



Description:

- Discovered by Theodor Escherich in 1885.
- *Escherichia coli* (*E. coli*) is a Gram-negative, facultative anaerobic, rod-shaped bacterium normally found in the intestines of humans and animals. Most strains are harmless and an important part of a healthy intestinal tract.

Interesting Facts:

- This bacteria is the best or most-studied free-living organism and has a record of 11 prestigious Nobel prizes associated with it.
- More than 700 serotypes of *E. coli* have been identified.
- It causes infection by producing Shiga toxins - how severe you suffer depends on the type of *E. coli*.
- What makes *E. coli* remarkably dangerous is its very low infectious dose and how difficult it is to kill.
- It can grow with or without oxygen.
- The best-known and most notorious type is *E. coli* O157:H7.
- *E. coli* can be used to make useful substances, like human insulin, human growth factor, taxol and epidermal growth factor.

Infection:

- *E. coli* bacteria may give rise to infections in wounds, the urinary tract, biliary tract, and abdominal cavity.
- It can cause septicaemia, neonatal meningitis, infantile gastroenteritis, tourist diarrhoea, and haemorrhagic diarrhoea.
- An *E. coli* infection may also arise due to environmental exposure.
- Infections with this type of bacteria pose a serious threat to public health with outbreaks arising from food and water that has been contaminated with human or animal faeces or sewage.

In the Lab / at Wickham Laboratories Ltd

- Both MacConkey broth and MacConkey agar are used to examine for the presence / absence of *E. coli*. Growth of colonies on MacConkey agar indicates the possible presence of *E. coli*. This is then confirmed using identification techniques such as MALDI-ToF (Matrix Assisted Laser Desorption Ionization-Time of Flight).
- The presence / absence of *E. coli* is one of the standard quality control (QC) tests required in the British, European, Japanese and US Pharmacopoeias for oral products (Ph. Eur. 2.6.13, USP <62> and <51>, JP 4.05).
- The presence / absence of this bacteria is also included in the QC testing for products with raw materials of natural origins. It may also be included in testing for other products if the risk assessment by the client deems it to be necessary.
- *E. coli* is one of the microorganisms required in both the USP Antimicrobial Effectiveness Test and the Preservative Efficacy testing of oral products (Ph Eur. 5.1.3.).
- It is one of the gallery of microorganisms used in growth promotion tests of in-house media for Microbiological Quality of Non-sterile products.
- It can be used as a challenge microorganism for the NHS Method: Protocols for the Integrity Testing of Syringes.

