The Experimental Induction of Allergy

by Craig Paardekooper

Here is an animal experiment that demonstrates how an allergy is induced by administering an immunogenic substance – such as aluminium – in combination with a food protein. Subsequently, the animal is allergic to the food protein.

1. Development and Characterization of an Effective Food Allergy Model in Brown Norway Rats (2015)

Authors: Abril-Gil M. et al. (2015)

Journal: *PLOS ONE*, 10(5): e0125314.

DOI: 10.1371/journal.pone.0125314

- Read the full paper – open access
- PubMed record

What the researchers demonstrated:

The researchers induced food allergy in Brown Norway rats using ovalbumin (OVA), an egg-white protein, together with two immunological adjuvants:

- Aluminium hydroxide (alum).
- *Bordetella pertussis* toxin.

They subsequently exposed the animals to ovalbumin orally and demonstrated:

- OVA-specific IgE antibody production.
- Allergic reactions following oral allergen challenge.
- Changes in body temperature.
- Mast-cell protease release.
- Increased intestinal permeability.

Importantly, they demonstrated that the combination of systemic immunisation and subsequent oral exposure produced a more convincing food-allergy model than immunisation alone.

2. A second particularly relevant paper

Assessment of the Route of Exposure to Ovalbumin and Cow's Milk Proteins on the Induction of IgE Responses in BALB/c Mice (2022). - Read the full paper – open access