SAUERKRAUT / CULTURED VEGETABLES

See also:

Probiotics
Kefir
Miso/Tempeh

Books:

Wild Fermentation: The Flavor, Nutrition, and Craft of Live-Culture Foods, by Sandor Ellix Katz
The Body Ecology Diet, by Donna Gates

Articles:

Websites:

http://www.wildfermentation.com
http://www.BodyEcology.com

Audio/Video:

Publications:

Organizations:

People:

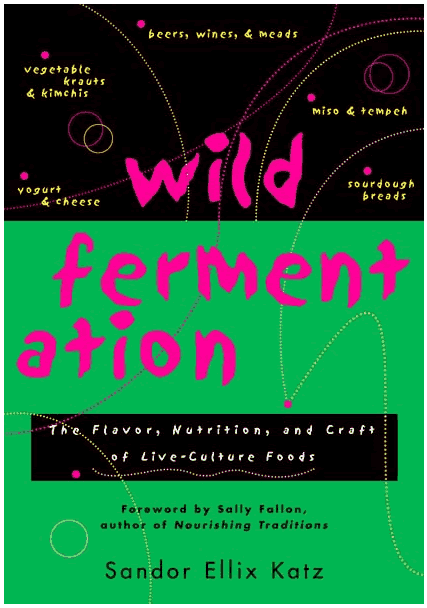
Donna Gates
Sandor Ellix Katz

Integral Nutrition:

Raw, Home-Made, Wild Cultured

Conventional:

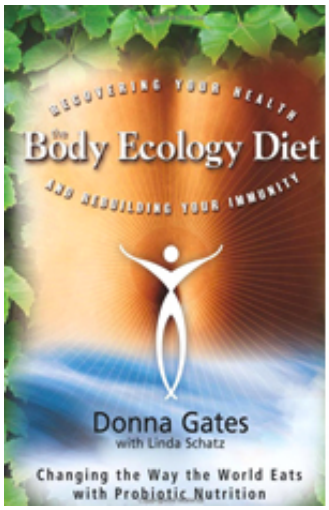
Pasteurized, Salted, Processed, Preservatives and Artificial flavors



Terms: **Probiotics, Culture, Fermentation**

BODY ECOLOGY'S CULTURED FOODS

Source: *The Body Ecology Diet* by Donna Gates, pgs 119-125



We now present two of The Diet's special, signature foods"super" foods that contribute immensely to healing and building your inner ecosystem: first, raw cultured vegetables; and second, kefir from the water of young green coconuts.

Raw cultured vegetables have been around for thousands of years, but we have never needed them more than we do today. Rich in lactobacilli and enzymes, alkaline-forming, and loaded with vitamins, they are an ideal food that can and should be consumed with every meal.

Since cultured vegetables are an excellent source of vitamin C, Dutch seamen used to carry them to prevent scurvy. For centuries, the Chinese have cultured cabbage each fall to ensure a source of greens through the winter (when they lacked refrigeration). Cultured vegetables are a favorite food of the long-lived Hunzas. Yogurt ads lead us to believe that eating yogurt ensures a long life, but it's really the active cultures of friendly bacteria (lactobacilli) inside it that are responsible for good health. Similarly, the enzymes and the high lactic acid in raw cultured vegetables promote wellness and longevity.

Cultured veggies taste tangy. It may be a new taste for you, but you will soon feel that no meal is complete without them. Even better, since they are all-vegetable, they combine with either a protein or a starch meal. They are slightly to the expansive end of the Expansion/Contraction Continuum, so they help balance the contractive nature of animal foods and sea salt.

So what exactly *are* raw cultured vegetables?

They're *sauerkraut*. The Austrians coined this word, from *sauer* (sour) and *kraut* (greens or plants). But we call them raw cultured vegetables, because we don't want you to mistake them for the salted and pasteurized sauerkraut sold in supermarkets and even some health-food stores. That kind of sauerkraut is definitely not on The Diet, because it is pasteurized. The pasteurization (heating) process destroys precious enzymes, and the added salt eliminates any health benefits. We'll teach you how to make these delicious raw cultured vegetables without heat or preservatives.

