European School of Prolotherapy

Educational Update

Improve your immunity with the medical use of Zeolites Powder

What are Zeolite's?

Zeolite is a complex mineral which forms in the contact of volcanic lava and water. This process can take thousands or even millions of years; scientists estimate that the first zeolite minerals formed over 300 million years ago.

"Zeolite" is a common name for over 240 unique structures (or frameworks), of which 40+ occur in nature. The most common types of zeolite include [1]:

- **Clinoptilolite**
- Mordenite
- Analcime
- Chabazite
- Natrolite
- Stilbite

Ancient Romans used zeolite B.C. to build bridges. Then it fell into oblivion and found its way back in 1756 when Swedish mineralogist Axel Cronstedt first described and named it.

He merged two Greek words: ***zéō***, meaning "boiling" and ***líthos***, meaning "stone." Zeolite released plenty of steam when heated and thus reminded Cronstedt of a "boiling stone" .

Proponents:

- Stops uncontrolled bleeding
- May help with detox
- Believed to support gut health
- Antioxidant activity
- May lower blood lipids
- May protect the brain and the liver
- Cleans and protects the skin

Skeptics:

- Can cause lung damage when inhaled
- Can block the absorption of drugs and nutrients
- May be contaminated with heavy metals
- Some types can be carcinogens

Structure and Components

In a clash of scalding lava and cold seawater, zeolite forms a unique cage-like structure and negative surface charge. Aluminum and silicon make the basis of this structure, but it often includes other elements such as oxygen, tin, zinc,and titanium.

Tiny cages enable zeolite to act as a “molecular sieve,” filtering molecules based on their particle size. Negative surface charge loosely binds minerals – such as sodium, potassium, and calcium – and replaces them with large ions and heavy metals .

In other words, zeolite can pick up plenty of “bad stuff” and replace it with “good stuff.”

Zeolite is a mineral compound created when lava hits seawater. Its structure, primarily made of aluminum and silicon, has been likened to a “molecular sieve.”

Production

Fast forward from its re-discovery, miners are now producing around **3 million tons** of zeolite each year. China leads the way, followed by South Korea, Japan, and Jordan. Natural zeolites are abundant but often contaminated with other minerals, quartz, metals, etc.

The industry mostly relies on synthetic zeolites, which are pure and have uniform structures. Some of them don’t exist in nature, such as Zeolite A.

Industrial Uses

Thanks to its unique physical properties, zeolite has found uses in:

- **Farming**: removes odors and helps manage wastewater
- **Agriculture**: controls moisture and provides minerals
- **Public health and ecology**: purifies water and helps remove nuclear waste
- **Household**: in deodorizing agents, cleaning products, and personal care
- **Chemistry**: speeds up chemical reactions

Traditional & Medical Uses of Zeolites

Traditional medicine recognizes clay eating (*geophagia*) as a natural detox method. Zeolite has similar properties and traditional uses.

In modern medicine, doctors and researchers use zeolite for :

- Separation and detection of biomarkers
- Controlled drug delivery
- Imaging methods such as NMR (nuclear magnetic resonance)
- Skin and bone tissue engineering
- Wound treatment and bleeding control

Detox Properties

Zeolite can bind and remove a wide range of toxins from the human body, drinking water, and waste materials. Its tiny cages and surface charge trap heavy metals, natural and chemical poisons, radioactive elements, microbes, metabolic products, and more.

Thanks to these potent detox properties, zeolite can.

- Reverse oxidative damage
- Maintain a healthy microbiome
- Kill bacteria and viruses
- Boost the levels of minerals and trace elements
- Repair skin lesions and stop bleeding

For these reasons, it’s often used to detox heavy metals and other toxins from the body.

Zeolite does it all in the gut without being absorbed, which makes it safe for human use with a few notable exceptions (see “**Side Effects & Interactions**” below).

Zeolite has a reputation as a detox aide because its unique surface structure binds to many potentially dangerous toxins.

