

Tetracyclines

Tetracyclines are broad-spectrum bacteriostatic antibiotika. It used to be widely used in pediatrics, but only until it was found to damage tooth enamel and growth cartilage .

Antimicrobial spectrum

- Broad spectrum, G + and G–, mycoplasmas , chlamydia , spirochetes , some protozoa (amoebae).
- Many strains are resistant (many G + cocci, G– aerobic rods), resistance is cross-linked.
- Does not affect *Pseudomonas* spp., *Proteus* spp. and *Serratia* spp.

Mechanism of action

- Inhibition of proteosynthesis, reversible binding to the 30S subunit of the ribosome .

Pharmacokinetics

- It is preferred after administration, better on an empty stomach.
- They form inactive chelates with Ca 2+ , Fe 2+ , Mg 2+ , Al 3+ ions , which limit absorption - do not administer simultaneously with antacids , do not drink with milk.
- Tissue penetration very good.
- They penetrate the placenta , high risk of fetal damage.
- They are widely distributed - in addition to the CNS, they penetrate mainly into bones and teeth , into milk (they cannot be given during pregnancy and lactation).
- They are concentrated in the liver , subject to enterohepatic circulation, excreted in the bile , and doxycycline is excreted in the faeces, otherwise by the kidneys .

Pharmacodynamics

- Bacteriostaticity does not depend on concentration but on exposure time.
- Their postantibiotic effect is insignificant.

Side effects

- There are many side effects, which affects the possibility of their use.
- Bone deposition and interference with tooth enamel , tooth enamel damage, tooth discoloration , phototoxicity, GIT problems (nausea , vomiting , diarrhea), suppression of the natural flora in the GIT (may result in blood clotting disorders due to vitamin K deficiency , superinfection), fatty liver degeneration.

Contraindication

- Pregnant and lactating women, children up to 8 years.

Main indications

- Chlamydial infections , ehrlichemia infections , rickettsiae , brucellosis infections , mycoplasmas .
- Infections in dentistry.
- Bacterial involvement of the bile, urinary and genital tracts .
- Some anthroponoses .
- Acne vulgaris .

Interaction

- Do not combine with beta-lactams .
- Increases the effect of PAD , immunosuppressants and digoxin .

Representatives

1st generation : tetracycline, oxytetracycline, rolitetracycline for im or iv administration.

2nd generation : doxycycline and minocycline.

3rd generation : thiacycline - does not have cross-resistance.

Today, only doxycycline and minocycline are used in practice.

Doxycycline

- Very lipophilic.
- It is administered parenterally, its absorption is less affected than with other tetracyclines.
- It has a long half-life (16 hours) - dosing of 12 or 24 hours.
- Dosage - first day **2 x 100 mg** , next days 100 mg every 24 hours.

Minocycline

- Specific indication - acne.

Links

Source

BENEŠ, Jiří. *Studijní materiály* [online]. [cit. 2010]. <<http://jirben.wz.cz>>.

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