Advanced Engineered Formulations of TMP/Ligustrazine and Microparticle/Nanoparticle Formulations for Inhalation Drug Delivery for Lung Vascular, Interstitial and Airway Diseases.

Title: Advanced Engineered Formulations of TMP/Ligustrazine and Microparticles/Nanoparticle Formulations for Inhalation Drug Delivery for Lung Vascular, Interstitial and Airway Diseases.

Invention: This invention formulates TMP in a readily deliverable aerosol to treat pulmonary hypertension and other lung diseases.

Background: Pulmonary hypertension (PH) is a condition that involves high blood pressure in the arteries of the lungs. Veins stiffen and narrow, making blood flow more difficult and thus, increased pressure is necessary to maintain adequate flow through the vascular system. Pulmonary hypertension leads to a wide variety of effects due to lack of oxygen distribution and extra strain on the heart and veins. Tetramethylpyrazine (TMP or Ligustrazine), has shown promise in treating PH. However, if delivered systemically, it can cause systemic hypotention. Thus, improved methods of delivering agents to the lung for treatment of pulmonary hypertension are needed. This invention provides a novel means of effectively encapsulating the active drug in aerosols to treat pulmonary hypertension.

Applications:

- Pharmaceuticals targeted at pulmonary hypertension.
- The formulation can be potentially used for other airway diseases.

Advantages:

- Aerosol formulations provide convenient access to lungs and veins
- Small size allows for full penetration to targeted regions
- Biocompatibility minimizes undesired interactions

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