Garlic

What is it?

Garlic is an herb that is grown around the world. It is related to onion, leeks, and chives. It is thought that garlic is native to Siberia, but spread to other parts of the world over 5000 years ago.

Garlic is most commonly used for conditions related to the heart and blood system. These conditions include high blood pressure, high levels of cholesterol or other fats (lipids) in the blood (hyperlipidemia), and hardening of the arteries (atherosclerosis).

In foods and beverages, fresh garlic, garlic powder, and garlic oil are used to add flavor.

Coronavirus disease 2019 (COVID-19): While garlic may have some benefit for preventing the common cold, there is no good evidence to support using it for COVID-19. Follow healthy lifestyle choices and proven prevention methods instead.

Is it Effective?

Natural Medicines rates effectiveness based on scientific evidence according to the following scale: *Effective, Likely Effective, Possibly Effective, Possibly Ineffective, Likely Ineffective, Ineffective, and Insufficient Evidence to Rate*.

The Effectiveness ratings for **Garlic** are as follows:

Possibly Effective for...

- **Hardening of the arteries (atherosclerosis)**. As people age, their arteries tend to lose their ability to stretch and flex. Garlic seems to reduce this effect. Taking a specific garlic powder supplement (Allicor, INAT-Farma) twice daily for 24 months seems to reduce how much hardening of the arteries progresses. Higher doses of this product seem to provide more benefits in women than men when taken over a four-year period. Research with other products containing garlic, alone or along with other ingredients (Kyolic Reserve, Kyolic, Total Heart Health, Formula 108, Wakunaga), have also shown benefits.
- **Diabetes**. Garlic seems to modestly reduce pre-meal blood sugar levels in people with or without diabetes. It seems to work best in people with diabetes, especially if it is taken for at least 3 months. It's unclear if garlic reduces post-meal blood sugar levels or HbA1c levels.
- **High levels of cholesterol or other fats (lipids) in the blood (hyperlipidemia)**. While not all research agrees, the most reliable evidence shows that taking garlic may reduce total cholesterol and low-density lipoprotein (LDL, "bad" cholesterol) in people with high cholesterol levels. Garlic appears to work best if taken daily for more than 8 weeks. But any benefit is probably small. And taking garlic doesn't help increase high-density lipoprotein (HDL, "good" cholesterol) or lower levels of other blood fats called triglycerides.
- **High blood pressure**. Taking garlic by mouth seems to reduce systolic blood pressure (the top number) by about 7-9 mmHg and diastolic blood pressure (the bottom number) by about 4-6 mmHg in people with high blood pressure.
- **Build up of fat in the liver in people who drink little or no alcohol (nonalcoholic fatty liver disease or NAFLD)**. Taking garlic powder seems to help to improve liver health in people with NAFLD. People who eat more garlic also seem to be less likely to be diagnosed with NAFLD.
- **Prostate cancer**. Some research suggests that eating garlic as part of the diet may be associated with a reduced risk of developing prostate cancer. But other research suggests that eating garlic does not affect prostate cancer risk in men from Iran.

Early clinical research suggests that taking garlic extract supplements might reduce the risk of prostate cancer or reduce symptoms associated with prostate cancer.

Possibly Ineffective for...

- **Stomach cancer**. People who eat more garlic or take garlic supplements don't seem have a lower chance of developing stomach cancer.
- **A digestive tract infection that can lead to ulcers (Helicobacter pylori or H. pylori)**. Taking garlic by mouth for H. pylori infection used to look promising due to laboratory evidence showing potential activity against H. pylori. However, when garlic cloves, powder, or oil is used in humans, it does not seem to help treat people infected with H. pylori.

Insufficient Evidence to Rate Effectiveness for...

