



TECHNOLOGY

Methods of treating obstructive lung diseases using bitter tastants

OVERVIEW

Asthma, an obstructive lung disease and the most common chronic condition among young children, affects ~20 million Americans, causing more than 4,000 deaths each year. Researchers have discovered a method for treating asthma and related obstructive lung diseases using bitter taste agonists as bronchodilators. This invention was made possible by the discovery of a new class of bitter agonist receptors, the activation of which results in the relaxation of airway smooth muscle cells. The bronchial relaxation induced by these agonists is 3x greater than that induced by beta-adrenergic receptor agonists alone. Furthermore, the effect of bitter taste to beta-adrenergic receptor agonists appears to be additive, suggesting the possible use of a combination therapy in treating obstructive lung diseases.

APPLICATIONS

-New treatment for chronic obstructive lung diseases, including but not limited to asthma
-Inhaled bitter tastants relieve bronchospasm in in-vivo models 3x more effectively than existing methods
-Potential to be administered as a drug

ADVANTAGES

-Bitter tastants are much more efficacious than the agents currently used to treat asthma and chronic obstructive pulmonary disease
-The effects in conjunction with beta-adrenergic receptor agonists are additive, suggesting different mechanisms of action for these agonists
-Additive effects also suggest that combination therapy using these techniques could be utilized

STAGE OF DEVELOPMENT

-Chemical library screening and lead optimization of bitter taste receptor agonists. -In-vivo studies to determine efficacy and toxicity.

R&D REQUIRED

Further lead optimization and efficacy testing prior to pre-clinical studies.

LICENSING POTENTIAL

UMB seeks partners for licensing, clinical development, and/or sponsored research to advance this technology into the healthcare field.

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PATENT STATUS

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LICENSE STATUS

Available for non-exclusive license

CATEGORIES

- Therapeutics

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EXTERNAL RESOURCES

- [Agonist-promoted homologous desensitization of human airway smooth muscle bitter taste receptors.](#)
- [Bitter taste receptors on airway smooth muscle bronchodilate by localized calcium signaling and reverse obstruction.](#)
- [β2-Agonist induced cAMP is decreased in asthmatic airway smooth muscle due to increased PDE4D.](#)
- [Asthma and Allergy Foundation of America](#)

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