



POSTER PRESENTATION

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Does IgE-mediated mast cell activation reduce oral tolerance to food antigens?

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Mast cell activation in response to food allergens can result in symptoms such as anaphylaxis. It is unclear how this activation impacts on the immune response to other foods that are present. The objective of this study was to investigate the role of immunoglobulin E (IgE)-mediated mast cell activation in the regulation of oral tolerance to a food antigen using a mouse model.

Oral tolerance to common food allergens – egg protein (OVA) or peanut – was established in C57Bl/6 mice. Mice were then immunized and challenged with the relevant food antigen. One group had mast cells activated via IgE/antigen at the site of immunization to food antigen. Antibody responses to food antigen were compared between groups. This was repeated with OVA in mast cell-deficient (*kit^{w-sh/w-sh}*) mice.

Oral tolerance was successfully induced by OVA-feeding as assessed by specific IgE, IgA, IgG1, and IgG2a antibody responses. Tolerance was not maintained in the IgG1 and IgG2a subclasses when mast cells were activated at the site of immunization in OVA-fed animals. OVA-feeding also induced tolerance in mast cell-deficient animals, but IgE/antigen treatment did not modulate OVA-specific antibody production. Feeding peanut butter reduced the anti-peanut IgE response to peanut immunization, but this tolerance was not maintained if mast cells were activated at the site of immunization in peanut-fed animals.

These findings suggest that mast cell activation may reduce the effective tolerance to food antigens. This research highlights a possible role for mast cell activation in the development of multiple food allergies that could aid in the design of novel preventative strategies.

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