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Novel Inhalation Formulations of Colistin and Meropenem

A novel inhalation formulation offers superior antibacterial activity and enhanced aerosol delivery efficiency, reducing inhaled powder mass and minimizing local adverse effects for antimicrobial therapy.

Antimicrobial therapy via the inhalation route has attracted increasing momentum for the treatment of lower respiratory systems. Inhalation therapy improves drug concentration on airway surfaces with reduced systemic exposure. Typically, the inhaled drug particles produced by the traditional jet-milling approach are highly cohesive and have poor flowability and aerosolization performance. Addition of excipients, such as lactose particles, may improve the aerosolization of cohesive powders; however, for high-dose drugs, like antibiotics, the addition of excipients may increase the inhalation powder mass that needs an excessive number of inhalations to complete the dose and a bulky inhaler to accommodate the large dose.

Researchers at Purdue University have developed a novel inhalation formulation which shows superior antibacterial activity. Incorporation of this formulation is evidenced by an almost two-fold increase in aerosol delivery efficiency expressed as fine particle fraction. The synergistic antimicrobial activities and the increased aerosolization performance from this formulation will not only improve patient compliance by reducing the inhaled powder mass and minimizing local adverse effects, but will also have the potential to achieve superior therapeutic efficacy.

Advantages:

-Enhanced antimicrobial activity

-Reduces inhaled powder mass

-Minimizes local adverse effects

Potential Applications:

-Dry powder inhalers

Technology ID
2018-ZHOU-68233

Category
Pharmaceuticals/Small Molecule Therapeutics
Pharmaceuticals/Drug Delivery & Formulations

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View online

-Respiratory infections

-Antimicrobial therapy via inhalation

TRL: 3

Intellectual Property:

Provisional-Patent, 2018-04-26, United States | Utility Patent, 2019-04-26, United States

Keywords: Antimicrobial therapy, inhalation route, lower respiratory systems, drug concentration, systemic exposure, novel inhalation formulation, antibacterial activity, aerosol delivery efficiency, dry powder inhalers, respiratory infections