

Anthrotainin – a new antibiotic to combat multiresistant bacteria



Anthrotainin, Antibiotics, Resistance, Tetracycline, chemical biology, biotechnology, medicine

DESCRIPTION OF TECHNOLOGY

Antibiotic resistance is one of the biggest – and continuously growing – threats to global human and animal health today. It can affect anyone, of any age, and in any country. More and more infections are becoming harder to treat, as the currently available antibiotics become less effective. Therefore, new antibiotics are urgently needed, which are able to effectively support our fight against antimicrobial resistance.



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The use of tetracyclines for the treatment of animal and human infections, for example, has been increasing in recent years. However, this has led to the emergence of tetracycline resistant bacteria limiting the applicability of tetracycline antibiotics.

The urgent need for the provision of novel compounds with anti-prokaryotic activity is an acute issue of modern chemical biology, biotechnology, and medicine.

The new antibiotic presented herein, Anthrotainin, is targeted towards overcoming the antibiotic resistance of prokaryotes, (archaea, gram-positive and gram-negative bacteria). Anthrotainin exerts antibacterial activity against the currently most important resistant bacteria, including tetracycline-resistant prokaryotes. It was first isolated from filamentous fungus, *Metapochonia lutea* (Ascomycota, Hypocreales, Clavicipitaceae) and is already thoroughly tested regarding its antibiotic activity on laboratory scale. The invention refers to a pharmaceutical preparation or feed supplement comprising anthrotainin and the use of anthrotainin for the treatment of a subject suffering from an infection caused by prokaryotes; it may also be applied prophylactically.

AT A GLANCE ...

Application Fields

- Treatment of infections with resistant bacteria
- Immunotherapy
- Vaccine development

Business

- Pharmacy
- Medicine

USP

- Effective against resistant bacteria
- Easily accessible
- Providing a new basic structure for developing further chemically modified novel antibiotics

Development Status

- Proof of concept

Patent Status

EP-priority application, filed on July 12th 2022; Subsequent PCT-filing, both pending.

APPLICATION FIELDS

Ideal application fields are the medical sectors (for humans as well as for animals). According to currently available data it is an outstanding candidate for expanding the repertoire of antibiotics against resistant bacteria of numerous types.

ADVANTAGES OVER THE PRIOR ART

Anthrotainin shows very good activity against gram-positive and gram-negative bacteria (10 µM-range), while exerting only low cytotoxic activity.

Anthrotainin has superior activity against tetracycline resistant bacteria, due to its different behaviour in resistance breeding experiments.

The mode of operation of Anthrotainin is not yet known, so that it can be expected that it is also effective against other resistant bacteria.

Anthrotainin has a similar, but different chemical structure than tetracycline, thus providing a new basic structure for developing further chemically modified novel antibiotics.

STATE OF THE PRODUCT DEVELOPMENT

The scientific working groups involved in the invention have already elaborated within the funded research-project BiMM (cf. <https://www.bimm-research.at>) the following aspects of Anthrotainin on laboratory scale:

- isolation;
- chemical characterisation/purification;
- activity against bacteria generally (*S. aureus* and *K. pneumoniae*);
- antibacterial performance in comparison with tetracycline (*S. aureus*).

COOPERATION OPPORTUNITIES

On behalf of the Universität für Bodenkultur Wien (University of Natural Resources and Life Sciences, Vienna) the TransMIT GmbH is looking for commercial actors being interested in licensing, purchase or cooperation for further development in Germany, Europe, US, and Asia.

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Emerged from research project



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