Cincinnati Children's | Innovation Ventures

Allergy

Serine Protease Inhibitors (SPINK7) for Treatment of EoE

Brief Description of Technology

Deficiency of SPINK7 is a novel regulator of pro-inflammatory cytokine production in eosinophilic esophagitis.

TECHNOLOGY ID

2015-0301

BUSINESS OPPORTUNITY

Exclusive License or Sponsored Research

TECHNOLOGY TYPE

Therapeutic Target

PATENT INFORMATION

Provisional Filed

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Technology Overview

A critical component of normal esophageal function is a protective epithelial barrier that prevents damage to the underlying tissue due to outside environment exposure such as foreign antigens and microorganisms. Impaired barrier function contributes to several esophageal pathologies and can provide a hospitable environment for immune responses. The serine peptidase inhibitor, kazal type 7 (SPINK7), has been shown to be down regulated in esophageal adenocarcinomas and eosinophilic esophagitis. Depletion of SPINK7 in differentiated esophageal epithelial cells resulted in dilated intercellular spaces and impaired epithelial barrier function, and SPINK7-depleted epithelial cells released a high level of pro-inflammatory cytokines. Dr. Rothenberg's team has uncovered a novel regulator of pro-inflammatory epithelial responses mediated by an acquired deficiency of SPINK7. They propose that allergic esophageal inflammation is mediated by an imbalanced production of proteases and protease inhibitors and that SPINK7 deficiency unleashes a pro-inflammatory response characterized by excessive cytokine production and loss of barrier function.

Applications

- Improved barrier function in EoE
- Reduced risk of developing esophageal adenocarcinoma

Advantages

Reduces the inflammatory response in the esophageal epithelium of EoE patients

Market Overview

Estimated occurrences of EoE in pediatric and adult populations are 43–57 per 100,000 persons. Currently, there are no US FDA-approved treatments for EoE. In clinical practice, up to one half of patients with EoE do not respond to standard medical or dietary treatment.

Investigator Overview

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