Health Benefits of Zeolite

Preliminary research on zeolite showed great results, but solid clinical evidence for most conditions is still lacking. The following studies should encourage further investigation before we make any definite conclusions. Remember to speak with a doctor before taking zeolite supplements. They can not replace medical treatment for any health condition.

Note: Clinoptilolite is the most common type of zeolite for medical uses. All potential benefits refer to clinoptilolite unless stated otherwise.

Effective For:

1) Bleeding

Uncontrolled bleeding is the 2nd leading cause of death in severe injuries and accidents.

The US military uses zeolite-based product (QuickClot) to stop severe bleeding on the battlefield. Backed up by solid clinical evidence and real-life effectiveness, this product has also found application in civil medicine.

Animal studies have confirmed its efficacy, too.

A mixture containing zeolite and clay (CoolClot) significantly decreased bleeding time in dogs with a life-threatening injury. In human blood samples, it enhanced clotting by 40%.

Clinoptilolite stopped uncontrolled bleeding in almost 70% of treated rats and increased their chance of survival by 60%.

Zeolite is considered an effective clotting aide to stop severe bleeding on the battlefield. Quick topical application can save lives.

Possibly Effective For

2) Detox

Heavy Metals
In a clinical trial on 33 volunteers, zeolite enhanced the elimination of **aluminum, arsenic, lead, mercury**, and other heavy metals. People who took liquid zeolite (30 drops a day) had significantly higher levels of these metals in their urine samples. Lab analysis confirmed that zeolite wasn't contaminated, attributing the results to heavy metal detox [21].

In studies on mice, zeolite enabled lead elimination and protected the brain from oxidative damage caused by this heavy metal. It reduced the levels of lead in organs by up to 91%.

In rats, clinoptilolite stimulated aluminum detox and stopped it from reaching the blood.

Cadmium is another heavy metal that can cause anemia and impair different organs. In cadmium-poisoned pigs, zeolite prevented anemia and protected the liver. However, it didn't impact the cadmium concentration in the kidneys.

Cell studies have confirmed the ability of zeolite to bind and remove heavy metals such as lead, arsenic, and mercury.

Brain Damage & Mood

Brain cells are particularly sensitive to heavy metal poisoning. Heavy metals can damage neurons and trigger anxiety, depression, anger, and attention problems.

The ability of zeolite to detox lead, mercury, aluminum, and other heavy metals makes it a promising complementary approach to the above-mentioned mood disorders. **However, no studies have investigated the impact of zeolite on mood yet**.

Alcohol

In 12 healthy drinkers, clinoptilolite (5 g) **reduced blood levels of alcohol** by up to 43%. It blocked alcohol absorption when combined with a drink.

In another clinical trial, 25 volunteers took zeolite (2.25 g – 4.5 g) the morning after the "night out." It was too late for alcohol detox, but their **hangover symptoms improved by 40-50%**.

Fungal Toxins

Aflatoxins may contaminate foods and endanger human health, especially the liver.

Clinoptilolite was able to **detox chickens from aflatoxin** and protect their liver, bile duct, and kidneys. Immune system organs such as the thymus also suffered less damage.

Given to cows, zeolite **lowered levels of aflatoxin in their milk**, which is a major source of human poisoning. In test tubes, zeolite could remove aflatoxin from water (60%) and animal feed (80%).

Zeolite protected chickens against another vicious fungal toxin, **ochratoxin A**. The animals ate more, gained weight, and recovered faster.

Radioactive Elements

Zeolite porous structure is a perfect trap for large radioactive elements. In rats and sheep, clinoptilolite **blocked the absorption of radioactive cesium** and reduced its concentration in animals' organs.

Clinoptilolite can bind radioactive atoms in nuclear waste and help solve this burning ecology issue.

Other Toxins

Nitrates are toxins that can contaminate drinking water and disturb the health of humans and animals. In cows, zeolite reversed the metabolic damage caused by nitrates.

