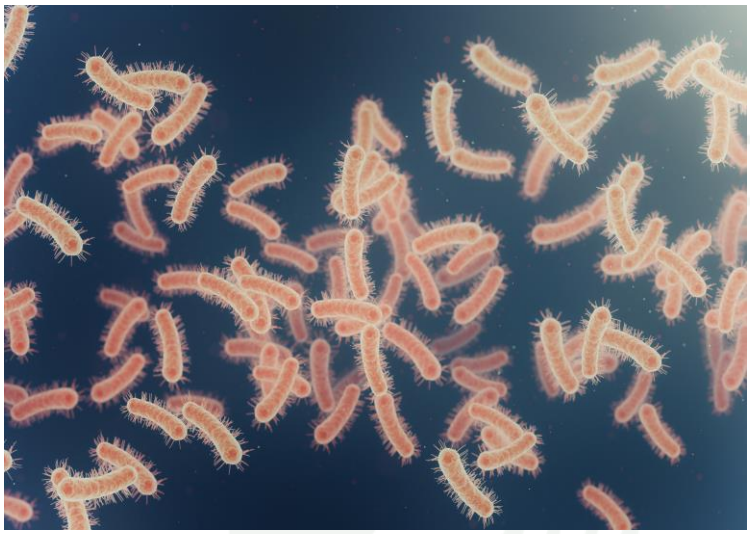
MY FOOD SAFETY MICROORGANISM PROFILE

Escherichia coli 0157:H7



Characteristics: **Gram-negative, non-motile,** non-**spore** forming, **facultative anaerobic, rod shaped**

Minimum heat treatment: 80°C core temperature (equivalent to 70°C for a minimum of 2 minutes).

Sources: The intestinal tract of animals and also readily found in contaminated water

Growth temperature: from 7 to 48.5°C
Optimum 30-37°C
Minimum 7°C

Water activity (**aw**):
Minimum 0.95
Maximum 0.995

Minimum growth (**pH**): 4
Optimum 6-7
Maximum 10

Salt tolerance (**NaCl**): up to 6%

Foods most often implicated: undercooked meat (especially ground beef & sausages), raw meat juices, **unpasteurised** dairy products (milk & soft cheeses), **unpasteurised** juices and raw produce (fruit & vegetables) contaminated by animals or farm effluent. Mainly C1, C2, C5, C6 and C8.

Pathogenicity factor: 4*

Illness on-set (**gestation period**): 2-10 days after the toxin is ingested.

Important factors:

1. The growth of **Escherichia coli 0157:H7** in foods is a public safety hazard as it produces the **Shiga toxin** that can cause food poisoning when ingested.
2. **E. coli 0157:H7 food poisoning (STEC)** symptoms may include mild to severe stomach cramps, diarrhea which is often bloody (hemorrhagic colitis), vomiting and sometimes fever.
3. **STEC** can also cause the potentially life-threatening complication known as **haemolytic uremic syndrome (HUS)**, where damaged red blood cells clog the kidneys leading to kidney failure.
4. **STEC** is more commonly known as **Hamburger Disease**, because it is frequently associated with eating inadequately cooked ground beef.
5. **E. coli 0157:H7** is exceptionally tolerant of acid pH and therefore able to survive and grow in many food products types

Additional control information:

STEC is acquired by eating food containing the live bacterial cells. **E.coli** live in the intestines of some healthy cattle and contamination of the meat carcass can occur in the slaughtering process. Eating meat that is rare or inadequately cooked is the most common way of getting **STEC**. Person to person transmission can occur if infected **food handlers** do not wash their hands after using the toilet. Contamination of the food processing environment (e.g. cutting boards, work tops and cloths etc.) may also be a source of infection, therefore maintaining clean and sanitary food preparation surfaces is also of paramount importance. Foods contaminated with **E. coli 0157:H7** can multiply rapidly and can survive freezing, making it particularly difficult to manage.

Guidelines and limits: Food intended to be given a treatment before consumption, to lower the risk from **STEC**, is considered **RTC.** Heat treatment includes a core temperature of a minimum of 80 °C (or equivalent temperature and time combinations, e.g. 70 °C for two minutes) is considered to be thorough cooking, being effective in eliminating microorganisms of concern (based on **a 6 log reduction of Listeria monocytogenes**.). Any such foods shown to contain living (viable) STEC isolated in 25 g of food is deemed to make the food unsafe.

MyFoodSafety.Net

Authored by: Bob Lock
Version: 1
Issued 20/05/2020