PURDUE INNOVATES | Office of Technology Commercialization

# Polymyxin Combinational Formulations

**Polymer-polymyxin formulations reducing lung toxicity in inhaled antibiotic therapy.**

Researchers at Purdue University have developed an antibiotic drug formulation that reduces the toxicity of polymyxins, drugs of last resort for treating Gram-negative bacterial infections. Polymyxins administered by inhalation in high doses can cause pulmonary eosinophilia and hypersensitivity pneumonitis. The Purdue antibiotic formulation combines polymyxins (i.e. polymyxin B, colistin or colistimethate) with a nontoxic and water-soluble polymer. Upon treatment with the combination of polymyxin B and the polymer, about twice the human lung epithelial cells remained viable after 24 hours compared to treatment with polymyxin B alone, and the combination proved safe to mouse lungs. The formulation prepared by the researchers falls in the ideal size range for dry powder inhalers.

**Technology Validation:** The Purdue formulations are safer to human lung cells and mouse lungs compared to polymyxins alone. Their particle size falls in the ideal size range for use in dry powder inhalers.

**Advantages**:

-Safer

-Less toxic

-Ideal inhalable size

**Applications**:

-Inhaled Antibiotic

-Drug Delivery

-Dry Powder Inhaler

**TRL:** Pharmaceuticals

**Technology ID**

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**Category**

Chemicals & Advanced Materials/Specialty & Performance Chemicals

Chemicals & Advanced Materials/Materials Processing & Manufacturing Technologies

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**Intellectual Property:**

Provisional-Gov. Funding, 2021-01-01, United States

PCT-Patent, 2021-10-27, WO

NATL-Patent, 2021-10-27, China

Foreign, Non-PCT, 2021-10-27, Hong Kong

NATL-Patent, 2023-06-30, United States

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