Additionally, clinoptilolite detoxed rats from **organophosphates** (nerve poisons). The fact that some pesticides belong to this group reveals the importance of zeolite detox properties.

Zeolite can bind to various dangerous toxins and poisons and prevent them from being absorbed and doing damage in the human body.

3) Gut Health

"Leaky gut" means that toxins, microbes, and inflammatory molecules can leak from the gut into the bloodstream. This may cause fatigue, autoimmune diseases, depression, and more.

In a clinical trial of 52 endurance athletes, zeolite (1.85 g daily for 12 weeks) **tightened the intestinal wall** and prevented leaking. It also had a mild anti-inflammatory effect on the gut.

In mice with ulcerative colitis, a type of IBD clinoptilolite was able to repair gut damage. It proved equally effective as a standard IBD drug (5-aminosalicylic acid). Tests verified that mice didn't absorb zeolite particles into the bloodstream.

Zeolite showed similar action in a study on pigs with gut inflammation.

The buildup of urea, ammonia, and gases in the gut may lead to ulcerative colitis, IBS, and even colon cancer. High levels of urea in the blood (uremia) can be life-threatening. Zeolite binds both urea and ammonia, potentially offering protection against these gut toxins.

According to limited clinical evidence, zeolite may be helpful in cases of "leaky gut."

4) Gut Microbiome

The positive impact of zeolite on gut bacteria contributes to the above benefits but also helps relieve diarrhea and improves overall health.

Cuban doctors have developed a drug for diarrhea (Enterex) made of clinoptilolite. They proved its safety and efficacy in 4 clinical trials and additional cell experiments. The ability of clinoptilolite to **restore healthy gut flora** played a crucial role in this effect.

When added to chicken feed, zeolite cut the number of harmful bacteria in their gut without disturbing the good bacteria. Chicken infected with *Salmonella*, a major cause of food poisonings, recovered faster and suffered less oxidative damage.

Another natural zeolite, **chabazite**, showed similar action in dogs. It even raised the number of probiotic *Lactobacillus* and *Bifidobacterium* strains while fighting intestinal pathogens.

In cell studies, zeolite inhibited the growth of 2 viral strains (*coxsackievirus* and *echovirus*) that invade us through the gut.

Zeolite may promote the growth of beneficial gut bacteria and inhibit the growth of pathogenic bacteria and viruses.

5) Oxidative Damage

Cigarette smoking poisons the entire body and increases the risk of cancer and cardiovascular diseases.Oxidative stress plays a key role in the adverse effects of smoking.

In a clinical trial on 85 smokers, clinoptilolite (5.4 g daily for 1 month) potently enhanced antioxidant defense, similar to Vitamin E.

Other types of natural zeolite showed comparable effects in 25 people: they boosted glutathione levels and protected lipids from oxidative damage.

In chickens and diabetic rats, zeolite:

- Boosted antioxidant enzymes (glutathione peroxidase, superoxide dismutase-SOD
- Increased total antioxidant capacity
- Protected the organs from injury

Zeolite’s ability to bind to toxins may confer a role in combating oxidative stress.

6) May Relieve Acid Reflux and Stomach Ulcers

In gastroesophageal reflux disease (GERD), acid reflux damages the esophagus, causing heartburn and other unpleasant symptoms.

In a clinical trial on 25 people with GERD, clinoptilolite (1.5 g daily for 2 weeks) relieved heartburn, pain, and discomfort by 45-55%.

The same protocol protected another 23 patients from stomach ulcers caused by a common NSAID drug, naproxen.

Insufficient Evidence For

The following purported benefits are only supported by limited, low-quality clinical studies. There is insufficient evidence to support the use of zeolite for any of the below-listed uses. Remember to speak with a doctor before using zeolite, and never use it in place of something your doctor recommends or prescribes.

7) Wound Healing

In a Russian clinical trial, zeolite enhanced the cleaning and recovery of burn wounds and improved overall complaints. **Important note**: patients consumed zeolite and didn't apply it on the wounds. This study doesn't reveal essential details such as dosage and sample size.

