



Current Research in Bacteriology

ISSN 1994-5426

science
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New Antibiotics Against Resistant Bacterial Infections Discovered

This year's World Health Day focuses on the growing threat of potentially deadly infections developing resistance to antimicrobial drugs -- especially to antibiotics. On this occasion, the European Commission is presenting the promising results of two EU-funded international research projects which provide new hopes to help and treat people. In the European Union alone, it is estimated that drug resistant infections cause more than 25,000 deaths and 1.5 billion in extra healthcare costs every year.

A new substance to tackle drug resistant tuberculosis

The project NM4TB, which gathers 18 research teams from 13 countries, discovered a novel class of substances, called benzothiazinones (BTZ), that could be used in the treatment of tuberculosis and drug resistant tuberculosis. These substances act by preventing the bacteria that cause tuberculosis from constructing their cell wall. This discovery represents an important breakthrough in the battle against tuberculosis as the most advanced compound of this new class, BTZ043, is also effective against extensively drug resistant tuberculosis (XDR-TB).

Exploiting genetic resources to find new antibiotics

18 research teams from 9 European countries and the Republic of Korea joined forces in the project ActinoGEN to discover and develop new antibiotics by exploiting the genetic resources of a group of bacteria called actinomycetes. Previous studies on the genomes of actinomycetes suggested that these bacteria had the potential to produce many new antibiotics. The researchers identified one entirely novel lead antibiotic by exploring the bacterial species *Streptomyces ambofaciens*, and engineered additional antibiotics by combinatorial biosynthesis. The project has generated 8 patents.

Background

A wide array of microorganisms, including bacteria, viruses, protozoa and fungi, are becoming resistant to drugs that are used to treat infections. This resistance, which is called antimicrobial resistance (AMR), is a major obstacle to the treatment of infectious diseases worldwide. Faced with the extent of AMR, and the dwindling number of effective antimicrobial drugs, the World Health Organization (WHO) has stated that it considers AMR to be one of the greatest threats to human health.

Tackling AMR requires investing in research and innovation. The EU has prioritised research in this field, supporting numerous research projects with a total amount of approximately 300 million since 1999. Priorities include developing novel medicines and therapies, defining the optimal use of existing antimicrobial drugs, developing diagnostic tools, monitoring the spread of resistance and basic research on pathogenic organisms. EU-funded projects have helped to better understand resistance mechanisms and to identify novel antimicrobial compounds that may lead to future drugs.

Story Source: The above story is reprinted from materials provided by European Commission, Research & Innovation DG.