ABSTRACTS

P01 How Well Could Mite-Sensitized-AR Patients Accept Subcutaneous Allergen Immunotherapy In Beijing.
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Keywords: Allergic Rhinitis; House Dust Mite; Standardized House Dust Mite Allergen Immunotherapy.

Introduction
Allergen immunotherapy has been regarded as the only etiological treatment of allergic rhinitis for almost twenty years, while it is still not well accepted by patients in China. We did a survey at out-patient clinic to investigate its acceptability in mite-sensitized-AR patients.

Method
We advertised through weibo, wechat, hospital website and posts in hospital hall to recruit potential AR patients. After questionnaire and free house dust mite skin prick test, AR patients allergic to house dust mite were transfer to an allergist, standard house dust mite allergen immunotherapy was recommanded.

Results
102 patients filled the questionnaire and went thought the skin prick test, 81 cases were diagnosed with clinical AR, among of them, 43 cases (53.1%) were allergic to house dust mite, 15 cases(18.4%) were grade 2 and above. The skin test levels were not related to VAS and how severity the quality of patients’ life were impacted. No patients chose allergen immunotherapy as their treatment at site, 3 patients (3/43) patients enrolled to this treatment at the following clinic visits.

Conclusion
More than half of AR patients were allergic to house dust mite, but only 1 out of 14 patients would consider standardized allergen immunotherapy.

P03 Initiating Yellow Jacket Venom Immunotherapy With A 100 Microgram Dose Of Venom.
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Keywords: Yellow Jacket Allergy, Venom Immunotherapy, Updosing, Sting Challenge

Introduction
Venom immunotherapy (VIT) is highly effective in preventing re-systemic reactions to yellow jacket stings. It is common practice to implement incremental doses until the maintenance dose of 100 µg is reached, which is considered to be more venom than an average sting. However, the beneficial effect of updosing on systemic side effects has never been proven in venom allergy. In this study, a starting dose of 100 µg Vespula spp. venom was compared to up dosing with a modified rush protocol in terms of adverse reactions, clinical efficacy and immunological effect.
Method
Pharmalgen® VIT was used. Eighteen patients were randomized into VIT initiation by either four 4-weekly 100 μg injections, or 13 up dose injections in 7 weeks followed by one booster injection at week 12. Adverse reactions were registered. Clinical efficacy of both protocols was assessed with a sting challenge. Twenty untreated patients receiving a sting challenge served as a control. Immunological effect was assessed by the sIgE/sIgG4 ratio.

Results
No systemic reactions were observed to either VIT regimen and both regimens offered complete protection from systemic reactions to subsequent sting challenges. In contrast, 20% of untreated patients reacted systemically to a sting challenge. A comparable decrease of the sIgE/sIgG4 ratio among the 100-μg and cluster protocol was measured (12.25 and 15.26; \( P = 0.344 \)).

Conclusion
It may be possible to start VIT at the maintenance dose in critically selected patients. Administration of 100 μg VIT is not a suitable alternative to a sting challenge with a living insect for assessing clinical allergy to yellow jacket venom.

Clinical and laboratory patient characteristics

<table>
<thead>
<tr>
<th></th>
<th>100-μg Protocol (n = 10)</th>
<th>Cluster protocol (n = 8)</th>
<th>Sting protocol (n = 20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>43.1 ± 12.4</td>
<td>52.9 ± 5.5</td>
<td>51.25 ± 12.2</td>
</tr>
<tr>
<td>Gender (male, %)</td>
<td>6 (60.0)</td>
<td>6 (75.0)</td>
<td>10 (50.0)</td>
</tr>
<tr>
<td>Field sting reaction (grade, %)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>1 (10.0)</td>
<td>1 (12.5)</td>
<td>3 (15.0)</td>
</tr>
<tr>
<td>II</td>
<td>2 (20.0)</td>
<td>2 (25.0)</td>
<td>3 (15.0)</td>
</tr>
<tr>
<td>III</td>
<td>3 (30.0)</td>
<td>1 (12.5)</td>
<td>7 (35.0)</td>
</tr>
<tr>
<td>IV</td>
<td>4 (40.0)</td>
<td>4 (50.0)</td>
<td>7 (35.0)</td>
</tr>
<tr>
<td>Interval field sting - start VIT resp. sting challenge (months)</td>
<td>9.7 (8.4-20.6)</td>
<td>9.6 (7.7-10.4)</td>
<td>11.2 (8.5-25.0)</td>
</tr>
<tr>
<td>sIgE-yellow jacket (kU/L)</td>
<td>3.51 (1.47-7.22)</td>
<td>7.96 (3.28-16.62)</td>
<td>5.15 (3.06-8.35)</td>
</tr>
<tr>
<td>Tryptase (μg/L)</td>
<td>5.0 (3.9-6.7)</td>
<td>5.5 (3.7-6.0)</td>
<td>4.3 (3.5-5.1)</td>
</tr>
</tbody>
</table>

Mean ± SD or median (interquartile ranges). Group differences were tested using the independent samples t-test, Mann-Whitney U-test, or Kruskal Wallis test. No difference in variable values between groups were found. VIT, venom immunotherapy.
Clinical Features Of Paediatric Patients Receiving Latex Immunotherapy
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Keywords: Latex Hypersensitivity, Desensitization, Sublingual Immunotherapy

Introduction
Latex allergy (LA) remains a significant problem. In children certain risk factors such as early and multiple surgical interventions should be considered.

