garlic its strong biting flavor, and you need to use fresh garlic to get a reliable antibiotic effect. Commercial powders and other products will not work for direct applications. Garlic appears to have antibiotic activity whether taken internally or applied topically — researchers found that the urine and blood serum of human subjects taking garlic had activity against fungi (Caporaso et al 1983).

Table 16.1

Some bacteria, viruses, fungi, mold, and parasites killed or inhibited by garlic or its constituents

*Acinetobacter calcoaceticus*

*Aspergillus flavus*

*Aspergillus fumigatus*

*Aspergillus parasiticus*

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*Aspergillus niger*

*Bacillus cereus*

*Candida albicans*

*Candida lipolytica*

*Cryptococcus neoformans*

*Cryptosporidium*

*Debaryomyces hansenii*

*Escherichia coli*

*Hansenula anomala*

*Herpes simplex virus type 1*

*Herpes simplex virus type 2*

*Histoplasma capsulatum*

*Human cytomegalovirus (HCMV)*

*Human immunodeficiency virus (HIV)*

*Human rhinovirus type 2*

*Influenza B*

*Kloeckera apiculata*

*Lodderomyces elongisporus*

*Parainfluenza virus type 3*

*Vaccinia virus*

*Vesicular stomatitis virus*

*Micrococcus luteus*

*Mycobacterium phlei*

*Mycobacterium tuberculosis*

*Paracoccidioides brasiliensis*

*Pneumocystis carinii*

*Proteus vulgaris*

*Pseudomonas aeruginosa*

*Rhodotorula rubra*

*Saccharomyces cerevisiae*

*Salmonella typhimurium*

*Salmonella typhimurium*

*Shigella dysenteriae*

*Shigella flexneri*

*Staphylococcus aureus*

*Streptococcus faecalis*

*Torulopsis glabrata*

*Toxoplasma gondii*

*Vibrio parahaemolyticus*

(Sources: Adetumbi et al 1983, 1986; Anesini and Perez 1993; Appleton and Tansey 1975; Borukh et al 1974, 1975; Chen et al 1985; Conner and Beuchat 1984; Dankert et al 1979; Didry et al 1987; Fletcher et al 1974; Fliermans 1973; Fromtling and Bulmer 1978; Ghannoum 1990; Gonzales-Fandos et al 1994; Johnson and Vaughn 1969; Kabelik 1970; Kumar and Sharma 1982; Mahajan 1983; Moore and Atkins 1977; Sandhu et al 1980; Sharma et al 1977; Shashikanth et al 1984; Tynecka and Gos 1973, 1975)

### **Resistant bacteria**

A major problem with pharmaceutical antibiotics is that they can promote the development of resistant strains of bacteria. Initially the antibiotic kills most of the bacteria being attacked. With repeated exposure, however, those few bacteria that by chance are genetically resistant to the antibiotic begin to multiply. Eventually a recurring infection becomes completely resistant to that antibiotic. After a half century of the massive use of antibiotics, and the indiscriminate over-prescription of them in North America, potentially serious medical problems exist from resistant strains of bacteria. Garlic does not seem to produce such resistant strains, and may be effective against strains that have become resistant to pharmaceutical antibiotics. European researchers in the late 1970s tested garlic juice against a group of ten different bacteria and yeasts (Moore and Atkins 1977). They found that garlic was effective against all of them, and also found a "complete absence of development of resistance." In an Indian study of garlic for dysentery, the researchers specifically selected four bacterial strains that were resistant to multiple antibiotics (Chowdhury et al 1991).

Garlic is effective against specific bacteria that are notorious for developing resistant strains, such as staphylococcus, mycobacterium, salmonella, and species of Proteus.

### **Antiviral activity**

A weakness of conventional antibiotics is that they are not effective against viral infections. That's why they won't work against the common cold or flu. They also won't work against some serious viral infections like viral meningitis, viral pneumonia, or herpes infections. Garlic or its constituents will directly kill influenza, herpes, vaccinia (cowpox), vesicular stomatitis virus (responsible for cold sores), and human cytomegalovirus (a common source of secondary infection in AIDS.) Garlic will also cure or improve the symptoms of a variety of viral diseases in humans or animals. In one animal study, researchers first fed a garlic extract to mice. They then introduced the flu virus into the nasal passages of the animals. Those animals that had received the garlic were protected from the flu, while the untreated animals all got sick. The researchers postulated that garlic's effect was due in part to direct antiviral effects of garlic, and in part to stimulation of the

immune system (Adetumbi and Lau, 1983)

### **Parasites and fungi**

The medical missionary Albert Schweitzer brought some fame to garlic earlier this century when he used it successfully to treat amoebic dysentery in his patients in equatorial Africa. Subsequent experiments have shown garlic to be effective not only against the parasitic amoebas that cause dysentery, but against other organisms such as toxoplasma, cryptosporidia, and pneumocystis, all of which cause disease in humans.

Parasitic infections are a common problem in AIDS patients. Dr. Subhuti Dharmananda, Director of the Immune Enhancement Project in Portland, Oregon, regularly treats AIDS patients with such opportunistic infections. The main antibiotic therapy he uses in garlic, at about nine cloves a day for active infections, and he finds it effective to prevent or treat these infections, even when conventional antibiotics have failed to do so. Note that he started out trying to use an encapsulated form of garlic standardized for its allicin content — one of the better products. He found, however, that even doses of twenty-seven capsules a day had no effect on the infections. When he switched to raw garlic at the same dose, he got the desired result (Dharmananda 1995). Recent research supports use for intestinal parasites in AIDS (AIDS Research Alliance 1996; Deshpande et al 1993).

