New Antibiotic (Yissum)

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Peptide-Based Induction of Bacterial Cell Death

Categories	Antibacterial, Antibiotic, Sterilization.
Patent Status	Patent pending
Market Size	The invention is targeted to a broad spectrum of infectious diseases and for sterilizing purposes.

The Field

- The bacterial toxin MazF induces bacterial cell death by triggering downstream death pathways. The labile anti-toxin MazE is constantly synthesized by bacteria and inactivates MazF by sequestering it.
- Several antibiotics, such as rifampicin, chloramphenicol, mitomycin C act by affecting the MazF/MazE balance.

Innovation Highligts

- The invention grounds on the recently discovered Extracellular Death Factor (EDF). EDF is a secreted bacterial pentapeptide which induces MazF-mediated cell death. EDF is the only naturally-occurring peptide known to act as a ‘quorum sensing' DEATH factor.
- EDF target bacteria include different E.coli strains. Staphylicoccus aureus, Psedomonas aeruginosa, and Bacillus subtilis EDF-like factors are under current research.
- The innovation concerns also EDF antagonists, which may confer antibiotic sensitivity by inducing mazEF plasmid loss.
- EDF-based antibacterial composition may be used for sterilizing as well as for pharmaceutical purposes.
- Possibility of modifying the EDF original sequence by the addition of amino acids and other moieties, thus improving physiological properties and allowing different administration modes.

Development Milestones

- Proof of concept established in different E.coli strains.

The Opportunity

- The list of conditions induced by potentially EDF-targeted bacteria includes: diarrhoea, dysentery, hemorrhagic colitis, pyogenic infection, abscesses, septicaemia, pneumonia, meningitis, lung infection, cystic fibrosis.
- EDF-based compounds provide a new and specific venue to induce bacterial cell death.

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