



Allergic Diseases: OVA-Induced Asthma



Typical mouse OVA asthma models take several weeks to induce asthma because anti-OVA antibody production is essential. To bypass this rate-limiting step, a newly-developed asthma mouse model uses an anti-OVA IgE monoclonal antibody (mAb) rather than OVA for sensitization, resulting in a one-week study as shown in Figure 1 (1,2). Chondrex, Inc. provides mouse anti-OVA IgE mAbs, allergenic E-C1 and non-allergenic E-G5, anti-OVA IgG mAb L71, and related kits for studying allergic diseases, such as in-vivo hypersensitivity reactions for in-vitro and in-vivo experiments.

Figure 1. Typical Protocols for Inducing Asthma in Mice

OVA/Alum-Induced Asthma



Anti-OVA IgE-Induced Asthma, **NEW!**

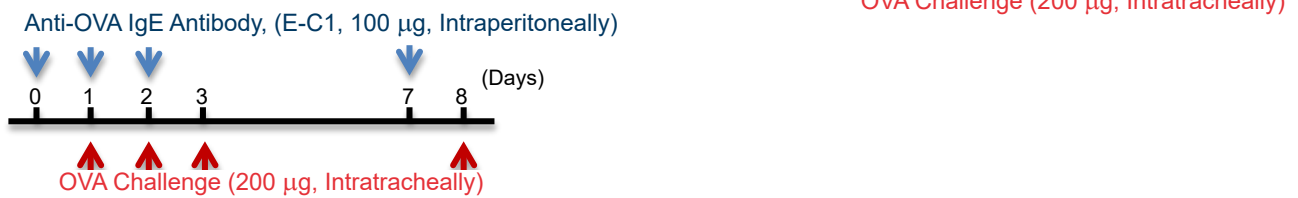


Figure 2 shows typical OVA-induced foodpad swelling through the use of anti-OVA mAbs. Interestingly, anti-OVA IgG synergistically develops an allergic reaction with non-allergenic IgE. This result indicates that anti-allergen IgG may play pathogenic roles in allergic diseases by forming multivalent antigen complexes which bind to IgE on the surfaces of mast cells, rather than competing with IgE for its allergenic epitopes (3).

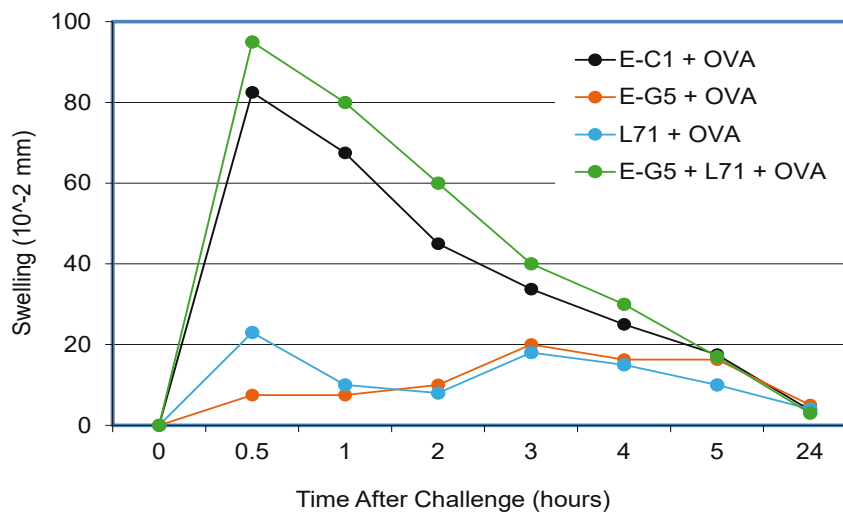


Figure 2. Footpad Swelling in Mice with Anti-OVA IgEs (E-C1 and E-G5) and IgG1 (L71)

Balb/c mice received 10 µg of anti-OVA monoclonal IgE antibodies (allergenic E-C1 and non-allergenic E-G5), and IgG1 (L71) by IV injection, then were challenged with OVA (50 µg) by intradermal injection at the footpad after 24 hours. Footpad thickness was determined with a Loop Handle Dial Thickness Gauge and shown in mm. Sensitization with E-C1 resulted in a hypersensitivity reaction as indicated by footpad swelling (black). In contrast, E-G5 (orange) and L71 (blue) did not induce individual hypersensitivity reactions. However, co-injection of E-G5 and L71 synergistically induced a hypersensitivity reaction (green) commensurate to E-C1.



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Ovalbumin From Chick Egg White

Name	Quantity	Catalog #
Ovalbumin From Chick Egg White	1 g, Lyophilized	3021
Low Endotoxin Ovalbumin From Chick Egg White	10 mg, Lyophilized	3022

Mouse Anti-OVA IgE and IgG Monoclonal Antibodies

Name	Mast Cell Activation	Hyper-Sensitivity Reaction	Quantity	Catalog #
IgE, Clone E-C1	Yes	Yes	1 mg, Lyophilized	3006
IgE, Clone E-G5	No	No	1 mg, Lyophilized	3007
IgG1, Clone L71	No	No	1 mg, Lyophilized	3008

Mouse Antibody Assay Kits

Kit	Anti-OVA	Total Immunoglobulin
IgE Antibody Assay Kit	3004	3005
Serum IgE Antibody Assay Kit	3010	-
IgG Antibody Assay Kit	3011	3023
IgG1 Antibody Assay Kit	3013	3025
IgG2a Antibody Assay Kit	3015	3026
IgG2b Antibody Assay Kit	3016	3027
IgG2c Antibody Assay Kit	3029	-
IgG3 Antibody Assay Kit	-	3028
IgM Antibody Assay Kit	3017	3024
IgA Antibody Assay Kit	3018	3019

Individual monoclonal antibodies against OVA are also available. Please visit www.chondrex.com for more information.

References

1. N. Mizutani, H. Goshima, T. Nabe, S. Yoshino, Establishment and characterization of a murine model for allergic asthma using allergen-specific IgE monoclonal antibody to study pathological roles of IgE. *Immunol Lett* **141(2)**:235-45 (2011).
2. N. Mizutani, H. Goshima, T. Nabe, S. Yoshino, Complement C3a-Induced IL-17 Plays a Critical Role in an IgE-Mediated Late-Phase Asthmatic Response and Airway Hyperresponsiveness via Neutrophilic Inflammation in Mice. *J Immunol* **188(11)**: 5694-705 (2012).
3. P. Mehlhop, M. van de Rijn, A. Goldberg, J. Brewer, V. Kurup, *et al.* Allergen-induced bronchial hyperreactivity and eosinophilic inflammation occur in the absence of IgE in a mouse model of asthma. *Proc Natl Acad Sci USA* **94**: 1344-49 (1997).