### **Yeast infections**

If you've ever had athlete's foot, you know how stubborn a yeast or fungal infection can be. A garlic wash can be very effective against fungi externally, but garlic can also treat systemic fungal infections. Researchers from the University of New Mexico demonstrated that garlic was effective both in the test tube and in animals against infection with the fungus *Cryptococcus neoformans*. Chinese researchers also have shown that garlic as a intravenous extract can be effective against cryptococcal meningitis. The blood and cerebrospinal fluid of the patients in that trial was twice as effective against the fungus as before treatment with garlic.

### **How to use garlic**

To use garlic as an antibiotic take it internally and, if appropriate, apply it directly to an infection. For internal use, try one of the following forms:

Garlic infused wine. Chop or crush garlic, cover with wine, and let it sit overnight.

Garlic vinegar. Same as above, but use vinegar instead of water.

Garlic honey. Same as above, but with honey. No added water is needed. This makes a great antibiotic cough syrup.

Garlic/carrot juice. Blend three cloves of garlic up in six ounces of carrot juice. Let it sit for four to six hours.

For external application, use caution putting crushed garlic directly against the skin, because it can cause burns. Here are some forms you can use for direct application of garlic as an antibiotic:

Blend up three cloves of garlic in a quart of water and apply as a wash. Make a larger amount of this mixture and use it as a sitz bath or foot

bath for infections of the feet or pelvic area.

Crush garlic, and dilute the juice with ten part of water. Use it as nose drops or a gargle.

### **Garlic and the immune system**

Although garlic attacks bacteria, viruses, and other microorganisms directly, it also stimulates the body's natural defenses against these invaders. Garlic's remarkable and legendary power against infectious diseases is due to a combination of both these properties.

Garlic or its constituents activate phagocytes, B-Cells, and T-cells — all three levels of the cellular immune system. For instance, diallyl trisulfide, a constituent of garlic, was found to activate natural killer cells and macrophages directly, and indirectly to increase B-cell activity to make antibodies. It did this in lab experiments at concentrations of as low as one microgram per ml — the equivalent of a tiny pinch of salt in about 30 gallons of water. The macrophages in this trial were then tested for their activity against cancer cells, and the diallyl-trisulfide-treated cells were more active than regular macrophages, indicating that not only their number but their activity was increased (Feng et al 1994). This same effect has been reproduced in other experiments.

This effect is not limited to trials in a test tube. Dr. Abdullah experimented with garlic in AIDS, giving the equivalent of two cloves a day of garlic to ten patients for six weeks, and the equivalent of four cloves for another six weeks. Three of the patients could not complete the trial, but of the seven who did, all showed normal natural killer cell activity by the end of the trial — activity which had been depressed at the start of the trial. The patients' opportunistic infections — chronic diarrhea, candida infection, genital herpes, and a chronic sinus infection — all improved. The patient with the chronic sinus infection had gained no relief from antibiotics during more than a year of treatment before the garlic trial (Abdullah 1989).

In one trial, immune parameters of the blood were measured after subjects — elderly patients — took a garlic powder preparation for three months (Brosche and Platt, 1993, 1994). The dose was only 600 mg of the powder per day, the equivalent of less than one-third of a garlic clove. Blood tests showed an increase in phagocytosis of the white blood cells, and also increased numbers of lymphocytes, responsible for cell-mediated immunity. Other trials have shown that garlic can increase the activity of natural-killer cells in healthy volunteers (Kandil et al, 1987, 1988).

### **A connoisseur's garlic cocktail**

Different solvents extract and promote specific chemical reactions between the constituents of garlic. Water, vinegar, alcohol, and oil each draw specific constituents out. Alcohol and water, for instance, is the best solvent to extract allicin. Soaking crushed garlic in oil promotes the production of ajoenes and dithiins, important antibiotic and blood-thinning constituents of garlic. My garlic "cocktail," then, is as follows.

Three cloves of garlic

1 Tbls of red wine

1 Tbls of vinegar

1 Tbls of olive oil

Blend well in a blender.

Add 1/4 cup hot water.

Let stand for 3 hours. Do not strain. Add one-third of this to a cup of hot water. Take another dose every 3-6 hours until it is all gone.

On paper this sounds a little like drinking salad dressing, but I find this to be a pleasant stimulating tonic with a sharp taste. Raw garlic cloves upset my intestines, but this does not.

Table 16.2

Some conditions that can be effectively treated with garlic

Note: Crushed garlic applied directly to the skin can cause burns.

Bites and Stings      Apply crushed and moistened garlic directly to the bite or sting

Bronchitis              Use raw garlic in one of the forms listed above

Candida infection      Use both internal and external applications appropriate

Common Cold         Take internally

Diarrhea and Dysentery    Take internally

Ear Infections         Soak crushed garlic in oil, and apply the oil directly to the ear.

Fungal Infections      Apply garlic oil directly, blend up garlic in warm water to make a warm water to make a soak or compress. internally.

Herpes                 Take fresh garlic orally, and apply garlic blended little water                      in a little water directly to the sore.

Infections              Take garlic internally and infected wound.              apply directly to infected wound.

Influenza              Take internally at the first threat of exposure. Blend

Parasites              three cloves in a medium and take internally 3 times a day, for a total of nine cloves.

Vaginal Infection      Use a douche, with three blended garlic cloves in a quart of water.              Strain through cheesecloth first to remove the solid matter.

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