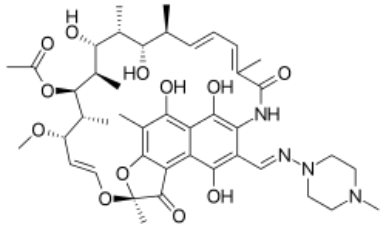
Rifampicin

Rifampicin is a **narrow -spectrum** antibiotic that belongs to antituberculotics along with streptomycin, capreomycin and cycloserine. It is highly effective (so far the most effective) against infections caused by *Mycobacterium tuberculosis* and *Mycobacterium leprae*. The effect on *Mycobacterium avium* is smaller and uncertain.

Rifampicin is a derivative of rifamycin. It is **bactericidal/bacteriostatic** at higher doses.

Pharmacokinetics



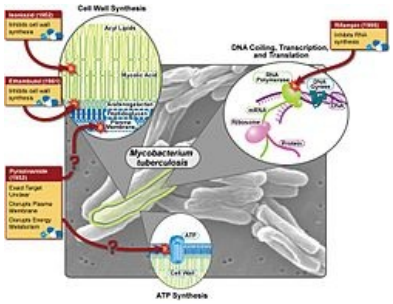
Structure of rifampicin

It can be given **orally**, as it is well absorbed from the GIT (especially on an empty stomach). It penetrates well into tissues and cerebrospinal fluid (important in cerebral tuberculosis). Penetration into abscesses (important in the treatment of abscess bacteria, eg *Staphylococcus aureus* and bone is also good. It is metabolised in the liver and excreted in the bile. About 30% of the administered dose of rifampicin is excreted in the urine. The half-life is 2-5 hours.

Pharmacodynamics

The mechanism of action is **inhibition of bacterial nucleic acid synthesis** by binding to DNA-dependent RNA polymerase.

Indications



Mechanisms of antituberculosis treatment

The main indication is the **treatment of tuberculosis**. It is always combined with other antibiotics. Due to good penetration into abscesses and bones, it can also be used for **staphylococcal infections** (treatment of osteomyelitis and infectious endocarditis caused by *Staphylococcus aureus*). However, staphylococcal infections develop **antibiotic resistence very quickly** (even over the course of the treatment!) and rifampicin should be combined with vancomycin or fluoroquinolones. Rifampicin can also be used to **treat legionellosis** but only in combination with macrolids.

Dosage

In the treatment of tuberculosis 450–600 mg once a day, in children 10–20 mg per day.
For staphylococcal infections, 600-1200 mg is given 2-3 times a day.

Undesirable side effects

An unpleasant but harmless side effect is **tears, urine, saliva and sweat turning orange**. It is a very **potent inducer of cytochrome P450**, which leads to an increase in xenobiotic excretion. Hepatitis, trombocytopenia with purpura and flu-like disorders may also occur.

Contraindications

Due to the induction of **Cytochrome P450** rifampicin should not be combined with chloramphenicol, clarithromycin and doxycycline as their serum concentrations are reduced. Similarly, concentrations of anticoagulants, glucocorticoids and some cardiovascular drugs are reduced.

Links

Related articles

- Antibiotics
- Antituberculotics
- Tuberculosis

Used literature

- LINCOVÁ, Dagmar – FARGHALI, Hassan, et al. *Základní a aplikovaná farmakologie.* 2.

edition. Praha : Galén, 2007. ISBN 978-80-7262-373-0.

- BENEŠ, Jiří, et al. *Infekční lékařství.* 1. edition. Galén, 2009. vol. 651. ISBN 978-80-7262-644-1.

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