TECHNOLOGY

Use of Tight Junction Antagonists in the Treatment of Acute Lung Injury and Acute Respiratory Distress

OVERVIEW

Acute Respiratory Syndrome (ARDS) is a severe, life-threatening condition, present in about 150,000 individuals in the US annually with an alarming mortality rate of 30-50% in those affected. To treat ARDS, UMB inventors have developed a specific peptide composition that is deliverable directly to treat excessive leakage within the lungs due to tight junction openings. ARDS often develops from Acute Lung Injury (ALI) or severe illness, resulting in the loss of the endothelial barrier that regulates oxygen passage. This in turn results in the buildup of fluids within the lungs, decreasing the lungs' ability to expand and blocks oxygen passage into the blood. If ARDS is not treated quickly, oxygen levels reach critically low levels and organ failure ensues leading to death. ALIs including ARDS occurs due to excessive leakage of the tight junctions causing fluid buildup and the inability to receive oxygen. It is based on these attributes that UMB inventors have developed a novel treatment to target tight junction openings, effectively managing the critical symptom of ARDS.

APPLICATIONS

Current treatments options for ARDS consist of breathing supports and treatment of underlying problems such as infection, inflammation, and fluid retention within the lungs. However, no direct treatment of ARDs exists and the use of ventilators is limiting due to the requirement of sedatives and paralyzers to keep the patient relaxed as well as the possibility of lung injuries caused by mechanical ventilators. Only 30% of ARDS survivors are well enough to be discharged directly home and many will continue to suffer from symptoms years after recovery due to lung injuries. It is estimated that 2.2 million days are spent annually in the intensive critical unit by patients suffering from ARDS. A tight junction inhibitor to prevent, inhibit, or reduce the opening of tight junctions within the lungs would be the first of its kind, direct treatment for the life-threatening condition of ARDS.

ADVANTAGES

-The invention treats the direct cause of ARDS which is the fluid buildup within the affected areas of the lungs. -Drug therapeutics delivered directly to the lungs allows for a more efficiently treatment option than current methods and can be used in conjunction with current therapeutic options to optimize patient treatment and outcome.

STAGE OF DEVELOPMENT

Additional validation required for methods of delivery and formulations.

R&D REQUIRED

Additional validation in vivo studies required

LICENSING POTENTIAL

UM seeks to develop and commercialize by an exclusive or non-exclusive license agreement and/or sponsored research with a company active in the area.

CONTACT INFO

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Additional Information

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PATENT STATUS

US Patent Application 14/971,675, pending

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EXTERNAL RESOURCES

- Clinical characteristics and outcomes of patients with acute lung injury and ARDS
- Pharmacologic therapies for adults with acute lung injury and acute respiratory distress syndrome.
- Clinical profile of ARDS.
- Current definitions of acute lung injury and the acute respiratory distress syndrome do not reflect their true severity and ...

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