

Fighting gonorrhoea – selective antibacterial agents against multidrug-resistant pathogenic gonococci

Field of application

According to the WHO, each year 78 million people contract gonorrhoea. As with other sexually transmitted diseases, the number of gonococcal infections has increased significantly in recent years (CDC, press release, 26. Sept. 2017: 'STDs at record high, indicating urgent need for prevention').

Due to its growing resistance, the need for effective drugs against the pathogen *Neisseria gonorrhoeae* (gonococci) is regarded as particularly urgent by the WHO.

At the University of Konstanz (with the help of funding from the DFG, the Marie Curie ZIF Zukunftskolleg Fellowship and the German Chemical Industry Fund), a selective, antibacterial substance against multidrug-resistant gonococci has now been identified.

State of the art

There are active substances available against the pathogen; however resistance has greatly increased worldwide, making treatment with broad-spectrum antibiotics no longer effective. So far, gonococci could not be selectively contained without damaging the healthy microflora of the intestine or vaginal tract through antibiotic treatment. Alarming reports from England and Australia show that first 'horror gonorrhoea isolates' have been found that are resistant to all approved antibiotics. They are currently considered untreatable.

Innovation

Due to its high selectivity and the fact that it spares the natural microbial flora, the new active agent could not only be suitable for effective treatment, but can probably also be used as a prophylaxis for particularly vulnerable population groups. The reason for its specificity seems to be a new mechanism of action, which uses the Achilles' heel of the pathogen to kill multidrug-resistant gonococci. The active substances belong to the class of 2-alkyl quinolones and their *N*-oxides (AQNO); in both the *in vitro* and the *in vivo* model with humanized mice, they have shown an enormous potency against gonococci, while no damage of commensal strains or mammalian cells could be detected – therefore subsequent further development and the approval as an antibiotic seem well worthwhile.

Patent portfolio

DE pending, international applications are planned.

Your benefits at a glance

- ✓ Highly effective & specific AB treatment
- ✓ Treatment and prophylaxis for pathogenic, multidrug-resistant gonococci
- ✓ No harmful effects on naturally occurring commensal *Neisseria* species, commensal microbiota or eukaryotic cells
- ✓ Avoiding resistance development
- ✓ Significant application potential worldwide
- ✓ Effectiveness confirmed in humanized mice

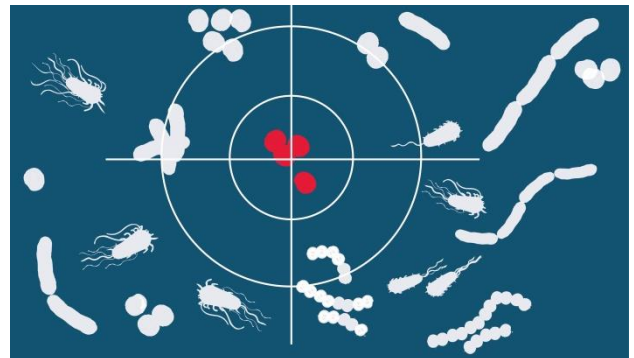


Figure: Gonococci in the crosshairs. New antibacterial agent works reliably and specifically against gonococci [acc. to T. Böttcher, University of Konstanz].

Technology transfer

Technologie-Lizenz-Büro GmbH is responsible for the exploitation of this technology and assists companies in obtaining licenses.

Contact

Anne Böse, Business Development
boese@tlb.de
 Technologie-Lizenz-Büro (TLB)
 der Baden-Württembergischen Hochschulen GmbH
 Ettlinger Straße 25, D-76137 Karlsruhe
 Tel. 0721 79004-0, Fax 0721 79004-79
www.tlb.de

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