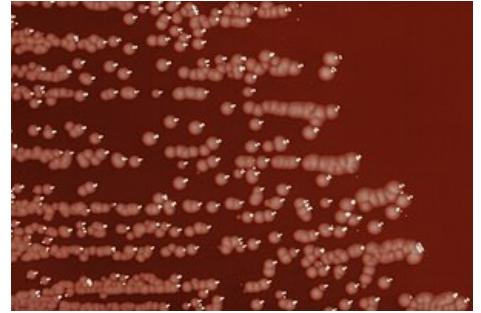


# Yersinia enterocolitica

*Yersinia enterocolitica* is a **G- non-sporulating, facultatively anaerobic** straight rod. It is pathogenic to humans and is the cause of human **yersiniosis**. The disease is transmitted alimentary through infected raw pork. It is widespread cosmopolitantly. The prevention is to avoid consuming badly roasted pork, or to observe hygiene after contact with the meat. The disease can be treated with antibiotics.

## Morphology

*Yersinia enterocolitica* is a **gram-negative straight** rod that is only **mobile** at lower temperatures. Its size is 0.3–1.0 µm and 1.0–6.0 µm. It can be grown on conventional cultivation soils because **it is easy to grow**. It has no problem growing in a low glucose environment at 28°C. It is recommended to use selective soils for culturing bacteria from faeces. The ideal pH for growth is in a wide range of 4.6-9 with an **optimal pH** of 7-8.



*Yersinia enterocolitica*

## Epidemiology

*Yersinia enterocolitica* was discovered by Schleifstein and Coleman in year 1939 in the USA. It has been a well-known pathogen in the last four decades. It occurs mainly in food, especially in **raw pork**, but has no problem surviving on fruits and vegetables in the refrigerator at lower temperatures. Most *Y. enterocolitica* isolates recovered from natural samples, including houses where animals are slaughtered or in butchers. They were non-pathogenic in nature and in water. Bio serotypes 4/O:3 are the most common cause of human **yersiniosis**, food poisoning caused by *Y. enterocolitica* is known cosmopolitantly.

## Pathogenicity and virulence

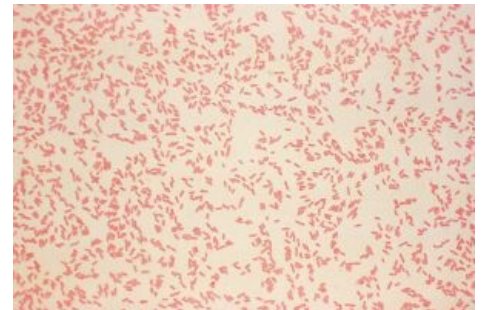
Virulence is bound on the chromosome and on the plasmid. It is given by the **invasiveness** and **penetration** of the microbe into the cell. Food can enter the terminal ileum and appendix, where it penetrates cells and lymphatic tissues to which it has a particularly high affinity. **Virulent** strains **multiply in macrophages** and induce **granuloma** formation. Non-virulent strains are eliminated without penetrating the cells.

## Clinical picture

We observe clinical signs from **mild diarrhea** to serious complications such as **liver abscesses** and **post-infectious extraintestinal consequences**. The main reservoir is **pigs**, which are asymptomatic carriers.

## Disease

Manifestations of the disease in humans are different in children and adults. Children develop **fever and diarrhea**, where blood may appear. **Abdominal pain** is also typical **in the right lumbar pit**. In adults, we observe **gastrointestinal infections** and diarrhea. With long-term illness, **secondary complications** can occur and these are **inflammations of the joints**. An unusual case of infection manifesting as **perianal ulcers** and colon ulcers has also been observed. An individual can become infected from infected pork. Toxic bacteria produce a **thermostable toxin** at 25°C in milk. However, at 4°C they will not produce significant amounts of this toxin.



*Yersinia enterocolitica* under a microscope

## Therapy

Bacteremia requires **antibiotic** treatment. **Tetracycline** is used. Tests have shown that bacteria have a high degree of resistance to **ampicillin** and **cephalothin**. In the diagnostic laboratory, **examinations of the stool**, nodes, and appendix are performed. Immunochromatic test for the quantitative determination of serotypes O3 and O9 in a stool sample with a result within 1 hour. The test is highly sensitive and specific.

## Prevention

Prevention against *Yersinia enterocolitica* and *Yersinia pseudotuberculosis* is to avoid eating undercooked pork or drinking unpasteurized milk. After contact with raw pork, it is recommended to wash your hands thoroughly with soap.

## Links

## Related articles

- Microbiology repetitorium
- Alimentary infections
- Yersinia pestis
- Yersinia pseudotuberculosis

## References

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- JULÁK, Jaroslav. *Úvod do lékařské bakteriologie.* 1. edition. Praha. 2006. ISBN 80-246-1270-4.