- **Patchy hair loss (alopecia areata)**. Early evidence suggests that applying a garlic 5% gel along with a topical steroid for 3 months increases hair growth in people with hair loss.
- **Chest pain (angina)**. Early research suggests that administering garlic intravenously (by IV) for 10 days reduces chest pain compared to intravenous nitroglycerin.
- **Athletic performance**. Early research shows that taking a single dose of garlic before exercise can increase endurance in young athletes.
- **Enlarged prostate (benign prostatic hyperplasia or BPH)**. Early research suggests that taking a liquid garlic extract daily for one month reduces prostate mass and urinary frequency. But the quality of this research is questionable.
- **Breast cancer**. Some research has found that people who eat more garlic AND onions have a lower risk of breast cancer. But other research has found that people who eat more garlic don't have a lower risk of breast cancer.
- **Colon cancer, rectal cancer**. Some research has found that eating more garlic is linked with a reduced risk of colon or rectal cancer. But other research does not support this. It's too soon to know if taking garlic supplements can help reduce the risk of colon or rectal cancer.
- **Common cold**. Early research suggests that garlic might reduce the frequency and number of colds when taken daily for prevention.
- **Corns**. Early research suggests that applying certain garlic extracts to corns on the feet twice daily might improve corns.
- **Cystic fibrosis**. Some early research suggests that taking garlic oil macerate does not improve lung function, symptoms, or the need for antibiotics in children with cystic fibrosis.
- **Cancer of the esophagus**. It is unclear if eating more garlic can reduce the risk for cancer of the esophagus. Some research suggests that it might, but other research disagrees.
- **Muscle soreness caused by exercise**. Early evidence suggests that taking allicin, a chemical in garlic, daily for 14 days can reduce muscle soreness after exercise in athletes.
- **Inherited tendency towards high cholesterol (familial hypercholesterolemia)**. In children with high levels of low-density lipoprotein (LDL or "bad") cholesterol, taking garlic powder extract by mouth does not seem to improve cholesterol levels or blood pressure.
- **Lead poisoning**. Some early research suggests that taking garlic powder might help to reduce levels of lead in the blood. But it doesn't seem to work as well as D-penicillamine.
- **Lung cancer**. Early research on the use of garlic for preventing lung cancer is unclear. Some research suggests that eating more garlic does not prevent the development of lung cancer. But other population research suggests that consuming raw garlic can reduce the risk of lung cancer.
- **A grouping of symptoms that increase the risk of diabetes, heart disease, and stroke (metabolic syndrome)**. Some early research suggests that taking raw garlic might increase levels of "good" cholesterol (HDL cholesterol) and decrease levels of other fats and sugar in the blood in people with this condition.
- **Mosquito repellent**. Early research suggests that taking one dose of garlic might not repel mosquitos.

- **Cancer of white blood cells called plasma cells (multiple myeloma)**. Some early population research suggests that eating more garlic might prevent multiple myeloma.
- **Muscle strength**. People who eat more garlic seem to have improved hand strength compared to those who don't eat garlic.
- **Obesity**. Some research shows that taking garlic alone does not reduce body weight in people with obesity.
- **Swelling (inflammation) and sores inside the mouth (oral mucositis)**. Early research suggests that using a garlic mouthwash three times daily for 4 weeks improves redness in people with mouth sores. People seem to be more satisfied with garlic than the drug nystatin, but it is less effective.
- **Thrush**. Early research suggests that applying garlic paste to affected areas in the mouth can increase the healing rate in people with thrush.
- **Osteoarthritis**. Early research shows that taking garlic tablets twice daily for 12 weeks can reduce pain in overweight women with osteoarthritis in the knee.
- **Narrowing of blood vessels that causes poor blood flow to the limbs (peripheral arterial disease)**. Early research suggests that taking garlic by mouth does not seem to reduce leg pain when walking due to poor blood flow in the legs.
- **A pregnancy complication marked by high blood pressure and protein in the urine (pre-eclampsia)**. Early research suggests that taking garlic extract during the third trimester of pregnancy does not reduce the risk of this condition in women who are pregnant for the first time.
- **Rheumatoid arthritis (RA)**. Some research shows that taking garlic might help to reduce pain and improve function in people with RA. But the effect seems to be small.
- **Hardening of skin and connective tissue (scleroderma)**. Research suggests that taking garlic daily for 7 days does not benefit people with scleroderma.
- **Preventing tick bites**. Early research suggests that people who consume high amounts of garlic over 8 weeks seem to have fewer tick bites. But it's not clear how garlic compares to commercially available tick repellents.
- **Ringworm (Tinea corporis)**. Applying a gel containing 0.6% ajoene, a chemical in garlic, twice daily for one week seems to be as effective as antifungal cream for treating ringworm. But it's not clear if applying plain garlic on the skin would have the same benefit.
- **Jock itch (Tinea cruris)**. Applying a gel containing 0.6% ajoene, a chemical in garlic, twice daily for one week seems to be as effective as antifungal cream for treating jock itch. But it's not clear if applying plain garlic on the skin would have the same benefit.
- **Athlete's foot (Tinea pedis)**. Applying a gel containing 1% ajoene, a chemical in garlic, seems to be effective for treating athlete's foot. Also, applying a garlic gel with 1% ajoene seems to be about as effective as antifungal cream for treating athlete's foot. But it's not clear if applying plain garlic on the skin would have the same benefit.
- **Vaginal yeast infections**. Some early research shows that taking garlic twice daily for 14 days does not improve symptoms of this condition.
- **Warts**. Early evidence suggests that applying a specific fat-soluble garlic extract to warts on the hands twice daily removes warts within 1-2 weeks. Also, a water-soluble garlic extract seems to provide modest improvement, but only after 30-40 days of treatment.
- **Wound healing**. Early research shows that applying ointment containing raw garlic to a wound after surgery improves healing more than applying ointment without garlic.
- **A type of benign (non-cancerous) breast disease (fibrocystic breast disease)**.
- **Swelling (inflammation) of the stomach (gastritis)**.
- **Swelling (inflammation) of the liver (hepatitis)**.
- **Other conditions**.