Benefits

- **Raw cultured vegetables help reestablish your inner ecosystem**. Their friendly bacteria are a less expensive alternative to probiotics (although we recommend both as you begin The Diet).
- **They improve digestion**. Knowing the benefits of raw foods, you may have decided to

include raw vegetables with each meal. Yet when you begin The Diet, your digestive tract may be too weak to tolerate them. Cultured vegetables eliminate this concern, since they are already pre-digested. This means that even before they enter your mouth, the friendly bacteria have already converted the natural sugars and starches in the vegetables into lactic acid, a job your own saliva and digestive enzymes would do anyway. The enzymes in the cultured vegetables also help the digestion of other foods eaten with them.

- **They increase longevity**. You could think of the friendly bacteria in raw cultured vegetables as little enzyme powerhouses. By eating the vegetables, you will maintain your own enzyme reserve and use it to eliminate toxins, rejuvenate your cells, and strengthen your immune system-which all adds up to a longer, healthier life.
- **They control cravings**. Homemade cultured vegetables are ideal for appetite control and thus weight control. The veggies help take away cravings for the sweet taste in pastries, colas, bread, pasta, dairy, fruit, and other expansive foods not on The Diet.
- **They are ideal for pregnant and nursing women**. Pregnant women should eat cultured vegetables to ensure that their ecosystems are rich in friendly bacteria. They also help alleviate morning sickness during the early part of the pregnancy. Once the baby is born, the mother should continue eating these vegetables and drinking their juice. And the liquid from the cultured vegetables can be fed to the baby in tiny spoonfuls to relieve colic.
- **They are alkaline and very cleansing**. Cultured vegetables help restore balance if your body is in a toxic, acidic condition. Because they do trigger cleansing, you may have an increase in gas initially as the vegetables stir up waste and toxins in the intestinal tract. Soon, however, you will notice an improvement in your stools. To ease the discomfort of the gas, colonies and enemas are very useful during this period.

How to Make Cultured Veggies

Cultured vegetables are made by shredding cabbage or a combination of cabbage and other vegetables and then packing it tightly into an airtight container, left to ferment at room temperature for several days or longer. Friendly bacteria naturally present in the vegetables quickly lower the pH, making a more acidic environment so the bacteria can reproduce. The vegetables become soft, delicious, and somewhat "pickled."

The airtight container can be glass or stainless steel. Use a Ito 1 l/2-quart container that seals with a rubber or plastic ring and a clamp-down lid. Room temperature means 70 degrees F. While three days is the minimum, we prefer to let ours sit for at least six or seven days, and have even left them culturing for weeks. You can taste them at different stages and decide for yourself.

In the winter months if your kitchen temperature falls below 70 degrees, wrap the container in a towel and place it inside an insulated or thermal chest. In the summer months the veggies culture faster. They may be ready in just three or four days.

During this fermentation period, the friendly bacteria are having a heyday, reproducing and converting sugars and starches to lactic acid. Once the initial process is over, it is time to slow down the bacterial activity by putting the cultured veggies in the refrigerator. The cold greatly slows the fermentation but does not stop it completely. Even if the veggies sit in your refrigerator for months, they will not spoil; instead they become like fine wine: more delicious with time. Properly made, cultured vegetables have at least an eightmonth shelf life.

While it is not necessary to add a "starter culture" to your vegetables, we recommend that you do so just to ensure that your vegetables begin fermenting with a hardy strain of beneficial bacteria. Body Ecology's Cultured Vegetable Starter contains a very robust bacterium called *Lb. plantarum*.

Enjoying the Fruits of Your Labor

Once you master the basic technique, be creative. Try different vegetable combinations, and include dark green leafy vegetables like kale and collards. Soak, drain, and chop up some ocean vegetables, like dulse, wakame, hijiki, and arame. Add your favorite herbs (dried or fresh), seeds (dill or caraway), and juniper berries. Even lemon juice can be added to the "brine." Try leaving out the cabbage altogether and making a batch of cultured daikon.

I (Donna) have a friend, Cynthia Hamilton, who lives in Los Angeles and teaches classes on how to make cultured vegetables. She also sells them, calling them a "probiotic salad." Cynthia recently surprised me with a new recipe using kohlrabi, celery, garlic, ginger, and a green apple. It tastes wonderful! Don't be afraid of the little bit of sugar in the green apple. The microflora use it for food. The sugar will be long gone before you eat the cultured veggies. (If you create a great new recipe that you want to share with others on the B.E.D. around the world, please write or e-mail us and we will happily post it on our website.)

