



Fermentation Troubleshooting Quick Guide

Following a tested recipe is the safest way to ferment foods. Many foods begin at a neutral pH around 7.0. To prevent *Staphylococcus aureus* toxin formation, food must ferment to below pH of 5.2 within the first 24 hours, assuming fermentation is happening at 60-80°F. Foods should reach a pH of 4.6 or below within 48 hours to reduce growth of pathogenic bacteria and/or spoilage microorganisms. Following a tested recipe exactly increases the likelihood of success and reduces the chances that the pH may be off.

As fermentation takes place some changes may seem to be undesirable but are actually a normal part of the process. Other changes are indeed undesirable and should be a cause for concern. See below for the most common changes during fermentation.

Note

Tested recipes are based on average room temperatures around 73°F. Fermentation taking place at temperatures above 85°F may not be predictable; there is a good chance of pathogenic and/or spoilage microorganism growth. At temperatures below 65°F fermentation will take longer to complete.

Surface Growth

Molds and/or yeast growing on the surface of the fermenting food should be skimmed off and not be allowed to grow as they will change the acidity. Growth occurs best in air, so make sure to create and maintain anaerobic conditions. If growth is noticed test pH, if off discard.



Foaming

Foaming during fermentation is due to carbon dioxide formation. Foaming is expected and normal, but it may not happen or even be noticeable. If foaming occurs, skim off.

Mushy

Mushy ferments are often indication of improper fermentation due to a weak brine, too high a temperature during fermentation, uneven salt distribution or air pockets. Mushiness is caused by spoilage microorganisms, but pathogenic microorganism can also be present; it is best practice to discard.

Bitter

Bitterness may be due to spices, vinegar, dry weather or using salt substitutes.

Smelly

Fermentation gives off odors and is normal, but if the smell is foul this can indicate problems such as pathogenic and/or spoilage microorganism growth. It is best practice to check pH and, if off, discard.

Insects

Keep fermenting foods protected from insects as they will lay eggs on the surface and can lead to physical contamination and off flavors. Keep the container securely covered with cheese cloth or muslin to keep insects out.

Color Changes

Color changes are expected, green cabbage may turn yellow or pinkish. If pickles are too dark it may be due to hard water (high mineral content), using ground spices or leaving the whole spices in the fermenting container.

It is important to use non-reactive metals when fermenting. The use of brass, iron, copper or zinc containers will cause darkening due to their reactivity. Foods fermented in these types of containers should not be eaten.

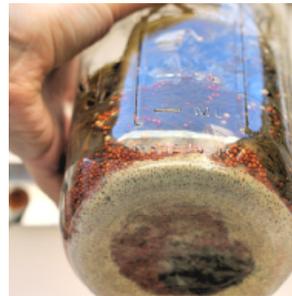
Slimy and/or Ropy

Slimy ferments are usually caused by fermenting at too high a temperature as spoilage microorganisms can outcompete the fermenters. Slimy/runny yogurt can occur when milk proteins are not denatured with adequate heating.



Sediment

Sediment may be caused by bacteria present during fermentation or due to not using canning salt.



Too Salty

Fermented foods may be rinsed before consuming if they are too salty. Do not reduce the salt in tested recipes, the salt concentration is necessary for full fermentation as salt is selecting for the correct bacteria.

Hollow

Hollow pickles can be due to improper fermentation or caused by using produce that is too large, too mature and/or has growth defects.

Shriveled

Shriveling is caused by using mature produce, cooking too long, using too strong a brine or dry weather.