More evidence is needed to rate garlic for these uses.

How does it work?

Garlic produces a chemical called allicin. This is what seems to make garlic work for certain conditions. Allicin also makes garlic smell. Some products are made "odorless" by aging the garlic, but this process can also make the garlic less effective. It's a good idea to look for

supplements that are coated (enteric coating) so they will dissolve in the intestine and not in the stomach.

Are there safety concerns?

When taken by mouth: Garlic is **LIKELY SAFE** for most people when taken by mouth appropriately. Garlic has been used safely in research for up to 7 years. When taken by mouth, garlic can cause bad breath, a burning sensation in the mouth or stomach, heartburn, gas, nausea, vomiting, body odor, and diarrhea. These side effects are often worse with raw garlic. Garlic may also increase the risk of bleeding. There have been reports of bleeding after surgery in people who have taken garlic. Asthma has been reported in people working with garlic, and other allergic reactions are possible.

When applied to the skin: Garlic products are **POSSIBLY SAFE** when applied to the skin. Gels, pastes, and mouthwashes containing garlic have been used for up to 3 months. However, when applied to the skin, garlic might cause skin damage that is similar to a burn.

RAW garlic is **POSSIBLY UNSAFE** when applied to the skin. Raw garlic might cause severe skin irritation when it is applied to the skin.

When given as a shot: There isn't enough reliable information to know if garlic is safe. It might cause side effects such as a burning sensation in the stomach, nausea, vomiting, body odor, and diarrhea.

Special Precautions & Warnings:

Pregnancy and breast-feeding: Garlic is **LIKELY SAFE** to use during pregnancy when taken in the amounts normally found in food. Garlic is **POSSIBLY UNSAFE** when used in medicinal amounts during pregnancy and when breast-feeding. There is not enough reliable information about the safety of applying garlic to the skin if you are pregnant or breast feeding. Stay on the safe side and avoid use.

Children: Garlic is **POSSIBLY SAFE** when taken by children in doses of up to 300 mg three times daily for up to 8 weeks. There isn't enough reliable information to know if garlic is safe when used in larger doses or for longer than 8 weeks. It is **POSSIBLY UNSAFE** to apply raw garlic to the skin. It might cause damage to the skin that is similar to a burn.

Bleeding disorder: Garlic, especially fresh garlic, might increase the risk of bleeding.

Surgery: Garlic might prolong bleeding and interfere with blood pressure. Garlic might also lower blood sugar levels. Stop taking garlic at least two weeks before a scheduled surgery.

Are there any interactions with medications?

Atazanavir (Reyataz)

Interaction Rating = **Moderate** Be cautious with this combination.
Talk to your health provider.

Garlic might reduce how much atazanavir (Reyataz) the body absorbs. This might decrease how well atazanavir (Reyataz) works. Talk to your doctor before taking garlic if you are taking atazanavir (Reyataz).

Isoniazid

Interaction Rating = **Major** Do not take this combination.

Garlic might reduce how much isoniazid (INH, Nydrazid) the body absorbs. This might decrease how well isoniazid (INH, Nydrazid) works. Don't take garlic if you take isoniazid (INH, Nydrazid).

Medications changed by the liver (Cytochrome P450 2E1 (CYP2E1) substrates)

Interaction Rating = **Moderate** Be cautious with this combination.
Talk to your health provider.

Some medications are changed and broken down by the liver. Garlic oil might decrease how quickly the liver breaks down some medications. Taking garlic oil along with some medications that are changed by the liver can increase the effects and side effects of your medication. Before taking garlic oil, talk to your healthcare provider if you take any medications that are changed by the liver.

Some medications that are changed by the liver include acetaminophen, chlorzoxazone (Parafon Forte), ethanol, theophylline, and drugs used for anesthesia during surgery such as enflurane (Ethrane), halothane (Fluothane), isoflurane (Forane), and methoxyflurane (Penthrane).

