

VITAMINS AND MINERALS FOUND IN SAUERKRAUT

The vitamins found in sauerkraut are numerous: Vitamin A, B vitamins, Vitamin C, Vitamin K and Vitamin U. The minerals are iron, potassium, iodine, calcium, magnesium, manganese and sodium along with trace amounts of phosphorus, chlorine, cobalt, fluorine, silicon, boron, copper, zinc, sulfur and selenium.

VITAMIN C

Cabbage has about 30 mg of Vitamin C per cup, but when fermented it can have upwards of 600 mg per cup with highest levels being seen in fermented red cabbage.

Scurvy, a disease caused by extreme Vitamin C deficiency, plagued sailors for centuries. As an experiment to find a cure for scurvy, Captain James Cook sailed with 7,860 pounds of sauerkraut when he left England for the South Pacific in 1768. He returned home, three years later, to report not a single death attributed to scurvy.

VITAMIN K2

Vitamin K2, or menaquinone, is a fat-soluble vitamin produced by gut flora and found in natto, raw grass-fed dairy products, grass-fed liver, egg yolks and certain fermented foods. Research has shown that Vitamin K2 is one of the most important nutrients for long-term bone health due to its ability to assist calcium and other minerals to bind into the bone matrix to strengthen bones.

Vitamin K2 forms in the fermentation process, making sauerkraut and other fermented foods good sources of Vitamin K2.

Natto, a traditional Japanese food made from soybeans fermented with *Bacillus subtilis* is hands down your best source of Vitamin K2 as further discussed in [this post](#). However, its sliminess and the funky smell is a hard sell for most of us.

Sauerkraut contains 10 mcg of Vitamin K2 in a single serving; Natto, 500 mcg or 100% of the DV in a single 2-ounce serving.

VITAMIN U

Vitamin U is not a vitamin in real terms but is instead a term used to describe the enzyme S-Methylmethionine. Whether taken as a supplement or from foods, Vitamin U has been shown to be able to treat a variety of gastrointestinal conditions, including ulcerative colitis, acid reflux, and peptic ulcers. Additionally, vitamin U may be able to reduce allergic reactions to cigarette smoke.

Vitamin U is found in raw cabbage and in sauerkraut where the fermentation process makes it more bioavailable.

VARIOUS STRAINS OF PROBIOTICS OR BACTERIA FOUND IN SAUERKRAUT

The main reason many of us consume sauerkraut is for the live and active probiotics. Probiotics are the bacteria present on the vegetables fermented and grown during fermentation. These various strains of probiotics help make foods more digestible and increase your gut's ability to absorb nutrients. *Lactobacillus plantarum* and *Lactobacillus acidophilus* are a couple of the superstars found in sauerkraut.

LACTOBACILLUS PLANTARUM

Rod-shaped *Lactobacillus plantarum* is extremely hardy and survives the acidic conditions of the stomach as it makes its way to your colon to colonize your gut. *Lactobacillus plantarum* is known for its ability to produce hydrogen peroxide which your body uses as a defense against pathogenic bacteria as well as bacteria consumed in foods. It is the dominant species of bacteria in sauerkraut.

LACTOBACILLUS ACIDOPHILUS

Lactobacillus acidophilus colonizes most densely in the small intestine where it helps maintain the integrity of the intestinal wall, ensure proper nutrient absorption and support healthy overall digestive function.

OTHER SPECIES OF BACTERIA IN SAUERKRAUT

Leuconostoc mesenteroides,

Lactobacillus plantarum,

Pediococcus pentosaceus

Lactobacillus brevis.

Probiotics are measured in colony-forming units or “CFUS.” The bacteria are identified by genus and species. The genus is the first word in a bacterium’s name; it’s the large group to which the bacteria belong.

This list of currently known probiotics in sauerkraut includes the original species identified and the following:

Lactobacillus acidophilus
*Lactobacillus brevis*¹
Lactobacillus coryniformis
*Lactobacillus curvatus*²
Lactobacillus delbrueckii
Lactobacillus hammesii
Lactobacillus paracasei
Lactobacillus paraplantarum
*Lactobacillus plantarum*¹
Lactobacillus rhamnosus
Lactobacillus reuteri
*Lactobacillus sakei*²

Lactobacillus salivarius
*Lactococcus lactis*²
*Leuconostoc argentinum*²
*Leuconostoc citreum*²
*Leuconostoc fallax*²
*Leuconostoc mesenteroides*¹
Pediococcus acidilactici
Pediococcus cerevisiae
*Pediococcus pentosaceus*¹
Weissella koreensis
Weissella species

BENEFICIAL DIGESTIVE ENZYMES

Digestive enzymes are biologically active proteins that are found throughout the body. They are destroyed by heat or pasteurization.

