

# Corynebacterium diphtheriae

Bacteria of the genus *Corynebacterium* are gram-positive, facultatively anaerobic, non-sporulating rod-shaped rods. *Corynebacterium diphtheriae* is the causative agent of diphtheria, which has multiple clinical forms.

## Cultivation

*C. diphtheriae* is a culture-intensive bacterium. It commonly grows on soils with blood and serum. Its growth is typical on cultivated soils with the addition of **tellurium salt** (Tinsdal and Clauberg's soil). Tellurite reduces to metallic tellurium, creating **black-colored colonies** on the culture medium. According to the appearance of the colonies, we distinguish three types: gravis, mitis and intermedius, individual types are characterized by the different clinical courses of the disease.

## Pathogenicity

Adherence factors, neuraminidase and, above all, **diphtheria toxin** are involved in the pathogenicity of the bacterium. The presence of a tox gene that is transmitted by  $\beta$  - bacteriophage is necessary for toxin production. The toxin has three structural and functional domains & ndash; receptor, transmembrane and catalytic. It irreversibly blocks proteosynthesis, which leads to the death of the infected cell.

## Disease

*C. diphtheriae* multiplies at the point of entry on the mucous membrane of the upper respiratory tract, in the vagina or wound. The clinical course of the infection is affected by the virulence of the given strain, toxin production and the condition of the infected organism. At the infected site, a **pseudomembrane** is formed from Fibrin, beneath which are bacteria that produce the toxin. It causes necrosis of surrounding cells and toxemia. The target tissues of the toxin are the myocardium and peripheral nerves.

Pseudomembranes formed in the mucosa of the upper respiratory tract can lead to a mechanical obstruction, mucosal edema and subsequently to **suffocation**.

## Therapy and prevention

The treatment of acute infection is the administration of antitoxins, and erythromycin is administered to eliminate the infectious agent.<sup>[1]</sup>

Prevention is **diphtheria toxoid vaccination**, carried out in triple combination as compulsory vaccination of children against diphtheria, tetanus and pertussis. The introduction of revaccination in adulthood is being considered today.

## Links

## Related articles

- Diphtheria

## References

1. VOTAVA, Miroslav. *Lékařská mikrobiologie speciální*. 1. edition. 2003. ISBN 80-902896-6-5.
  - BEDNÁŘ, Marek. *Lékařská mikrobiologie : bakteriologie, virologie, parazitologie*. 1. edition. 1996.
  - BENEŠ, Jiří. *Infekční lékařství*. 1. edition. 2009. ISBN 978-80-7262-644-1.

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