Zeolite loaded with **nitric oxide** (NO) boosted wound healing in rats. It killed bacteria and fungi while protecting skin cells.

Patches with **faujasite** (natural zeolite) and **copper** showed similar effects. They also enhanced oxygen supply and skin regeneration.

Another excellent combination for wound healing may be zeolite + silver. Patches with **silver-zeolite** can inhibit the growth of dangerous microbes, such as:

- P. aeruginosa, which can cause hospital-acquired infections
- E. coli, known for causing ulcers and infecting wounds
- *S. aureus* and MRSA, hard-to-treat strains of bacteria
- Candia albicans

Because of its blood clotting and antibacterial activity, some researchers have been investigating whether zeolite can help with wound healing.

8) Cholesterol and Blood Lipids

In a clinical trial on 41 patients, micronized (fine-ground) zeolite lowered blood levels of the “bad” cholesterol (LDL) and blood lipids, while raising the “good” cholesterol (HDL). After 8 weeks (6-9 g daily), these **values improved by 20-25%**.

The lack of a control group in this study prevents us from drawing reliable conclusions.

9) Oral Hygiene

In 11 volunteers, a mouth rinse with silver-zeolite (zeolite packed with silver ions) greatly reduced dental plaque formation.

In a cell study, silver-zeolite cut candia growth and acid production, two major causes of dental plaque and oral infections.

Additionally, zeolite can eliminate volatile odors and thus combat bad breath.

10) Liver Protection

The antioxidant power of zeolite may be crucial for liver protection.

In rats with partially removed liver, clinoptilolite provided antioxidant support by boosting glutathione and protective enzymes. As a result, blood markers of oxidative damage dropped.

In a cell study, clinoptilolite reversed the liver-damaging effects of adriamycin, an anticancer drug. It suppressed inflammatory proteins (NF-kB, TNF-alpha,and IL-1B) and prevented cell death.

As described above (see “**Detox**”), zeolite also protects against liver-damaging aflatoxins.

Zeolite’s antioxidant activity and ability to bind toxins may give it a role in liver health.

Benefits of Zeolite for the Skin

Due to its detox and antibacterial properties, zeolite may benefit the skin in different ways. Many would-healing and personal care products have zeolite as their main ingredient.

11) Personal Care

In a clinical trial on 39 volunteers, deodorant spray with 10% silver-zeolite showed a strong and lasting (24 h) effect against armpit microbes, which produce unpleasant odors. A spray with a control substance failed to achieve this.

In cell studies, zeolite eliminated viruses and volatile odors. It stopped the growth of the HSV-1 (Herpes simplex) virus, which causes cold sores.

Zeolite forms a protective film on the skin, acting as a natural sunscreen. In one cell study, zeolite even reversed oxidative damage triggered by another sunscreen ingredient, titanium-dioxide.

These properties make zeolite a central ingredient in various personal care products, most of which are available on the market (see "**Supplements**" below).

A deodorant containing zeolite may help prevent body odor and protect the skin.

12) Inflammation and Allergies

In mice, a mixture of natural zeolites trapped **histamime** and other triggers of inflammation, decreasing skin swelling by 57%.

One cell study verified the ability of zeolite to bind histamine and thus relieve inflammation and allergic reactions.

Air pollutants may trigger inflammation, allergies, and autoimmune issues. Since zeolite can bind to toxins and heavy metals, it might reduce the detrimental impact of pollution on the skin too.

In animals and cells, zeolite has shown the potential to reduce skin inflammation and bind to histamine.

Cancer Research

The findings discussed below stem from animal and cell-based studies. They should guide further investigation but shouldn't be interpreted as supportive of the anticancer effects in humans until more research is done. Zeolite supplements aren't approved for cancer prevention or treatment [82].

According to a review of studies on animals with different types of cancer, zeolite may:

- Shrink tumors and prevent their growth
- Improve overall health and prolong the lifespan

- Boost the effects of chemotherapy

Both oral and skin treatment showed the above benefits.