We get enzymes from the foods we eat and through the production of enzymes by our body. This is in contrast to probiotics, which are live bacteria found mainly in our digestive system. Our bodies cannot make probiotics, however, probiotics do make enzymes.

Enzymes digest food by splitting up food molecules into smaller building blocks for easy absorption into your bloodstream. Enzymes are effective at relieving common digestive issues such as gas, bloating, indigestion, heartburn and general discomfort.

There are three main categories of digestive enzymes:

Protease, that breaks down proteins into peptides and amino acids.

Amylase, that converts starch into simple sugars your body can absorb.

Lipase, that breaks down the fats in foods for optimal digestion.

For better digestion, it is important to consume fermented foods, such as sauerkraut, in addition to other raw fruits and vegetables,

especially as we age, since it is believed that our body's enzyme production may decline as we age.

Also helpful is to thoroughly chew our food! Enzymes that are produced in our salivary glands break down starches and fats as soon as you start chewing.

ANTIOXIDANTS

Antioxidants are powerful substances found mostly in fruits and vegetables that benefit the body by neutralizing and removing free radicals from the bloodstream. Vitamin C discussed earlier, is an important antioxidant found in sauerkraut.

Sauerkraut it is also high in antioxidants such as lutein and zeaxanthin, both shown to help protect and maintain healthy cells in the eyes where they are found in high concentrations in the retina of our eyes.. Especially advantageous with today's use of electronic devices is the ability for these antioxidants to filter harmful high-energy blue wavelengths of light. They likely play a role in the prevention of cataracts.

ALCOHOL

The natural process of vegetable fermentation transforms the small amount of sugars (glucose) in your cabbage into lactic acid, carbon dioxide (to keep air out of your ferment) *and* alcohol (ethanol). The bacteria then consume most of the ethanol and produce healthy organic acids, such as lactic acid. The amount of ethanol at the end of the fermentation for sauerkraut is so low that actual levels are probably undetectable.

A FEW THINGS YOU WILL NOT FIND IN SAUERKRAUT

If you are avoiding dairy and think you can't eat lacto fermented foods, or if you are afraid that you will poison your family by feeding them food left "to rot" on the counter for weeks, read on.

LACTOSE

You may have seen the term “lacto fermentation” and been concerned about the use of dairy in the fermentation process.

Sauerkraut is produced by lactic-acid fermentation. The use of the terms “lactic” and “lacto” cause unwarranted concern for those avoiding dairy. It’s simply a confusion of similar words.

“Lactic” identifies the type of bacteria that carry out fermentation. “Lactic-acid bacteria” or LAB for short. The term “lactose” identifies a sugar found in milk. There is no lactose in sauerkraut fermented naturally by the wild bacteria already on the cabbage and vegetables.

However, you may see some recipes that call for the use of whey. Whey, the watery substance in yogurt, is rich in the bacteria used to culture yogurt, which some feel is necessary to ferment sauerkraut. Sauerkraut fermented in this way would contain dairy. None of my recipes call for whey.

E. COLI, SALMONELLA, C. BOTULINUM AND OTHER PATHOGENIC BACTERIA

The beauty of fermentation lies in the ability of lactic acid, which forms during fermentation, to create an environment inhospitable to pathogenic bacteria.

Lactic acid bacteria are world-class athletes when it comes to consuming the sugars in vegetables and converting them to lactic acid. This lactic acid is more effective than other types of acid (including acetic acid, the acid in vinegar) at destroying pathogenic bacteria, including *Salmonella* and *E. coli*. It’s a combination of the acid’s ability to kill bacteria and the low pH created by fermentation that makes fermented foods so safe.

Testing the pH of fermented vegetables is a great way to ensure food safety, especially if you are new to fermentation or you are experimenting with your own recipes.