Method
This is a retrospective, descriptive study of twenty-six Mexican children between 1 and 19 years (65% male, 35% female) with confirmed LA (clinical history and sensitization with either skin prick testing and/or latex-specific serum immunoglobulin E >0.35 KU/L. They were enrolled to receive sublingual immunotherapy (SLIT) with latex extract. Rush (3-day) induction protocol of latex sublingual immunotherapy was performed with increasing doses of ALK-Abelló latex extract at three concentrations of latex proteins (5, 50 and 500 microgmL) followed by a maintenance therapy. Any side-effects that might be related to immunotherapy are being reported, the corresponding dose and treatment were registered (ongoing study).
**Results**

In children, early surgical interventions had been classically identified as risk factors for LA. We identified a wide variety of number, type and timing of surgical interventions and procedures such as eye surgery, appendectomy, dental procedures, myelomeningocele repair, urogenital abnormalities repair, among others. Interestingly we did find that 61.5% of the patients had a clear history of atopy and allergic disease.

**Conclusion**

Surgical procedures alone may not be considered the main risk factors for LA, whilst history of allergic disease may play an important role in sensitization and development of LA. Although preventive measures can be established, specific immunotherapy is a suitable therapeutic intervention. We still need to follow up this cohort in order to establish outcome, adverse effects and significant associated factors.

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**P05 THE VALUES OF SPECIFIC IgG4 IN THE INITIAL STAGES OF VARIOUS FORMS OF SUBCUTANEOUS ALLERGEN IMMUNOTHERAPY (SCIT)**

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**Keywords:** Allergen Immunotherapy, Rush/Cluster Application, IgG4

**Introduction**

Rush and cluster allergen-specific immunotherapy are modern build-up forms of subcutaneous immunotherapy. A number of reports suggests that induction of IgG₄ "blocking antibodies" may be important for successful allergen immunotherapy. In our case we compare the tolerability of rush, cluster and classical schedules of build-up phase of SCIT with elevation of IgG₄ allergen-specific antibodies serum levels.

**Method**

In 78 patients with confirmed hypersensitivity (skin PRICK test, specific IgE) to birch pollen, grass, dust mites and insect venoms, who received a specific allergen immunotherapy in autumn-winter 2009-2010, we monitored the production of specific IgG₄ antibodies. Our aim was to determine the level and rate of production of these antibodies under the influence of different forms of the initial phase of allergen immunotherapy. We compared SCIT performed with depot products- PHOSTAL (mites and pollens), ALUTARD (insect venoms) or allergoid - POLLINEX (tree and rye) - in patients with classical initial phase (reaching maintenance dose in 3 months), cluster method (with achievement of maintenance dose in 1 month) and in patient with rush method throught the initial phase (reaching the maintenance dose in 1 day). Laboratory testing was performed before the initial phase and then after 1 month and 3 months after the initial session.

**Results**

In patients with insect venom SCIT the specific IgG₄ values increased significantly after rush and cluster method - after 1 month up to 4 times and after 3 months 10 times. In classical application schema was increase after 3 months only 3 times higher than starting values.

In group with pollens SCIT we described significant increase only with rush method - after 3 months up-to 10 times.
In group with house dust mites SCIT was significant difference between the rush and classical form of application. In 3 months there were IgG₄ rise up-to 7 fold in rush group.

**Conclusion**
The rapid initial phase of the application form SCIT create much higher production of specific IgG₄ than the classic form. This fact can be used mainly in cases where we are interested in as soos as posible induction of the protective effect of allergen immunotherapy (eg. against allergies to insect venom or pollen during its becoming season).

**P06 Failure To Treat Bee Venom Allergy Due To Systemic Reactions During Maintenance Phase Of Venom Immunotherapy**

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**Keywords:** Bee Venom, Immunotherapy, Systemic Reaction, Tryptase

**Introduction**
Venom immunotherapy (VIT) is the treatment of choice to induce tolerance to hymenoptera venom allergic patients who have experienced systemic reaction after a sting. Efficacy with single venom SIT is 75% to 90%. Systemic reactions during treatment occur in 10% to 15% of patients, usually during up-dosing phase of the VIT and most of the reactions are mild. We present a case of a treatment failure due to frequent systemic reactions, both on up-dosing and maintenance phases of the treatment with no known underlying cause.