Clinoptilolite cut the number of melanoma (skin cancer) metastases in mice and boosted their immune response.

In cell studies, zeolite loaded with an anticancer drug (5-fluorouracil) was able to kill stomach and colon cancer cells. Adding zeolite enhanced the potency of this drug.

The ability of zeolite to bind radioactive elements, fungal toxins, and other cancer-causing substances also makes it a promising candidate for future cancer research.

There is currently nowhere near enough evidence to recommend zeolite for the prevention or treatment of cancer, but research is ongoing.

Limitations and Caveats

A good deal of zeolite research lacks confirmation in humans. Clinical trials point to some potential benefits of zeolite, but the evidence is limited to a **small number of patients**. Some of these trials come with other notable caveats, such as:

- Lack of control
- Unknown study details
- Conflict of interest

We need more extensive, well-designed clinical studies to verify the medicinal uses of zeolite.

Zeolite Side Effects

The list of side effects below is not a definite one, and you should consult your doctor about other potential side effects, based on your health condition and other factors.

In clinical trials, zeolite caused no significant side effects.

One safety review also found no dangers related to zeolite consumption. That said, human and animal trials revealed it can **cause lung inflammation and damage when inhaled**.

Since zeolite binds heavy metals and other toxins, some people voiced concerns about potential poisoning from contaminated supplements. However,

zeolite has a high affinity for those toxins and keeps them trapped under all conditions.

In one study, large amounts of zeolite in chicken feed caused **gut inflammation**. Rough-ground zeolite (large particles) **reduced the number of blood cells** in mice.

IMPORTANT: Only certain types of natural zeolite are suitable for human consumption. Others, such as **erionite**, may even be cancerous.

No studies have confirmed the safety of zeolite in children, pregnant or breastfeeding women. These groups may want to avoid it just in case.

Zeolite is generally considered safe, but animal studies have indicated the potential for gut inflammation. Furthermore, the safety profile of zeolite is incomplete in pregnant women and children.

Food and Drug Interactions

Food

Zeolite's super-binding properties come with a price. Although it prefers heavy metals and environmental toxins, essential nutrients may also end up trapped inside its tiny cages.

In a study on pigs, clinoptilolite blocked the absorption of protein from food. Zeolite A (synthetic) decreased blood levels of calcium, phosphorus, iron, and other minerals.

Most other studies didn't observe nutritional deficits.

Drugs

Supplement-drug interactions can be dangerous and, in rare cases, even life-threatening. Always consult your doctor before supplementing and let them know about all drugs and supplements you are using or considering.

Zeolite binds complex organic toxins but also drugs with similar structures. For example, it can remove antibiotics, which is great for water purification but dangerous if you've been prescribed antibiotics. The same goes for supplements and drugs with iron.

Zeolite may change gut pH value (acidity) and thus interfere with different medications, especially with controlled release dosage forms.

In one study on mice, immunostimulatory effects of zeolite provoked a graft-vs-host reaction, which can be detrimental after organ transplantation. Hence, zeolite shouldn't be used after transplantation or combined with immunosuppressants.

To stay on the safe side, make sure **not to combine zeolite with any drugs or supplements**.

Zeolite could potentially bind to and inactivate prescription medications. It should therefore not be combined with any drugs.

Zeolite Supplements

Despite the promising clinical and preclinical research, zeolite supplements have not been approved by the FDA for oral consumption. In general, regulatory bodies aren't assuring the quality, safety, and efficacy of supplements. Speak with your doctor before supplementing.

When choosing a high-quality zeolite supplement, you should look for:

1. **Source**: check if the manufacturers source their zeolite from reputable, clean regions
2. **Handling**: look for a purified product, tested for heavy metals and other contaminants
3. **Physical properties**: look for activated and micronized (fine-ground) zeolite

The most common form on the market is **zeolite powder**, containing **90-97% of clinoptilolite**. Micronized products have a particle size **<20 µm**. Other available forms include:

- Pills with **700-800 mg** of powder (mostly clinoptilolite)
- Liquid zeolite (suspension in water)
- Zeolite wound patches (usually loaded with silver)

Some websites claim that activated liquid zeolite is more potent and cleansed from toxins during the so-called liquid purification process. However, no evidence is available to back up these claims. What's more, "activation" only implies mechanically reducing the size of zeolite particles.

