



POSTER PRESENTATION

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Using human-severe combined immunodeficiency (hu-SCID) mice as a model for testing allergenicity of genetically modified organisms (GMOs)

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Background

GM peas expressing the alpha-amylase inhibitor (AAI) protein derived from common *Tendergreen* bean were created to protect them against infestation by pea weevils. Although animal models are used for studying allergenicity of GM containing foods, the correlation with human allergy remains controversial.

Methods

Our aim in this study was to establish a humanized mouse model to study GMOs by adoptively transferring peripheral blood mononuclear cells from AAI-specific IgE-positive legume allergic and non-allergic individuals into SCID mice. These mice were then gavaged twice weekly for 1 month with GM pea, non-transgenic pea and Tendergreen bean seed meal suspensions or PBS. Subsequently, mice were administered 1 dose of the purified AAI protein or PBS intranasally as a read out for an *in vivo* allergic response. Seventy-two hours later, no eosinophilia or mucus hypersecretion were observed in the lungs of mice treated with PBS or fed the non-transgenic peas.

Results

In contrast, hu-SCID mice derived from allergic and non-allergic donors had intense allergic lung inflammation and mucus over production illustrating that AAI-containing seed meal feeding primed for allergic immune responses. However, there were no differences in the responses between hu-SCID mice derived from allergic and non-allergic donors. Because both donors had anti-AAI antibodies, we hypothesize that they were both sensitized to AAI

and thus indistinguishable when their cells were exposed to AAI during feeding in the humanized mice.

Conclusion

This model provides new opportunities to investigate factors underlying the propensity to develop food allergy in individuals with antibodies to food allergens.

Disclosure of interest

None declared.

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