**Method**
Medical records of a single patient who have been treated with VIT in Vilnius University Hospital Santariskiu klinikos were reviewed.

**Results**
The patient experienced a first anaphylactic reaction with a loss of consciousness after a bee sting in year 2011. Bee venom allergy was diagnosed in 2012 and an ultra rush VIT was initiated with lyophilisate of Honey bee venom (Stallergenes, Antony Cedex, France). After a 15 mcg subcutaneous injection she developed an anaphylactic shock and VIT was discontinued. The patient experienced another anaphylactic reaction in 2012 after which she was referred to an allergologist in our hospital. Specific immunoglobulins E (sIgE) were as follows: Honey bee (*Apis mellifera*) venom - 6 class, Common wasp (*Yellow jacket, Vespula spp.*) venom - 3 class, European hornet (*Vespa crabro*) venom - 2 class (Phadia, Uppsala, Sweden). Conventional VIT with freeze-dried insect venom of honey bees (HAL Allergy, Leiden, Netherlands) was initiated with weekly increase of doses in the build-up phase. During initial treatment four systemic reactions occurred. The maintenance dose of 100 mcg was reached after 5 months. However, after a third maintenance injection the patient experienced anaphylactic shock and was treated in intensive care unit. We did not find any elevation of serum tryptase during all systemic reactions. There was an attempt to continue VIT starting at 50 mcg dose with premedication with antihistamines and nonsteroidal anti-inflammatory drugs, but 60 mcg dose could not be exceeded due to repeated mild systemic reactions. After 14 months of treatment VIT was discontinued due to the loss of patient’s motivation.

**Conclusion**
The patient experienced multiple mild and severe systemic reactions during up-dosing and maintenance phases of VIT which led to the discontinuation of the treatment. Neither baseline serum tryptase elevation, nor other risk factors were
detected. Premedication showed no beneficial effect. No increase in serum tryptase during anaphylaxis let us suspect that an alternative mast cell-independent mechanism of the reaction could be involved.

**P07 Poly-Sensitized Patient With Large Local Reaction To Honeybee Sting Working As Beekeeper**

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Keywords: Hymenoptera, Venom, Immunotherapy, Beekeeper

**Introduction**

Patients with Hymenoptera venom allergy who develop a systemic allergic reaction to an insect sting should benefit from the subcutaneous immunotherapy, while for patients with large local reactions venom immunotherapy is not in general necessary. However an individualized approach should be considered for patient with unavoidable or frequent exposure, as is the case of beekeepers.

**Method**

A 24-year old Caucasian woman working as a beekeeper presented a large local reaction after a honeybee sting to the face with a peak at 3 hours after the sting. She did not experience acute systemic reactions. The patient was already followed in our department since 5 years for a chronic urticaria triggered by contact with water for which she is taking 5 mg of Levocitirizine daily. During the last year she also developed rhinitis for which a work-up has been done in order to determine specific allergic triggers. Her medical history includes likewise an atopic dermatitis and asthma during childhood.

**Results**

In order to evaluate her reaction to the insect sting, intradermal testing with hymenoptera venom was performed, and showed an 8 mm positive reaction for honeybee venom (positive control histamine at 4 mm). In vitro testing for insect-specific IgE was also performed. Venom honeybee (*Apis mellifera*) IgE were positive (28.5 kU/L), while the venom Yellow Jacket (*Vespula* spp), *Vespa crabo* and *Polistes dominula* IgE were negative. Furthermore the specific IgE for the recombinant allergens were positive for rApi m1 (1.91 kU/L) and rApi m10 Icarapin (17.8 kU/L) and negative for rVes v5 and CCD MUXF3 Bromelain. The diagnostic work up confirmed the patient sensitization for honeybee venom. Additionally the serum-tryptase levels were normal (4.25 µg/L), and the total IgE were > 250 kU/L.

**Conclusion**

Albeit the patient works as a beekeeper, we considered that the patient risk to develop a severe systemic reaction is low based on the ‘delayed’ local reaction, the normal serum-tryptase basal levels and the high basal levels of total IgE. Thus we decided that the subcutaneous venom immunotherapy would not be initiated for this patient.

N.B. Patient informed consent has been obtained for the presentation of this case.
P08 Clinical And Sensitization Profile Of Children Receiving Allergy Immunotherapy In Mexico City.
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Keywords: Allergen Immunotherapy, Polysensitization

Introduction
Subcutaneous and sublingual immunotherapy (SLIT, SCIT) are approved for the treatment of pediatric asthma and rhinitis. **Objective:** Identify the clinical and sensitization profile of Mexican children with allergic diseases who are currently receiving allergen immunotherapy.