You may be thinking that making cultured veggies amounts to a big hassle. Well, it is possible to buy them commercially (see our Shopping List), but store-bought varieties come in smaller sizes and can be too costly for many people. You wouldn't be getting the "therapeutic amounts" you reap by making your own. So here's a suggestion: Plan a "*CV Party*" with your family and friends. Gather on a weekend afternoon to laugh together while you chop and pack the veggies. Make sure everyone leaves with enough containers to last until the next party. You and your loved ones will enjoy many meals incorporating one of the most medicinal and economical foods you'll ever eat.

Tips for Eating Raw Cultured Vegetables

Include at least 1/2 cup of the veggies in any meal where you are eating a protein or starch. Use the juice in salad dressing as a replacement for apple cider vinegar or lemon juice. You can also toss the veggies into salads, wrap them up in blue cornmeal tortillas, or serve them with crunchy blue corn chips.

Never heat the veggies, or the valuable enzymes and bacteria will be killed. If you leave them out at room temperature for a while, they come alive and start to multiply quickly. So sometimes when you open a jar, the veggies overflow and start bubbling out the top. This is good! It just means your batch is rich with viable bacteria ready to go to work in your digestive tract and establish a new inner ecology.

Two of Our Beginners' Recipes

One important secret to making really delicious yet medicinal cultured veggies is to use freshly harvested, organic, well-cleaned vegetables. After washing the veggies, spin them dry. Clean equipment is essential. Rinse everything you use in very hot water.

Version 1

3 heads green cabbage, shredded in a food processor 1 bunch kale, chopped by hand
(optional): 2 cups wakame ocean vegetables (measured after soaking), drained and chopped, with spine removed
1 Tbsp. dill seed

Version 2

3 heads green cabbage, shredded in a food processor 6 carrots, large, shredded in a food processor
3-inch piece ginger, peeled and chopped
6 cloves garlic, peeled and chopped

To Make Cultured Vegetables:

1. Combine all ingredients in a large bowl.
2. Remove several cups of this mixture and put into a blender.
3. Add enough filtered water to make a "brine" with the consistency of a thick juice. Blend well and then add brine back into first mixture. Stir well. (If using starter culture, see below.)
4. Pack mixture down into a glass or stainless-steel, airtight container. Use your fist, a wooden dowel, or a potato masher to pack veggies tightly.
5. Fill container almost full, but leave about 2 inches of room at the top for veggies to expand.
6. Roll up several cabbage leaves into a tight "log" and place them on top to fill the remaining 2-inch space. Clamp jar closed.
7. Let veggies sit at room temperature for at least three days. A week is even better. Refrigerate to slow down fermentation. Enjoy!

To Use Body Ecology's Culture Starter:

Dissolve one package of starter culture in 1/4 cup warm (90^0 F) water. Add a small amount of sugar to feed the starter (try Rapadura, Sucanat, honey, agave nectar, or Body Ecology's EcoBloomTM). Let starter/sugar mixture sit for about 20 minutes or longer while the *L. plantarum* and other bacteria "wake up" and begin feeding on the sugar. Add this starter culture to the brine (step 3).

VIRUSES WORLDWIDE BATTLED BY GUT MICROBES

Source: By Dr. Mercola
http://articles.mercola.com/sites/articles/archive/2012/07/14/gut-microbes-for-healthy-immune-system.aspx

Three recent studies highlight the importance of maintaining a healthy gut to avoid disease and optimize your health. The first, published in the journal *Cell*[i], shows that "host-specific microbiota appears to be critical for a healthy immune system."

According to *Medical News Today*[ii]:

> *"Human microbe-colonized mice have gut immune systems that look essentially identical to germ-free mice," said Dennis Kasper of Harvard Medical School. "Even though they have the same number and diversity of bacteria, their immune systems don't develop properly.*
>
> *... The results might have implications for understanding the health consequences of our shifting diets, our excessive use of antibiotics, and our modern-day obsession with showers and antibacterial household cleansers, the researchers say.*
>
> *"Because the intestinal microbiota can regulate immune responses outside the gut, the absence of the 'right' gut microbes may conceivably shift the balance toward disease in individuals genetically predisposed to autoimmune diseases," they write, noting that our relationship with our gut microbiome today may be threatened by a combination of heavily processed foods, frequent treatment with antibiotics, and advances in hygiene.*
>
> *... Although modern medicine and technology may offer alternative ways to fight disease, Kasper says, "the current prevalence of autoimmune diseases - such as asthma, multiple sclerosis, and inflammatory bowel disease - may be, at least in part, the consequence of the increasing vulnerability of the coevolved human-microbe relationship."*

For those of you who have been reading this newsletter for any length of time, this is not at all surprising. I've written extensively on how the bacteria in your gut influence your overall health—physical, mental, and emotional. What this research does tell us though, is how important it is to have the *correct types* of microbes in your gut. Not just any microbe will do...

