



## Fermented Foods and Health

Do you know what chocolate, cheese, kimchi, and sourdough bread all have in common? These foods may seem very different at first, but they are all linked by the actions of microscopic organisms. This is because they are all fermented foods, which means that they have been chemically broken down or changed by microbes such as bacteria, molds, or yeasts.

Fermentation is an ancient food preparation method that is gaining newfound popularity. It involves a range of foods, techniques, and types of microbes. Most people are familiar with fermented foods such as yogurt and sauerkraut. However, did you know that traditional corned beef is also fermented, and that the flavors of chocolate would not exist if the cacao beans were not fermented after harvest?

Fermentation helps preserve foods, which was especially important before refrigerators and chemical preservatives. It also creates unique flavors in foods that are beloved components of many local cuisines. Examples include kimchi in Korea, stilton blue cheese in the United Kingdom, and iguanaq (fermented walrus) in Canada. Furthermore, consuming fermented foods may come with added health benefits.

## Health benefits of fermented foods

In spite of the long history of fermentation, we still do not *fully* understand the potential health benefits of fermented foods. Yet, there appears to be three primary ways in which fermented foods could improve health. Fermentation may:

1. **Increase the availability of nutrients in some foods.** As microbes break down a food through fermentation, they may help release nutrients so that our bodies can more easily absorb those nutrients, making them more bioavailable, or more available for our bodies to use. Studies show that fermentation can increase the bioavailability of some proteins and minerals in foods such as grains, beans, and dairy.
2. **Contribute to the formation of new compounds** such as organic acids, phenols, proteins, and antioxidants. These compounds play an active role in bodily functions and health, with beneficial properties ranging from being antimicrobial to inhibiting tumor growth.
3. **Provide a source of probiotics.** Some microbes responsible for fermentation are called probiotics. Probiotics are live microorganisms that impart a health benefit to the person eating them, when consumed in adequate amounts. Studies have shown that probiotics may positively affect our digestion, mood, immune system, and metabolism.

## Tips to include more fermented foods in your diet

As you can see, fermented foods have a range of potential health benefits. Below are some tips about how to add more fermented foods to your diet.

- Make your own sauerkraut or other fermented veggies. Check out the [kimchi recipe](#) located on the Colorado Farm to Table website to get started. Alternatively, look for fermented sauerkraut, kimchi, and pickles at your grocery store. Look for ones that are refrigerated, that do not have vinegar in the ingredients, and that say “raw” or “fermented” on the label. (Most of the pickles and sauerkraut found in grocery stores today are heated and made with vinegar, rather than fermented.)
- Use fermented veggies such as sauerkraut, kimchee, pickles, and carrots to top sandwiches, meats, salads, and even soups. Eat them as an appetizer, a side dish, or even a snack!
- Try your hand at sourdough bread. Learn the basics with the [sourdough guide](#) on the Colorado Farm to Table website. You can also buy sourdough bread. Look for bread that lists sourdough starter, rather than yeast, in the ingredients.
- Eat more yogurt. Try it with fruit and granola for breakfast, as an easy snack, as a base for dips, or as a substitute for sour cream. Read the yogurt label to make sure that it says it says “live and active cultures”. Steer away from yogurt that has a lot of added sugar. You can experiment with making your own, as well!
- Look for kombucha at your local grocery, or make this bubbly fermented tea at home. [Find out how](#) at Colorado Farm to Table. Try it plain or flavored!

Have fun trying out new fermented foods, and enjoy familiar ones as well. They are not only a delicious addition to our diets, but a healthy one, as well!

## Fermenting Foods Safely

Regardless of the reason to incorporate fermented foods or beverages into a lifestyle, fermenting and food safety naturally go hand-in-hand, and steps to ensure a safe product must be practiced.

Fermenting can be intimidating because it involves a shift in mindset from getting rid of microorganisms to respecting and working with the microorganisms. The fermenting microorganisms can be either “wild” or already on the food (for example: on cabbage for sauerkraut) or added as a starter culture (for example: add to milk for yogurt). When provided a safe and suitable environment for growth, fermenting microorganisms can outcompete the microorganisms that could potentially be harmful or cause spoilage. Our role is to monitor and control the factors important for microbial growth, or to manage the ecosystem. Consider these tips as you practice fermenting your own foods:



Photo: Pickles <https://flic.kr/p/eeaCuv>

- **Follow a reputable and trusted recipe or resource**, but also keep your own records of your process. This helps set the stage for a safe and desirable end-product.
- **Understand and apply best practices.** The food, amount of salt, moisture, oxygen levels, and temperature all play a role in allowing the food to safely ferment. With appropriate oxygen and temperature control, microorganisms, especially lactic acid bacteria, actually digest the carbohydrates in the food and create organic acids, such as lactic acid. These organic acids acidify the product to a pH level below 4.6, which would make it more difficult for growth of harmful microorganisms. Salt is needed to support a suitable fermentation environment in many ferments, especially vegetables. Salt helps set up the environment to favor certain bacterial species over others, as well as block the oxygen exposure. Spoilage microorganisms often rely on oxygen, which is why a head of cabbage just left in the crisper drawer of your refrigerator will rot instead of ferment.
- **Always practice proper hygiene.** Wash your hands thoroughly, clean and sanitize equipment, and block exposure to pests and airborne contaminants.
- **When finished fermenting, refrigerate.** When maintained safely, fermented products can be kept refrigerated longer than the initial fresh product. The length of time depends on the end-product, plus oxygen exposure or potential contamination from use that might compromise the safety and quality of the product.

Whether you are determined to start your first or hundredth batch of yogurt, kimchi, sourdough, or kombucha, be cautious of simply following the traditions passed down from ancestors. The food system has changed, our materials have changed, and our lifestyles have changed as well as our understanding of the biological and chemical processes involved in fermentation. Be mindful of the needs of your microscopic partners, and enjoy safely creating fermented products.

**Sources:**

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