

Fact Sheet on *E. coli* O157:H7

What is *E. coli*

Escherichia coli (*E. coli*) is a coliform bacterium that is commonly found in the intestine of animals and humans. Hundreds of different *E. coli* strains exist and most are harmless. In fact, some strains of *E. coli* are essential because they aid in the digestion of food and produce vitamins K and B. Unfortunately, some *E. coli* strains can cause diarrhea, urinary tract infections, respiratory illness or pneumonia. The *E. coli* O157:H7 is one of the potentially deadly forms of *E. coli* that can cause severe illness, permanent kidney damage, brain damage, and even death in humans.

What is *E. coli* O157:H7

E. coli O157:H7 is one of the potentially deadly forms of *E. coli* that can cause severe illness, permanent kidney damage, brain damage, and even death in humans, particularly in children, seniors and people with weakened immune systems. *E. coli* O157:H7 is the strain that produces toxins (or poisons) and can destroy the cells of the human intestine and kidneys resulting in bloody diarrhea and kidney failure in most severe cases. This is why *E. coli* O157:H7 is also referred to as enterohemorrhagic *E. coli* (EHEC) or verotoxinogenic *E. coli* (VTEC), reflecting the human illnesses associated with it.

Where is *E. coli* O157:H7 found

E. coli O157:H7 can be found in cattle, sheep, horses, goats, elk, pigs, deer, opossums, raccoons, dogs, poultry, wild birds and houseflies. The bacteria can be found throughout the environment, anywhere animals (including pets) co-exist with humans. There are four major routes of human *E. coli* O157:H7 exposure:

1. Contamination of meat at slaughter;
2. Contamination of fresh fruits and vegetables if water used for washing produce is contaminated with *E. coli* O157:H7 from livestock manure and manure run-off;
3. Exposure at fairs where livestock is present or at petting zoos;
4. Contamination of recreational water (e.g. swimming in contaminated lakes, rivers, ponds or pools not properly maintained).

E. coli O157:H7 lives in the intestines of cattle and can be transferred to the outer surface of meat when an animal is butchered. Research data show that as many as 100 percent of cattle lots may test positive for *E. coli* O157:H7 when they arrive at packing plants. This is why meat packers and processors need to implement the best manufacturing practices available to prevent contamination of the meat products, particularly ground beef because the process of grinding can then spread the bacteria throughout the meat.

Nevertheless, *E. coli* O157:H7 is found less than 1 percent of the time in ground beef as a result of precautionary measures and food safety technologies used by packers, including a series of anti-microbial treatments applied throughout the slaughter and processing steps.

What is the meat industry doing to prevent *E. coli* O157:H7

The Canadian beef industry is committed to reducing and ultimately eliminating *E. coli* O157:H7 on beef products through comprehensive beef safety research efforts to develop efficient control measures.

Continuous efforts are deployed to improve the beef production system and implement the best measures that are technically possible to prevent the pathogen from entering the food supply. The intervention strategies include hot water or steam thermal treatments of carcasses and meat cuts, the use of organic acid rinses as well as aggressive and statistically sound testing programs.

Meat processors have also developed internationally recognized systems known as HACCP (Hazard Analysis and Critical Control Point) to control *E. coli* O157:H7 and other food borne bacteria in order to prevent them from contaminating the meat products. HACCP systems identify potential food safety hazards and ensure that these hazards are controlled or eliminated before they affect the final product.

Advice to consumers

In the case of intact whole muscle cuts (non-mechanically needled) like steaks and roasts, bacteria can only be found on the surface of these foods. Cooking these products destroys any bacteria present on the outside of these meat cuts. However, when meat is ground, any bacteria present on the surface are distributed throughout the ground product. That is why it is so important to ensure that ground meats are thoroughly cooked.

Consumers should take special care to cook ground beef products and other ground meats thoroughly as ground beef can turn brown before disease-causing bacteria are killed. Use a digital instant read food thermometer to ensure thorough cooking to an internal temperature of 71°C (160°F).

Other safe food handling messages that can help consumers fight *E. coli* O157:H7 include:

Hand washing and food contact surface cleaning

- ✓ Wash hands often with soap and water before handling food – be especially vigilant after using the washroom, changing diapers, or handling animals.
- ✓ Clean and sanitize all food contact surfaces including counter tops, cutting board and utensils with a mild bleach solution before and after food preparation.

Prompt refrigeration of food products

- ✓ Keep meat in the refrigerator at 4°C (40°F) or below.

- ✓ Thaw meat in the refrigerator, not at room temperature.

Avoid cross-contamination

- ✓ Do not re-use knives, cutting boards, plates, etc. that have been in contact with raw meat until they have been thoroughly cleaned and sanitized with a mild bleach solution.
- ✓ Don't place cooked meat on the plate or tray you use to carry the raw meat.

Helpful links

Canadian Meat Council

<http://www.cmc-cvc.com>

American Meat Institute

<http://www.meatami.com/>

Meat Safety

<http://www.meatsafety.org/>

Canadian Partnership for Consumer Food Safety Education

<http://www.canfightbac.org/>

Health Canada

<http://www.hc-sc.gc.ca/hl-vs/iyh-vsv/food-aliment/meat-viande-eng.php>

The Canadian Food Inspection Agency

<http://www.inspection.gc.ca/english/fssa/concen/cause/ecolie.shtml>

The Humane Society of the United States

http://www.hsus.org/wildlife/issues_facing_wildlife/zoos/health_dangers_at_petting_zoos_and_fairs.html

MamasHealth.com

<http://mamashealth.com/food/ecoli.asp>