

Medicine and Pharma | Therapy and Substances | Technology Offer

New antibacterial substance class against MRSA – suitable for the treatment of medically relevant surfaces

Application area

Antibiotics are one of the greatest medical achievements; only a few decades ago bacterial infections like pneumonia, scarlet fever or syphilis caused a lot of victims. Today, these diseases can be treated successfully. However, multi-resistant germs are becoming a growing threat. This is due to the fact that they are already resistant to most of the classes of antibiotics currently available. According to the Federal Ministry of Health 400,000 to 600,000 patients contract a hospital-acquired, or nosocomial, infection, each year. 10,000 to 15,000 of them die as a result (as of 5 April 2017). Surfaces like those of urinary catheters rank among the greatest sources of infections. There is a continuous evolution of the germs themselves and therefore also of new resistances.

State of the art

Despite the ever-growing number of new resistant germs, it seems as if today the economic incentive for developing new active substance classes is decreasing. The number of new classes of antibiotics worldwide has been declining for years now. Their development is a tedious and expensive process; new drugs can only have a trustworthy effect for a short period of time before new resistances arise. This trend is dangerous for all of us, because MRSA is propagating, especially where we are most vulnerable – in hospitals worldwide. On top of this it is getting more and more difficult to identify new substance classes – the range seems to be increasingly exhausted.

Innovation

As part of a research project at the University of Konstanz funded by the DFG (German Research Foundation), the Marie-Curie ZIF Zukunftskolleg scholarship and by FCI (Fonds der Chemischen Industrie), the scientists succeeded in developing a completely new class of antibiotics, which is also highly effective against multi-resistant pathogens such as *S. aureus*. This could be demonstrated *in vitro* in cells of several pathogenic and non-pathogenic bacteria. The active substances according to the invention have a new chemical structure that derives from the molecular signals PQS and HHQ, two important factors in microbial communication. These “quorum-sensing” signals usually coordinate the virulence of pathogenic bacteria. For those new structures that are now used against them, there are obviously no mechanisms of resistance yet. Due to the fact that the active substance can also be used for the embedding into different materials, future infections caused by medical surfaces as those of urinary catheters could thus be prevented as well (DOI: 10.1002/nadc.201590400).

Your advantages at a glance

- ✓ A new type of highly effective class of antibiotics
 - Bypassing of existing resistances
 - Effective against pathogenic MRSA strains
 - Effective against gram-positive pathogens
 - Effective against gram-negative pathogens
- ✓ Low toxicity against human cells
- ✓ Laboratory-confirmed efficacy
- ✓ Active substances suitable for the treatment and disinfection of material surfaces (medical instruments, etc.)

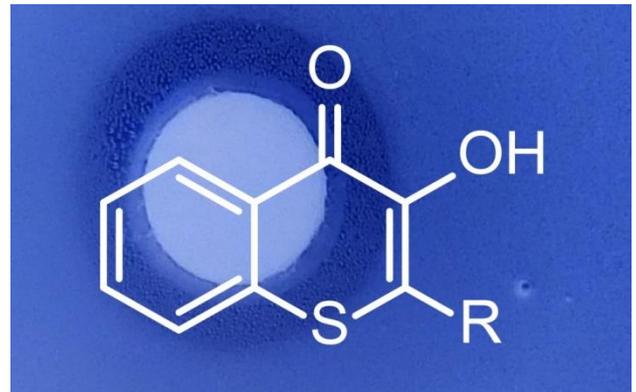


Figure 1: Chemical structure of one of four new highly efficient antibiotic derivatives that inhibit not only MRSA, but also gram-negative human pathogens.

Technology transfer

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

Patent portfolio

EP pending and PCT commissioned.

Contact

Anne Böse, Business Development
boese@tlb.de
 Technologie-Lizenz-Büro (TLB)
 der Baden-Württembergischen Hochschulen GmbH
 Ettlinger Straße 25, D-76137 Karlsruhe, Germany
 Tel. 0049-721 79004-0, Fax 0049-721 79004-79
www.tlb.de

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