Unfortunately, as noted above, common lifestyle factors such as processed foods, antibiotics (both those prescribed and those found in conventionally-raised meats), birth control pills, and excessive cleansing and cleaning with antibacterial soaps and household cleaners all conspire to shift your intestinal microflora toward one that no longer supports your immune system.

Gut Microbes in Constant Combat with Viruses

You've probably heard that about 80 percent of your immune system resides in your gut, and the next study underscores this fact. It also provides yet another clue as to the kind of constant pressure your gut bacteria is under to keep your immune system humming.

The study, featured in *Genome Research*[iii], looked at a common set of viruses linked to gut bacteria in humans. These viruses, which feed off bacteria, are called phages, and they pose a constant threat to the health of the bacterial community living in your gut.

Phages can actually outnumber bacteria 10 to 1, which in itself is a testament to the power of your beneficial gut bacteria (and by extension your immune system) to keep disease at bay. But it also helps explain why just a few days of careless eating can sometimes make you feel a bit listless, or why chronic poor health is at such epidemic levels.

Between chemical assaults, inadequate nutrition, excessive sugar consumption and an overabundance of natural viral "co-hosts," your microflora has one heck of a job to maintain order and balance... And as soon as that balance is thrown off kilter, it will begin to reflect in your immune function.

Here, the scientists wondered how they might identify viruses that target gut microbiota; whether these viral communities differ between individuals and global populations; and how this might relate to human health and disease.

As reported by *Medical News Today*[iv]:

"Israeli researchers decided to use coded information from a bacterial immune system to get to the bottom of these questions. They discovered a process... to identify and evaluate phages in European individual's gut microbiota, discovering that almost 80 percent of phages are shared between two or more individuals. They then compared their data to samples they took previously from American and Japanese individuals and to their surprise, they also discovered phages that exist in their European data set.

According to [senior author Rotem] Sorek, ***this means that people's gut microbiota are repeatedly infected with hundreds of virus' types. "These viruses can kill some of our gut bacteria. It is therefore likely that these viruses can influence human health,"*** *he said. The researchers highlight that it is of key importance to gain a better understanding of the amount of pressure that is placed on the 'good' bacteria, which is crucial to maintain health...*

Scientists are now able to investigate how phage functions in the gut change over time and what impact this may have on diseases like inflammatory bowel disease, as well as finding more effective methods to treat these diseases." [Emphasis mine]

How Your Gut Flora Influences Your Health

An earlier study published in the April issue of *Nutrition in Clinical Practice*[v] also shows that microorganisms in the human gastrointestinal tract form a highly intricate, living fabric of natural controls that affect body weight, energy, and nutrition.

A couple of the key findings in this study were that each individual's community of gut microbes is unique, and the groundwork for each person's gut flora is laid from birth. In fact, the mode of delivery during the birthing process has been shown to affect an infant's microbial profile. This is in part why it's so important for pregnant women to become mindful of their gut health, as it will affect not just their own health, but also that of their child. It's not a static thing, however. Your gut flora is highly susceptible to environmental changes, and can rapidly respond to alterations in diet for example.

Dr. Natasha Campbell-McBride's research also demonstrates the dynamic interaction between your gut, your brain, and your immune system, starting from birth.

Download Interview Transcript

She has developed what might be one of the most profoundly important treatment strategies for a wide range of neurological, psychological, and autoimmune disorders—all of which are heavily influenced by your gut health. I believe her Gut and Psychology Syndrome, and Gut and Physiology Syndrome (GAPS) Nutritional program is vitally important for MOST people, as the majority of people have such poor gut health due to poor diet and toxic exposures, but it's particularly crucial for pregnant women and young children. Children born with severely damaged gut flora are more susceptible both to disease and to vaccine damage, which may help explain why some children develop symptoms of autism after receiving one or more childhood vaccinations, while others do not.

Previous research has also shown that your microflora has a significant impact on gene expression, such as the genes responsible for vitamin biosynthesis and metabolism. Probiotics have been found to influence the activity of hundreds of your genes, helping them to express in a positive, disease-fighting manner—some of which affect your body in a manner resembling the effects of certain medicines!