Medications changed by the liver (Cytochrome P450 3A4 (CYP3A4) substrates)

Interaction Rating = **Moderate** Be cautious with this combination.
Talk to your health provider.

Some medications are changed and broken down by the liver as well as the intestines. Garlic might increase how quickly the intestines break down some medications and decrease how quickly the liver breaks down some medications. Taking garlic along with some medications that are broken down by the liver or the intestines might increase or decrease the effectiveness of some medications. Before taking garlic, talk to your healthcare provider if you are taking any medications that are changed by the liver or intestines.

Medications that might be affected include certain heart medications called calcium channel blockers (diltiazem, nicardipine, verapamil), cancer drugs (etoposide, paclitaxel, vinblastine, vincristine, vindesine), fungus-fighting drugs (ketoconazole, itraconazole), glucocorticoids, alfentanil (Alfenta), cisapride (Propulsid), fentanyl (Sublimaze), lidocaine (Xylocaine), losartan (Cozaar), midazolam (Versed), and others.

Medications for diabetes (Antidiabetes drugs)

Interaction Rating = **Moderate** Be cautious with this combination.
Talk to your health provider.

Garlic might decrease blood sugar in people with diabetes. Diabetes medications are also used to lower blood sugar. Taking garlic along with diabetes medications might cause blood sugar to go too low. Monitor your blood sugar closely. The dose of your diabetes medication might need to be changed.

Some medications used for diabetes include glimepiride (Amaryl), glyburide (DiaBeta, Glynase PresTab, Micronase), insulin, pioglitazone (Actos), rosiglitazone (Avandia), chlorpropamide (Diabinese), glipizide (Glucotrol), tolbutamide (Orinase), and others.

Medications for high blood pressure (Antihypertensive drugs)

Interaction Rating = **Moderate** Be cautious with this combination.
Talk to your health provider.

Garlic might lower blood pressure in some people. Taking garlic along with medications used for lowering high blood pressure might cause your blood pressure to go too low. Do not take too much garlic if you are taking medications for high blood pressure.

Some medications for high blood pressure include nifedipine (Adalat, Procardia), verapamil (Calan, Isoptin, Verelan), diltiazem (Cardizem), isradipine (DynaCirc), felodipine (Plendil), amlodipine (Norvasc), and others.

Medications for HIV/AIDS (Protease inhibitors)

Interaction Rating = **Moderate** Be cautious with this combination.
Talk to your health provider.

Taking garlic might decrease the amount of HIV/AIDS medication that can enter into the bloodstream. This could decrease the effectiveness of some medications used for HIV/AIDS.

Some of these medications used for HIV/AIDS include amprenavir (Agenerase), nelfinavir (Viracept), ritonavir (Norvir), and saquinavir (Fortovase, Invirase).

Medications that slow blood clotting (Anticoagulant / Antiplatelet drugs)

Interaction Rating = **Moderate** Be cautious with this combination.
Talk to your health provider.

Garlic might slow blood clotting. Taking garlic along with medications that also slow clotting might increase the chances of bruising and bleeding.

Some medications that slow blood clotting include aspirin, clopidogrel (Plavix), diclofenac (Voltaren, Cataflam, others), ibuprofen (Advil, Motrin, others), naproxen (Anaprox, Naprosyn, others), dalteparin (Fragmin), enoxaparin (Lovenox), heparin, warfarin (Coumadin), and others.

Saquinavir (Fortovase, Invirase)

Interaction Rating = **Moderate** Be cautious with this combination.
Talk to your health provider.

Saquinavir (Fortovase, Invirase) is a medication taken for HIV. Garlic might decrease how much saquinavir goes into the blood. This might decrease the effectiveness of saquinavir (Fortovase, Invirase).

Tacrolimus (Prograf)

Interaction Rating = **Moderate** Be cautious with this combination.
Talk to your health provider.

Tacrolimus (Prograf) is changed and broken down by the liver. Garlic might decrease how quickly the liver breaks down tacrolimus (Prograf). Taking garlic with tacrolimus (Prograf) might increase the effects and side effects of tacrolimus (Prograf).

Warfarin (Coumadin)

Interaction Rating = **Moderate** Be cautious with this combination.
Talk to your health provider.

Warfarin (Coumadin) is used to slow blood clotting. Garlic might increase the effectiveness of warfarin (Coumadin). Taking garlic along with warfarin (Coumadin) might increase the chances of bruising and bleeding. Be sure to have your blood checked regularly. The dose of your warfarin (Coumadin) might need to be changed.

