Novel Aerosolized Treatment for Asthma

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Technology description

Summary

Investigators at the University of Pittsburgh have developed microspheres carrying antisense DNA technology targeted to specific molecules vitally involved in allergic asthma.

Description

These microspheres can be administered via an aerosolized formulation. The microsphere encapsulated anti-sense molecules orchestrate an anti-inflammatory response by considerably decreasing the pro-inflammatory cytokines secreted by mast cells and dendritics cell in the lung. Moreover, the microspheres were found to reach a large population of lung cells following intratracheal instillation. *Background* Allergic asthma is a complex inflammatory disease of the lungs characterized by variable airflow obstruction, airway hyperresponsiveness (AHR) and airway inflammation. The inflammatory process consists of a chronic infiltration by mast cells, basophils, eosinophils, dendritic cells and BIT-lymphocytes, each playing a distinct role as part of a network of local inflammation. The key biomarker of allergic asthma is the IgE antibody, now considered to be the critical â€œgatekeeperâ€ of the human allergic response. Given the role of the IgE molecule in the asthmatic inflammatory response, reducing its levels or inhibiting its actions on mast cells, basophils and dendritic cells could have a major impact on asthma prevention and therapy of active disease. While current therapies are available, they do not completely eliminate IgE. â€œEscapedâ€ IgE can therefore still activate acute processes.

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