

What is **zoonotic *E. coli***?

- *Escherichia coli* (*E. coli*) is a bacterium that is found in the gastrointestinal tract of all humans and most warm-blooded animals, and which is part of the normal bacterial flora. However, some *E. coli* strains can cause diseases and lead to serious infection.
- VTEC/STEC (verotoxin- or shigatoxin-producing *E. coli*) strains have the potential to cause bloody diarrhoea and haemolytic uremic syndrome (HUS) in humans, a serious complication that can be fatal. A virulent, rare strain of VTEC known as O104:H4 was identified as the source of the *E. coli* outbreaks that struck Germany and France in the spring and summer of 2011.
- Humans are infected with VTEC by consuming or handling contaminated food or water or through contact with infected animals. Person-to-person transmission is also possible among close contacts (in families, childcare centres, nursing homes, etc.). A wide variety of food has been implicated in outbreaks, including raw (unpasteurised) milk and cheese, undercooked beef and a variety of fresh produce (such as sprouts, spinach and lettuce).

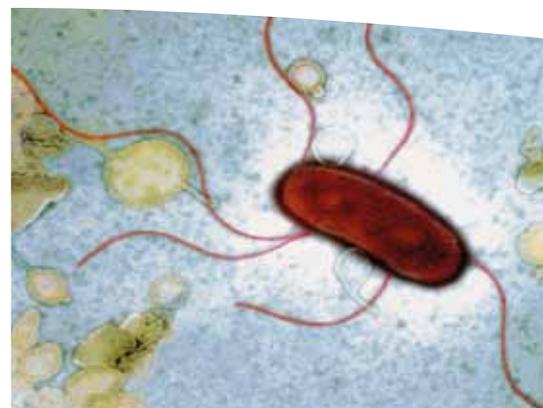


- The main source of such strains is ruminants, particularly cattle. Meat can become contaminated by faecal matter due to poor processing methods during slaughter. Faeces from infected animals can contaminate other foods and water.
- Following an incubation period, usually of about three to four days, a variety of gastrointestinal symptoms appear in humans, ranging from mild to severe bloody diarrhoea, mostly without fever.

- HUS is a serious medical complication that can develop in patients, characterised by haemolytic anaemia (caused by the abnormal breakdown of red blood cells) and thrombocytopenia (reduction of platelets needed for blood clotting) leading to severe, bloody diarrhoea. HUS is associated with severe acute renal failure, often requiring intensive care.
- Consumers can often reduce the risk of falling ill from potentially contaminated food, animals or another ill person by following good hand hygiene and food handling practices. ■

EFSA's role and **EU-wide** cooperation

EFSA, in collaboration with the European Centre for Disease Prevention and Control (ECDC), plays an important ongoing role in helping to protect European consumers from toxigenic strains of *E. coli* by monitoring the prevalence of the bacteria across the region and by conducting risk assessments, such as the role of different foods in the transmission of this infection to humans. >>>



E. coli bacterium

- › Verotoxin-producing *E. coli* (VTEC) are strains of *E. coli* that produce toxins which are harmful – sometimes fatal – to humans.
- › EFSA, in cooperation with the European Centre for Disease Prevention and Control (ECDC), plays an important ongoing role in protecting European consumers from toxigenic strains of *E. coli* by monitoring the prevalence of the bacteria in its annual EU Summary Reports on trends and sources of zoonoses, zoonotic agents, antimicrobial resistance and food-borne outbreaks and providing scientific advice on related health risks.
- › A total of 3,573 confirmed VTEC infections in humans were reported in the European Union in 2009. Among animals and foodstuffs, human pathogenic VTEC bacteria were most often reported in cattle and bovine meat.
- › EFSA was closely involved in the response to the outbreak of the rare O104:H4 strain in Germany and France in 2011, cooperating with the European Commission, ECDC, EU Member States, the World Health Organisation and the Food and Agriculture Organisation.

WHAT ARE ZOONOSES?

Zoonoses are infections or diseases that can be transmitted directly or indirectly between animals and humans, for instance by consuming contaminated foodstuffs or through contact with infected animals.

Food-borne zoonoses are a significant and widespread public health threat. Research indicates that between one third and one half of all human infectious diseases have a zoonotic origin, that is, are transmitted from animals, directly or indirectly.

Europe on alert: the O104:H4 outbreaks of 2011

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EFSA and ECDC use data collected from individual Member States to monitor and analyse the situation with regard to zoonoses, antimicrobial resistance and food-borne outbreaks in Europe. The results are presented in the annual EU Summary Reports on zoonoses, food-borne outbreaks and antimicrobial resistance and in other reports on specific zoonoses issues.

EFSA and its Task Force on Zoonoses Data Collection work openly and transparently to deliver timely scientific data and analysis of the highest standards to support risk assessors and the policies and decisions of risk managers.

The Task Force comprises representatives of Member States, other reporting countries as well as the European Commission, the World Health Organisation (WHO) and the World Organisation for Animal Health (OIE).

EFSA's Panel on Biological Hazards provides independent scientific advice on biological hazards in relation to food safety and food-borne diseases. The Panel has produced a number of risk assessments concerning VTEC.



Diagram: EU actors dealing with zoonoses

Between the beginning of May and July 2011, more than 770 cases of haemolytic uremic syndrome (HUS) and 3,100 cases of VTEC were reported across the EU following the outbreak in Germany. There were 47 confirmed deaths. Investigations identified seed sprouts as the most likely probable source. It was the biggest food-borne bacterial outbreak in Germany in the last 60 years.

EFSA responded to the outbreak by liaising with German risk managers and risk assessors, the European Commission, and ECDC. On 3 June it issued a joint statement with ECDC that provided information on infection and transmission modes and advice on how to avoid infection.

On 6 June the Commission urgently requested EFSA to provide scientific assistance and advice on the outbreak. EFSA published a fast-track risk assessment on the risks to public health from the consumption of raw vegetables. EFSA's scientists pointed out a number of reports in scientific literature of VTEC outbreaks associated with vegetables, particularly sprouting seeds and green, leafy salad vegetables.



On the same day, EFSA published a technical report jointly with ECDC on the prevalence and incidence of VTEC in humans, food and animals.

On 24 June, the French authorities reported a cluster of cases of patients suffering from bloody diarrhoea. Bacteriological tests identified O104:H4 as the probable cause – the same rare strain that was responsible for the outbreak in Germany. All of the cases were associated with an event near Bordeaux where seed sprouts were consumed. EFSA implemented its established urgent response procedures and jointly prepared with ECDC a rapid risk assessment of the German and French O104:H4 outbreaks. On 27 June EFSA set up a Task Force to trace back the implicated seeds through the EU supply and distribution chain.

The Task Force, which included specialists from Member States and the Commission, and scientists from ECDC, WHO and FAO, delivered its report on 5 July, concluding that one lot of fenugreek seeds imported from Egypt and used to produce sprouts was the likely link between the two outbreaks.

EFSA recommended to the Commission that all efforts be made to prevent further consumer exposure to the suspect seeds and that forward-tracing be carried out in all countries which may have received seeds from the suspect lots. After EFSA published its report, the EU was able to take measures to protect European consumers. On 3 October, EFSA updated its consumer advice on sprout consumption following completion by Member States of tracing activities across the food chain.



Fenugreek seeds

Committed to ensuring that Europe's food is safe