Differences in antibody repertoires between peanut allergic and tolerant patients to improve peanut allergy diagnostics

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Development of improved peanut serum-based allergy diagnostics by preventing false-positive outcomes induced by specific IgE of sensitized but tolerant subjects. By means of our study results, improved allergens (i-allergens) for the diagnostic may…

Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Allergic conditions
Study type	Observational invasive

Summary

ID

NL-OMON46680

Source
ToetsingOnline

Brief title
i-allergen

Condition

- Allergic conditions

Synonym
Food allergy

Research involving
Human

Sponsors and support

Primary sponsor: Universitair Medisch Centrum Utrecht

Source(s) of monetary or material Support: EUROIMMUN AG, Lübeck, Germany,Euroimmun AG;Lübeck;Germany

Intervention

Keyword: diagnostics, food allergy, peanut

Outcome measures

Primary outcome

Since this is an explorative study, the primary outcome will be divided in a discovery and a validation outcome.

1) Discovery outcomes

For characterization of obtained Ara h 2, 6 and 7 specific IgE-antibodies from sensitized but tolerant and genuine allergic subjects, the epitope specificity will be examined. These outcomes will be the basis to evaluate the recognition of epitope combinations in Ara h 2, 6 and/or 7 sensitized subjects with allergy or tolerance.

2) Validation outcomes

To confirm the discovery outcome, the functionality of the antibody combinations (* epitope combinations) will be investigated by loading the as relevant characterized antibody combinations on effector cells and stimulating them with the allergen of interest. The property to induce an allergic reaction will be measured by the release of mediators or the upregulation of surface maker on the effector cells.

Secondary outcome

Since additional parameters might influence the induction of an allergic reaction, the binding affinity of IgE antibodies and the epitope specificity of antibodies with another isotype will be measured. Their acquirement to inhibit an allergic reaction will be estimated by mediator release assay or up regulation of surface maker.

Contiguous to the primary and secondary parameters, new linear and conformational epitopes may be identified.
Additionally, symptoms during an allergic reaction differ between allergic subjects and the potential antibody combinations can vary accordingly. Fewtrell and Metzger, 1980, showed a greater histamine release after forming cross-linked oligomers instead of dimers [16]. Possibly, we can find hints why some subjects have stronger reactions than others.

Study description

Background summary

Food allergy is a medical problem affecting 2-3 % of the population with an increasing tendency. To date, the gold standard in food allergy diagnostic is the double blind, placebo controlled food challenge (DBPCFC) exhibiting major drawbacks, such as the risk to develop a life-threatening allergic reaction, high costs and time consumption. Diagnostics using specific IgE can overcome these drawbacks, but can lead to false negative and false positive results. In the diagnostics of anti-neutrophil cytoplasmic antibody (ANCA)-associated vasculitis, improved diagnostics tools were developed by categorizing epitopes in disease-related and natural ones. Thus, we hypothesize the existence of allergy-related epitope combinations since an allergic reaction is induced by cross-linking of at least two high affinity IgE-receptors (Fc*RI) on the surface of mast cells, basophils and eosinophils.

Study objective

Development of improved peanut serum-based allergy diagnostics by preventing false-positive outcomes induced by specific IgE of sensitized but tolerant subjects. By means of our study results, improved allergens (i-allergens) for the diagnostic may be developed.

Study design

It is an explorative study and the included subjects will come for one visit to withdraw 100 ml blood. The blood is used to generate monoclonal antibodies specific for the major peanut allergens Ara h 2, 6 or 7.

Study burden and risks

The most common side effect is a small discoloration or bruise remaining at the site for several days. There may be mild temporary pain associated with the insertion of the needle. In very rare cases, a local infection may occur at the site of the venipuncture. The subject will be informed about possible slight pain and discomfort with the blood withdrawal.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adults (18-64 years)
Elderly (65 years and older)

Inclusion criteria

- At least 18 years of age
- Detectable IgE-sensitization to at least one of the allergens Ara h 2, 6 and 7
- Positive performed peanut food challenge for allergic patients
- Negative performed peanut food challenge or convincing history for tolerant patients

Exclusion criteria

- Pregnancy
- Previously or current participation in an allergy immunotherapy trial

Study design

Design

Study type: Observational invasive

Masking:	Open (masking not used)
Control:	Uncontrolled
Primary purpose:	Diagnostic

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	01-08-2018
Enrollment:	12
Type:	Actual

Ethics review

Approved WMO Date:	07-03-2018
Application type:	First submission
Review commission:	METC NedMec
Approved WMO Date:	04-05-2018
Application type:	Amendment
Review commission:	METC NedMec

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
CCMO	NL63917.041.17

Study results