Are there any interactions with Herbs and Supplements?

Herbs and supplements that might lower blood pressure

Garlic might lower blood pressure. Using it along with other herbs and supplements that have this same effect might increase the risk of blood pressure dropping too low in some people. Some of these products include andrographis, casein peptides, cat's claw, coenzyme Q-10, fish oil, L-arginine, lycium, stinging nettle, theanine, and others.

Herbs and supplements that might lower blood sugar

Garlic might lower blood sugar. Using it with other herbs or supplements that also have this effect might lower blood sugar too much. Other herbs and supplements that might lower blood sugar include banaba, bitter melon, cowhage, ginger, glucomannan, goat's rue, fenugreek, kudzu, willow bark, and others.

Herbs and supplements that might slow blood clotting

Using garlic with other herbs that can slow blood clotting might increase the risk of bleeding in some people. These other herbs include angelica, clove, danshen, ginger, ginkgo, red clover, turmeric, vitamin E, willow, and others.

Are there interactions with Foods?

There are no known interactions with foods.

What dose is used?

The following doses have been studied in scientific research:

BY MOUTH:

- **For hardening of the arteries (atherosclerosis)**: A 300 mg garlic powder tablet (Kwai, Lichtwer Pharma), taken as a single dose or three times daily for up to 4 years, has been used. Also, 150 mg of a specific garlic supplement (Allicor, INAT-Farma) twice daily for 24 months has been used. Combination products containing garlic have also been used. A specific aged garlic extract (Kyolic Reserve, Wakunaga) providing 1200 mg twice daily for 12 months has been used. A specific aged garlic extract supplement (Kyolic, Total Heart Health, Formula 108, Wakunga) containing 250 mg of aged garlic extract taken daily for 12 months, has been used. Also, a combination product containing 300 mg of aged garlic extract, taken at a dose of four tablets daily for one year, has been used.
- **For diabetes**: Garlic powder 600-1500 mg daily has been used for at least 12 weeks. A 300 mg garlic tablet (Allicor, INAT-Farma) taken two to three times daily with medications called metformin or sulfonylurea, for 4 to 24 weeks has been used.
- **For high levels of cholesterol or other fats (lipids) in the blood (hyperlipidemia)**: A dose of 1000-7200 mg of a specific aged garlic extract (Kyolic, Wakanuga) has been used daily in divided doses for 4-6 months. A dose of 600-900 mg of a specific garlic powder tablet (Kwai, Lichtwer Pharma) has been taken daily in two or more divided doses for 6-16 weeks. Also, 300 mg of another specific garlic powder product (Garlex, Bosch Pharmaceuticals) taken twice daily for 12 weeks has been used. Also, 1,200 mg of garlic powder plus 3 grams of fish oil daily for 4 weeks, or 500 mg of garlic oil plus 600 mg of fish oil daily for 60 days, has been used.
- **For high blood pressure**: 300-1500 mg of garlic tablets taken in divided doses daily for 24 weeks has been used. 2400 mg of a specific garlic powder tablet (Kwai, Lichtwer Pharma) taken as a single dose or 600 mg daily for 12 weeks has been used. Capsules containing 960-7200 mg of aged garlic extract, taken daily in up to three divided doses for up to 6 months, have been used. Specific products containing aged garlic extract include Kyolic (Garlic High Potency Everyday Formula 112, Wakunga/Wagner). 500 mg of garlic oil plus 600 mg of fish oil daily for 60 days has been used.
- **For build up of fat in the liver in people who drink little or no alcohol (nonalcoholic fatty liver disease or NAFLD)**: Garlic powder (Amin Pharmaceutical Company) 800 mg twice daily for 12 weeks or an enteric-coated powder 400 mg twice daily for 15 weeks have been used.

What other names is the product known by?

Aged Garlic Extract, Ail, Ail Blanc, Ail Cultive, Ail Rocambole, Ajo, Alho, Allii Sativi Bulbus, Allium, Allium sativum, Angio D'India, Camphor Of The Poor, Clove Garlic, Common Garlic, Da Suan, Echte Rokkenbolle, Echter Knoblauch, Garlic Clove, Garlic Oil, Knoblauch, Lahsun, Lasun, Lasuna, Maneul, Nectar Of The Gods, Ninniku, Ophio Garlic, Poor Man's Treacle, Rason, Rocambole, Rockenbolle, Rust Treacle, Schlangenknoblauch, Serpent Garlic, Spanish Garlic, Stinking Rose, Suan, Thoum, Vitlok.

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