Hybrid antibiotic against MDR & XDR Pseudomonas
Adjuvant antibiotic for Gram-negative infections
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Antibiotic resistance

• Antibiotic resistance is a serious threat to global public health; it leads to increased infections, longer hospital stays, high direct & indirect costs, & increased mortality.
• 2M Americans develop hospital acquired infections (HAIs) that are resistant to antibiotics, resulting in over 23,000 deaths, direct costs of $20B & indirect costs of $35B.
• Drug resistance is increasing much faster than the development or discovery of new antibiotics; however, the use of adjuvants is a promising combination strategy for overcoming bacterial resistance.

Market

• Global antibacterial drugs market is estimated to reach $45.09B (2019); CAGR of 0.3% (2013-2019).

opportunity

• The global quinolone segment is estimated to reach $7.48B (2019).

Challenges

• Multidrug-resistant (MDR) Pseudomonas

  • P. aeruginosa is the leading cause of HAIs, showing mortality rates of up to 50%.
  • MDR Pseudomonas are resistant to all but one or two classes of antimicrobials & pose as a serious threat.
  • In the U.S., 6,700 infections & 440 deaths per year are attributed to MDR Pseudomonas.
  • Major challenges in the development of anti-pseudomonal agents are lack of cell penetration & extensive efflux.

The technology:

A therapeutic to treat P. aeruginosa infections

Profile

  • Effects:
    • Enhances outer bacteria membrane permeability & reduces efflux.
    • Over comes resistance effect & enhances fluoroquinolone efficacy.
    • Works synergistically with existing antibiotics.
  • Characteristics:
    • Structure: tobramycin-moxifloxacin hybrid co-structure.
    • Potency: MIC 4 μg/L against P. aeruginosa.
    • Efficacy: Combination therapy gave up to 86% survival in MDR P. aeruginosa in G. Melonela model.
    • Toxicity: max tolerated dose in Galleria model of 150 mg/Kg.

Enhanced efficacy (Galleria mellonella in vivo infection model)

Key publication:


Benefits

hybrid antibacterial potency
low toxicity
synergetic effect
high in vivo efficacy

Patent status:

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