"Reseeding" Your Gut with Fermented Foods and Probiotics

Maintaining optimal gut flora, and 'reseeding' your gut with fermented foods and probiotics when you're taking an antibiotic, may be one of the most important steps you can take to improve your health. If you aren't eating fermented foods, you most likely need to supplement with a probiotic on a regular basis, especially if you're eating a lot of processed foods. Poor diet in general, and each course of antibiotics extols a heavy price, as it tends to wipe out the beneficial bacteria in your gut, giving pathogens free rein to proliferate unchecked.

Historically, people used to get large quantities of beneficial bacteria, i.e. probiotics, straight from their diet in the form of fermented or cultured foods, which were invented long before the advent of refrigeration and other forms of food preservation. As a result, they didn't suffer the same kinds of problems with their gut health as so many do today.

It's worth noting that each mouthful of fermented food can provide *trillions* of beneficial bacteria—*far* more than you can get from a probiotics supplement, which will typically provide you with colony-forming units in the billions. I thought this would be a good analysis, so I tested fermented vegetables produced with our probiotic starter culture to determine their probiotic potency and was astounded to discover they had *10 trillion* colony-forming units of bacteria. Literally, one serving of vegetables was equal to an entire bottle of a high potency probiotic!

Fermented foods also give you a wider variety of beneficial bacteria, so all in all, it's a more cost effective alternative. Fermenting your own foods can provide even greater savings, and is actually easier than you might think. To learn more, please listen to my interview with Caroline Barringer, a Nutritional Therapy Practitioner (NTP) who has been involved with nutrition for about 20 years. She's now one of Dr. Campbell-McBride's chief training partners, helping people understand the food preparation process.

Download Interview Transcript

References:

- [i] See All References

MAKING SAUERKRAUT

Source: Sandor Ellix Katz http://www.wildfermentation.com/making-sauerkraut-2/

Timeframe: 1-4 weeks (or more)

Special Equipment:

- Ceramic crock or food-grade plastic bucket, one-gallon capacity or greater
- Plate that fits inside crock or bucket
- One-gallon jug filled with water (or a scrubbed and boiled rock)
- Cloth cover (like a pillowcase or towel)

Ingredients (for 1 gallon):

- 5 pounds cabbage
- 3 tablespoons sea salt

Process:

1. Chop or grate cabbage, finely or coarsely, with or without hearts, however you like it. I love to mix green and red cabbage to end up with bright pink kraut. Place cabbage in a large bowl as you chop it.

2. Sprinkle salt on the cabbage as you go. The salt pulls water out of the cabbage (through osmosis), and this creates the brine in which the cabbage can ferment and sour without rotting. The salt also has the effect of keeping the cabbage crunchy, by inhibiting organisms and enzymes that soften it. 3 tablespoons of salt is a rough guideline for 5 pounds of cabbage. I never measure the salt; I just shake some on after I chop up each cabbage. I use more salt in summer, less in winter

3. Add other vegetables. Grate carrots for a coleslaw-like kraut. Other vegetables I've added include onions, garlic, seaweed, greens, Brussels sprouts, small whole heads of cabbage, turnips, beets, and burdock roots. You can also add fruits (apples, whole or sliced, are classic), and herbs and spices (caraway seeds, dill seeds, celery seeds, and juniper berries are classic, but anything you like will work). Experiment.

4. Mix ingredients together and pack into crock. Pack just a bit into the crock at a time and tamp it down hard using your fists or any (other) sturdy kitchen implement. The tamping packs the kraut tight in the crock and helps force water out of the cabbage.

5. Cover kraut with a plate or some other lid that fits snugly inside the crock. Place a clean weight (a glass jug filled with water) on the cover. This weight is to force water out of the cabbage and then keep the cabbage submerged under the brine. Cover the whole thing with a cloth to keep dust and flies out.

6. Press down on the weight to add pressure to the cabbage and help force water out of it. Continue doing this periodically (as often as you think of it, every few hours), until the brine rises above the cover. This can take up to about 24 hours, as the salt draws water out of the cabbage slowly. Some cabbage, particularly if it is old, simply contains less water. If the brine does not rise above the plate level by the next day, add enough salt water to bring the brine

level above the plate. Add about a teaspoon of salt to a cup of water and stir until it's completely dissolved.

