

Bacillus

Basic characteristics

In the genus 'Bacillus' includes gram-positive, aerobic or facultative anaerobic rods with dimensions from 0.5 to 1.2 μm (average) and the length often exceeds 10 μm . Bacterial motility is conditioned by peritrichally located flagella. A typical feature of a bacterium of the genus Bacillus is the formation of a single endospore, the size of which does not exceed the width of the bacterial cell. Endospore formation - sporulation, takes place only in the presence of oxygen. By oxidizing storage lipids, in particular poly- β -hydroxybutyric acid, the cell obtains the energy needed to form spores.



Sorting

The genus Bacillus can be divided into 3 groups according to the morphology of spores and sporangia:

1. A group of low-nutrient bacteria whose elliptical spores do not cause sporangia to swell. According to cell width, this group of cells is divided into bacteria with cells larger than 1.0 μm (*B. megaterium* , *B. cereus* , *B. thuringiensis* and *B. anthracis* ') and smaller cell bacteria (' *B. subtilis*, *B. pumilis* ' , ' *B. licheniformis*, *B. coagulans* ').
2. A group of bacteria that form elliptical spores that cause sporangia to swell. (*B. circulans* ' , ' *B. macerans*, *B. polymyxa* , *B. alvei* , *B. brevis* ' , ' *B. stearothermophilus*, ' *B. popilliae* ' , ' *B. larvae* ' , ' *B. lentimorbus*)
3. A group of bacteria forms spherical spores. (*B. sphaericus*)

Cultivation

The genus **Bacillus** in terms of cultivation, it is one of the undemanding bacteria that grows very easily on common soils.

Biochemical properties

Members of this genus are producing catalase. Most species produce proteolytic and amylolytic enzymes, but only some synthesize lecithinase (*B. cereus* , *B. thuringiensis* , *B. anthracis*) and a variety of hemolysins (*B. cereus* , *B. thuringiensis* , *B. megaterium*). We also currently use bacteria in the pharmaceutical industry to produce antibiotics of a polypeptide nature (bacitracin, gramicidin and polymyxin).

Pathogenicity

Bacillus anthracis is considered obligatory pathogenic. 'It is the originator of anthrax. Enterotoxigenesis is a manifestation of toxins produced by *B. cereus* ' , or some strains, such as ' *B. subtilis* , *B. pumilis* , *B. licheniformis* . Other species are considered to be low pathogenic and apply only to immunocompromised people.

Pathogens and diseases

- ' *B. cereus* ' - eye infections, wound infections, sepsis, endocarditis, osteomyelitis, meningitis and pneumonia
- ' *B. alvei* ' , ' *B. circulans* ' a ' *B. pumilis* ' - meningitis
- ' *B. licheniformis* ' , ' *B. brevis* ' , ' *B. coagulans* ' , ' *B. macerans* ' , ' *B. sphaericus* ' a ' *B. subtilis* ' - septic condition (sepsis)
- ' *B. subtilis* ' - ulcerations, postoperative cellulitis, pneumonia

Links

Related articles

- ***Bacillus anthracis***
- Sepsis
- Enterotoxigenesis
- Endocarditis
- Osteomyelitis
- Meningitis
- Pneumonia
- Ulceration
- Cellulitis

Source

- ws:Bacillus

- VOTAVA, Miroslav, et al. Lékařská mikrobiologie speciální. 1. vydání. Brno : Neptun, 2003. 495 s. ISBN 80-902896-6-5

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