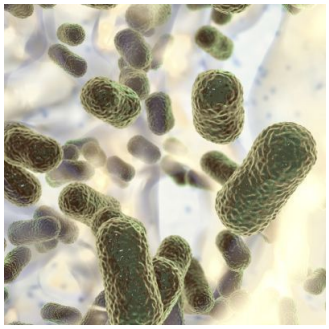
HealthManagement
Promoting Management and Leadership

Artificial Intelligence Identifies Superbug-Killing Antibiotic



Scientists have used artificial intelligence (AI) to identify a novel antibiotic capable of eliminating a dangerous strain of antibiotic-resistant bacteria. By employing AI, researchers efficiently narrowed down a vast pool of potential chemicals to a small selection suitable for laboratory testing. This process led to identifying a powerful experimental antibiotic named abaucin, which requires additional testing before practical implementation. The study, conducted by scientists in Canada and the United States, highlights the significant potential of AI in expediting the development of new medications.

The rise of antibiotic-resistant bacteria has led to a critical shortage of new drugs, posing significant challenges in treating infections. Each year, over a million people worldwide succumb to infections that cannot be effectively treated with existing antibiotics. To address this issue, researchers targeted *Acinetobacter baumannii*, a particularly problematic species of bacteria known for causing wound infections and pneumonia. This bacterium is classified as a critical threat by the World Health Organization, alongside two other superbugs.

Researchers employed AI to search for a new antibiotic. They began by training the AI using thousands of drugs with known chemical structures and testing them manually on *A. baumannii* to identify compounds that could impede or eliminate the bacteria. This data was then utilised for training AI to recognise the chemical features associated with attacking this bacterium. AI was used to evaluate a list of 6,680 compounds with unknown effectiveness. It generated a shortlist of potential candidates within an hour and a half. The researchers conducted laboratory experiments on 240 of these, ultimately identifying nine potential antibiotics. Among them, abaucin stood out as a highly potent antibiotic.

After discovering the experimental antibiotic abaucin, the next phase involves refining the drug through laboratory processes and clinical trials. However, it may take until 2030 for the first AI-generated antibiotics to be approved for prescription use. Notably, abaucin did not impact other bacterial species, exhibiting specificity exclusively against *A. baumannii.* Unlike many antibiotics that tend to kill bacteria broadly, the researchers anticipate that abaucin's precision will make it more challenging for drug resistance to develop, potentially resulting in fewer side effects. This targeted approach could be a promising strategy for combatting antibiotic resistance and enhancing treatment outcomes.

The application of AI in antibiotic discovery offers several advantages over manual methods. AI has the potential to screen millions of compounds, a task that would be impractical to accomplish manually.

Source: Nature Chemical Biology

Image Credit: iStock

Published on : Fri, 26 May 2023

© For personal and private use only. Reproduction must be permitted by the copyright holder. Email to copyright@mindbyte.eu.