7. Leave the crock to ferment. I generally store the crock in an unobtrusive corner of the kitchen where I won't forget about it, but where it won't be in anybody's way. You could also store it in a cool basement if you want a slower fermentation that will preserve for longer.

8. Check the kraut every day or two. The volume reduces as the fermentation proceeds. Sometimes mold appears on the surface. Many books refer to this mold as "scum," but I prefer to think of it as a bloom. Skim what you can off of the surface; it will break up and you will probably not be able to remove all of it. Don't worry about this. It's just a surface phenomenon, a result of contact with the air. The kraut itself is under the anaerobic protection of the brine. Rinse off the plate and the weight. Taste the kraut. Generally it starts to be tangy after a few days, and the taste gets stronger as time passes. In the cool temperatures of a cellar in winter, kraut can keep improving for months and months. In the summer or in a heated room, its life cycle is more rapid. Eventually it becomes soft and the flavor turns less pleasant.

9. Enjoy. I generally scoop out a bowl- or jarful at a time and keep it in the fridge. I start when the kraut is young and enjoy its evolving flavor over the course of a few weeks. Try the sauerkraut juice that will be left in the bowl after the kraut is eaten. Sauerkraut juice is a rare delicacy and unparalleled digestive tonic. Each time you scoop some kraut out of the crock, you have to repack it carefully. Make sure the kraut is packed tight in the crock, the surface is level, and the cover and weight are clean. Sometimes brine evaporates, so if the kraut is not submerged below brine just add salted water as necessary. Some people preserve kraut by canning and heat-processing it. This can be done; but so much of the power of sauerkraut is its aliveness that I wonder: Why kill it?

10. Develop a rhythm. I try to start a new batch before the previous batch runs out. I remove the remaining kraut from the crock, repack it with fresh salted cabbage, then pour the old kraut and its juices over the new kraut. This gives the new batch a boost with an active culture starter.

SAUERKRAUT OFFERS A SPECTRUM OF HEALTH BENEFITS

Source: www.naturalnews.com by Tara Green

(NaturalNews) Sauerkraut combines the health benefits offered by all cruciferous vegetables (a category which includes cauliflowers and brussel sprouts as well as cabbage) with the probiotic advantages derived from the fermentation process.

Cabbage offers a host of health benefits. It is high in vitamins A and C. Studies have shown the cruciferous vegetables can help lower cholesterol levels. Cabbage also provides a rich source of phytonutrient antioxidants. In addition, it has anti-inflammatory properties, and some studies indicate

it may help combat some cancers. However, this already helpful vegetable becomes a superfood when it is pickled.

The fermentation process used to make sauerkraut was probably first developed centuries ago simply as a means of preserving vegetables for easy consumption throughout the winter. The health benefits derived from pickling vegetables were already well-known to early civilizations. Historical evidence suggests laborers on the Great Wall of China consumed a version of the pickled cabbage dish 2,000 years ago.

Traditional Chinese has long prescribed sauerkraut juice as a home remedy for many common ailments . The armies of Genghis Khan most likely first brought the dish to Europe. The Roman army traveled with barrels of sauerkraut, using it to prevent intestinal infections among the troops during long excursions.

In periods and cultures when natural healing methods fell into disuse, people consumed fewer fermented foods and were subject to more illness. Scurvy (vitamin C deficiency) killed many British sailors during the 1700s, especially on longer voyages. In the late 1770s, Captain James Cook circumnavigated the world without losing a single sailor to scurvy, thanks to the foods his ship carried, including sixty barrels of sauerkraut.

Mainstream health experts began to pay renewed attention to sauerkraut after a study published in The Journal of Agricultural and Food Chemistry in 2002. Finnish researchers reported that in laboratory studies, a substance produced by fermented cabbage, isothiocyanates, helped prevent the growth of cancer.

Even before the laboratory study, however, alternative health experts extolled the healing benefits of sauerkraut because of the lactic acid bacteria produced as a side-effect of the pickling process.

Healthy human colons contain many beneficial bacteria which feed on the waste left over from our digestion, creating lactic acid. Without these beneficial bacteria the human digestive system becomes home to harmful parasites and yeasts, resulting in the condition of candida.

Sauerkraut provides a high density source of a wide range of beneficial live bacteria which assist in the digestive process. Consuming a serving of sauerkraut can give your body as much of a health boost as many of the expensive probiotic drinks and supplements sold in stores. However, most commercially sold sauerkraut have lost most of their beneficial bacterial organisms. To gain the most benefits from sauerkraut, you may want to purchase it freshly made, or learn how to make your own.