Liquid zeolite is sometimes enriched with an antioxidant, dihydroquercetin (DHQ).

As mentioned, zeolite is a common ingredient in personal care products, such as:

- Soaps
- Face masks
- Body scrubs
- Toothpaste

Dosage

The below doses used in clinical trials may not apply to you personally. If your doctor suggests using zeolite, work with them to find the optimal dosage according to your health condition.

The following doses of zeolite proved effective in clinical trials:

- Relieving hangover symptoms: **2.25 g – 4.5 g**, the morning after a 'night out'
- Inhibiting alcohol absorption: **5 g** with a drink
- Strengthening the gut lining: **1.85 g** daily for 3 months
- Soothing GERD and stomach ulcers: **1.5 g** daily for 2 weeks
- Reducing cholesterol and blood lipids: **6 – 9 g** daily for 2 months
- Boosting antioxidant support: **5.5 – 6 g** daily for 1 month

User Experiences

The opinions expressed in this section are solely from the users who may or may not have medical background. Their reviews do not represent the opinions of SelfHacked. SelfHacked does not endorse any specific product, service, or treatment.

Do not consider user experiences as medical advice. Never delay or disregard seeking professional medical advice from your doctor or another qualified healthcare provider because of something you have read on SelfHacked.

Powdered clinoptilolite is the most popular supplement, followed by liquid forms. Many users have reported positive experiences with zeolite. They were able to stop diarrhea, relieve digestive issues, detox, improve general wellbeing, and save pets from poisoning.

Interestingly enough, many parents report symptom improvement in their children with developmental disorders. The mentioned role of heavy metals in brain damage and strong detox action of zeolite may explain this phenomenon.

On the other hand, some users complained about constipation, dehydration, stomach discomfort, and the lack of desired effects.

When it comes to cosmetics, users seem to love face masks and toothpaste with zeolite. Some complain about its drying and staining effects.

Recipes With Zeolite

Face Mask

Mix **1 tbsp. of zeolite** and just enough water to make a paste (around 2 tbsp.).

Apply to your face and leave **15+ mins** (less for dry skin).

Rinse and proceed with your usual skin care.

For a daily cleanse, rinse the mask as soon as it dries.

Optional ingredients: coffee, cocoa, green tea powder, vitamin E, essential oils (peppermint, tea tree, lavender), olive oil (for dry skin).

Body Scrub

Use your palm or a body brush to apply **1-2 tbsp**. of zeolite on your skin before you take a shower.

Be careful around sensitive areas.

Optional ingredients: bentonite clay, sugar, coffee.

Tooth Powder

- 2 tbsp. zeolite powder
- A pinch of Himalayan salt and/or baking soda
- A pinch of cinnomen and dried herbs (cloves, sage, peppermint, etc.)
- 5-10 drops of essential oils of your choice

Takeaway

“Zeolite” stands for volcanic minerals that form in the contact of molten lava and (sea)water. Thanks to their structures, these minerals can bind a wide range of environmental toxins and metabolic products.

Clinoptilolite is the most common natural zeolite with potential health benefits. It may help you detox, boost your gut health, stop bleedings, and combat free radicals. The evidence is insufficient when it comes to liver protection, anticancer effects, and Alzheimer’s disease.Zeolite is safe for human consumption but can damage the lungs if inhaled for a longer time. Children and pregnant women may want to avoid it. Don’t combine zeolite with any drugs or supplements, and make sure to consult your doctor first. Antibacterial and detox properties of zeolite can benefit the skin, too. Available products include wound dressings, deodorants, soaps, toothpaste, face masks, and more.

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