



Unpasteurized Fruit Juices and Ciders: A Potential Health Risk

What is the problem?

In the last decade in North America over 1,700 people have fallen ill after consuming juice and cider. Most of these outbreaks involved unpasteurized juices and ciders such as apple cider, orange juice and lemonades. Other fresh fruit juice outbreaks included pineapple, carrot, coconut, cane sugar, banana, acai and mixed fruit juices (source: CSPI, Outbreak Alert! Database)

The pathogens, or biological agents, responsible for these illnesses and deaths include bacteria (viral and parasitic groups) as well as metal contaminants. The most common pathogens were *E.coli* O157 and O111, *Salmonella*, *Cryptosporidium* and norovirus. A few other outbreaks were due to *Vibrio cholerae*, *Clostridium botulinum*, yeast and hepatitis A.

Is this a serious problem?

Yes! *E. coli* O157:H7 and *Salmonella* can make you very sick. For instance, some people get permanent kidney damage (hemolytic uremic syndrome or HUS) from *E. coli* O157:H7 infections. Others have died. Hepatitis can cause liver damage. Botulism impairs nerve transmission and in severe cases causes deaths. *Cryptosporidium* causes prolonged diarrheal illness.

Who is at greatest risk?

Infants, young children, older adults, and people with weakened immune systems (such as those with HIV or those being treated for cancer) are most at risk. These people are safe to drink pasteurized juice and should keep juices refrigerated.

Facilities that serve juice such as schools, child and adult daycares, and hospitals, should make sure it is pasteurized. Children on field trips to farms or farm markets should not drink unpasteurized juice.

Where do pathogens like *E. coli* O157:H7 come from?

These bacteria are commonly found in cattle feces. Most outbreaks of *E. coli* O157:H7 illness have been linked to food or water that has been contaminated with cattle feces. In the case of fruit juice, the fruit that the juice is made from can be contaminated with animal feces in several ways: from lying on ground where cattle or other animals have been; from fertilizers made from animal wastes; or from being carried in a container that has been contaminated. *E. coli* O157:H7 can also be spread by birds and humans. This is also true for pathogens such as *Cryptosporidium* (spread by cattle), *Salmonella* (spread by birds) and *C. botulinum* (found in soils). Other pathogens, such as norovirus and hepatitis A are spread by humans from poor food handling and handwashing practices.

How can you protect your family?

Only purchase juice that has been pasteurized by the manufacturer. Most juices sold in stores are pasteurized.

The best way to kill pathogens like *E. coli* O157:H7 and other bacteria is via pasteurization. According to Health Canada and the Canadian Food Inspection Agency, people who are at greatest risk of serious illness should boil unpasteurized juice before drinking it. This is the safest way to protect yourself at home.

Does heating spoil the juice?

Most commercially processed juices are heated to about 85°C for about 16 seconds to destroy yeast and mold. These products are just as nutritious as if they were not heated. They taste good and last much longer than untreated juice.

Will refrigeration make the juice safe?

Refrigeration alone does not destroy *E. coli* O157:H7 or other bacteria. Refrigeration does slow the growth of germs, bacteria, yeast and mold in juices, but it will

not make or keep unpasteurized juice safe. Opened juices and unacidified juices such as carrot juice, should always be kept refrigerated. Check the label instructions on the juice.

What about washing the fruit before you make the juice?

Washing the fruit before you make juice will reduce the numbers of harmful germs and bacteria on the peel, but it will not remove them all. Using a mild soap and/or a weak bleach solution (one teaspoon or 5 mL bleach to a litre of water) will help when you wash the fruit. Because it takes only a few of these organisms to make you sick (especially if you are at higher risk), washing alone cannot be relied upon to eliminate the risk of getting sick.

How to pasteurize apple juice for home storage

If you prepare juices at home, the following steps will help make the juice safe:

1. Read through the safety advice from Health Canada at www.hc-sc.gc.ca/fn-an/securit/facts-faits/unpast_fruit_juices-jus_fruits_cidre_nonpast-eng.php
2. When making your own juice from fresh apples - or fruits - using a home juicer, follow the “Code of Practice for the Production and Distribution of Unpasteurized Apple and Other Fruit Juices/Cider in Canada.” This resource has been provided by the Canadian Food Inspection Agency (CFIA) and can be found at www.inspection.gc.ca/english/fssa/protra/codee.shtml. This code should also be followed if you purchase unpasteurized juice from an operation such as a roadside stand.
3. Ascorbic acid may be added to prevent the juice from darkening. Ascorbic acid and instructions for use are available from wine-making shops.
4. Remove pulp, if desired, by adding a pectic enzyme. After settling overnight, siphon the clear juice into another container for heating. Pectic enzymes are also available at wine-making shops.
5. Pasteurize the juice using a double-boiler. Heat the juice to about 70°C (158°F), stirring frequently. Keep it at 70°C for at least 1 minute. This will make sure that all *E. coli* O157:H7 bacteria, as well as other organisms such as mould, are destroyed.

6. Pour the juice into clean, sterilized preheated bottles. Seal with new caps. The bottles must be preheated to prevent them from breaking due to heat shock.
7. This juice should keep a fairly long time if poured into bottles while it is still hot. The heat will destroy airborne yeast and mould. If the juice is bottled after it has cooled down, it will have a limited shelf-life, even if it is refrigerated.

NOTE: Less acidic juices, such as carrot juice or high-pulp juices, should also be pasteurized by heating to a temperature of at least 70°C for 1 minute. In addition, these juices **MUST** be kept refrigerated to prevent the outgrowth of *C. botulinum* spores that are not destroyed by pasteurization and may lead to botulism toxin formation in the juice. Unpasteurized fruit juices should not be consumed by at risk populations.

For further information about food safety, see these HealthLink BC Files:

[#03 Pasteurized and Raw Milk](#)

[#22 Home Canning - How to Avoid Botulism](#)

[#59a Food Safety: Easy Ways to Make Food Safer](#)

[#59b Food Safety for Fresh Fruits and Vegetables](#)

[#59c Food Safety: Instructions on Food Labels](#)

Reference:

[USFDA Guidance for Industry: Juice HACCP Hazards and Controls Guidance First Edition; Final Guidance](#)



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