If you want to explore recipes for making sauerkraut and other fermented dishes, an excellent place to start is with Sandor Ellis Katz's Wild Fermentation: The Flavor, Nutrition and Craft of Live Culture Foods.

In his book, Katz points out that "Fermentation not only preserves nutrients, it breaks them down into more digestible forms." Katz, who also wrote The Revolution Will Not Be Microwaved: Inside America's Underground Food Movements, recommends not only eating sauerkraut but drinking the juice which he calls "a rare delicacy and unparalleled digestive tonic."

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HEALTH BENEFITS OF TAKING PROBIOTICS

Source: Harvard Medical School Family Health Guide

Bacteria have a reputation for causing disease, so the idea of tossing down a few billion a day for your health might seem — literally and figuratively — hard to swallow. But a growing body of scientific evidence suggests that you can treat and even prevent some illnesses with foods and supplements containing certain kinds of live bacteria. Northern Europeans consume a lot of these beneficial microorganisms, called probiotics (from *pro* and *biota*, meaning "for life"), because of their tradition of eating foods fermented with bacteria, such as yogurt. Probiotic-laced beverages are also big business in Japan.

Enthusiasm for such foods has lagged in the United States, but interest in probiotic supplements is on the rise. Some digestive disease specialists are recommending them for disorders that frustrate conventional medicine, such as irritable bowel syndrome. Since the mid-1990s, clinical studies have established that probiotic therapy can help treat several gastrointestinal ills, delay the development of allergies in children, and treat and prevent vaginal and urinary infections in women.

Self-dosing with bacteria isn't as outlandish as it might seem. An estimated 100 trillion microorganisms representing more than 500 different species inhabit every normal, healthy bowel. These microorganisms (or microflora) generally don't make us sick; most are helpful. Gut-dwelling bacteria keep pathogens (harmful microorganisms) in check, aid digestion and nutrient absorption, and contribute to immune function.

The best case for probiotic therapy has been in the treatment of diarrhea. Controlled trials have shown that *Lactobacillus GG* can shorten the course of infectious diarrhea in infants and children (but not adults). Although studies are limited and data are inconsistent, two large reviews, taken together, suggest that probiotics reduce antibiotic-associated diarrhea by 60%, when compared with a placebo.

Probiotic therapy may also help people with Crohn's disease and irritable bowel syndrome. Clinical trial results are mixed, but several small studies suggest that certain probiotics may help maintain remission of ulcerative colitis and prevent relapse of Crohn's disease and the recurrence of pouchitis (a complication of surgery to treat ulcerative colitis). Because these disorders are so frustrating to treat, many people are giving probiotics a try before all the evidence is in for the particular strains they're using. More research is needed to find out which strains work best for what conditions.

Probiotics may also be of use in maintaining urogenital health. Like the intestinal tract, the vagina is a finely balanced ecosystem. The dominant *Lactobacilli* strains normally make it too acidic for harmful microorganisms to survive. But the system can be thrown out of balance by a number of factors, including antibiotics, spermicides, and birth control pills. Probiotic treatment that restores the balance of microflora may be helpful for such common female urogenital problems as bacterial vaginosis, yeast infection, and urinary tract infection.

Many women eat yogurt or insert it into the vagina to treat recurring yeast infections, a "folk" remedy for which medical science offers limited support. Oral and vaginal administration of *Lactobacilli* may help in the treatment of bacterial vaginosis, although there isn't enough evidence yet to recommend it over conventional approaches. (Vaginosis must be treated because it creates a risk for pregnancy-related complications and pelvic inflammatory disease.) Probiotic treatment of urinary tract infections is under study.

Probiotics are generally considered safe — they're already present in a normal digestive system — although there's a theoretical risk for people with impaired immune function. Be sure the ingredients are clearly marked on the label and familiar to you or your health provider. There's no way to judge the safety of unidentified mixtures.

In the United States, most probiotics are sold as dietary supplements, which do not undergo the testing and approval process that drugs do. Manufacturers are responsible for making sure they're safe before they're marketed and that any claims made on the label are true. But there's no guarantee that the types of bacteria listed on a label are effective for the condition you're taking them for. Health benefits are strain-specific, and not all strains are necessarily useful, so you may want to consult a practitioner familiar with probiotics to discuss your options. As always, let your primary care provider know what you're doing.