Method
This is a cross-sectional, observational, descriptive and retrolective design. Our population included children aged 1-18 years who attend the Allergy Clinic at the National Institute of Pediatrics (Mexico City). The following diagnoses were identified: asthma, rhinitis, atopic dermatitis and oral allergy syndrome. Allergens were suspected upon clinical history and sensitization was determined by skin tests (standardized allergen extracts and histamine positive control). All clinical records of patients enrolled into allergen immunotherapy (either SCIT or SLIT) were reviewed from January 2011 to December 2015.

Results
We identified 1532 patients (39.8% female and 60.2% male). The great majority of pediatric patients consulting for allergic disease are polysensitized (85%) and all of them receive a multiallergen immunotherapy. The five most common allergens found were *Dermatophagoides pteronyssinus, Dermatophagoides farinae, Cupressus arizónica, Olea europea* and *Blomia tropicalis.*

Conclusion
Recent data states that single-AIT in may be suitable in polyallergic patients. We still need to follow up this cohort in order to establish outcome.

P09 Lignosus Rhinocerus Extract Suppresses Airway Inflammation And Regulates Treg Imbalance In The Ovalbumin-Induced Asthmatic Model
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Keywords: Airway Inflammation, Asthma, Lignosus Rhinocerus, Ovalbumin, Regulatory T Cell

Introduction
Tiger Milk mushroom or scientifically known as *Lignosus rhinocerus* is locally used as herbal remedies for various diseases in Malaysia. This study investigated the effects of *L. rhinocerus* extract (LRE) on ovalbumin (OVA)-induced airway inflammation in Sprague Dawley rats.

Method
Male Sprague Dawley rats were sensitized with a combination of ovalbumin (OVA) and *Bordetella pertussis* at day 1 and day 14. The animals were challenged with OVA and treated orally with LRE at 500 mg/kg per body weight at day 21 for seven days. Dexamethasone was given to OVA-sensitized rats in
the control group. The levels of immunoglobulin E (IgE) in serum, T-helper 2 cytokines in bronchoalveolar lavage fluid (BALF), eosinophil infiltration in BALF, and lung histology on mucus production were investigated. Flow cytometry analysis was also performed to identify leukocytes and T regulatory subpopulation in BALF.

**Results**

LRE treatment significantly ameliorated the increase in total IgE in serum and IL-4, IL-5 and IL-13 levels in BALF and also effectively suppressed eosinophils numbers in BALF while attenuating eosinophil infiltrations and mucus production in the lungs. Flow cytometry analysis also revealed that CD4+Foxp3+ decreased in BALF of OVA-induced rats; however treatment of LRE and dexamethasone resulted in an obvious elevation in CD4+Foxp3+ in BALF.

**Conclusion**

This study demonstrated inhibitory effects of LRE on airway inflammation and Treg regulation in OVA-induced asthma model. These results suggest the potential of LRE as an alternative for the treatment of asthma.
P10 INDUCTION OF HUMORAL IMMUNE RESPONSE BY ALLERGENS CAPSULATED INTO POLYMERIC CHITOSAN-ALGINATE NANOPARTICLES

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Keywords: Allergen Immunotherapy, House Dust Mite, Vaccines

Introduction
Background. Specific immunotherapy (SIT), based on the injections of natural allergen extracts, can induce IgE mediated side effects. Previously we have shown in vitro that capsulation of recombinant house dust mite (HDM) allergens into chitosan-alginate nanoparticles (NP) completely prevented their recognition by IgE in sera from HDM allergic patients. To use capsulated allergens in SIT they should be able to induce protective IgG response.

The aim of this study was to compare the ability of capsulated allergens to induce IgG upon NP injection via intraperitoneal (i.p.), subcutaneous (s.c.), or intranasal (i.n.) routes.

Method
Methods. Recombinant Der f 1 and Der f 2 from HDM, Asp f 3 from Aspergillus fumigatus, ovalbumin (OVA), or lactoferrin from cow milk were encapsulated into NP. Core 80-90 nm NPs were obtained from carbodiimide activated chitosan 60 kDa admixed with allergen by self assembly in water-methanol phase during dialysis (zeta-potential +8mV). Core NPs were additionally coated by activated alginate added drop-wise at constant shaking. Resulting core-shell NPs were 120-180 nm in diameter and negatively charged (-8 to -13mV). To analyze the ability to induce humoral responses, mice were immunized either i.n. 8 times (once per 3 days) or i.p. s.c. 3 times (once per week) with free allergens; core or core-shell NPs containing encapsulated allergens. Concentration of allergens in NPs was estimated using fluorescent derivatives of proteins and was comparable in all samples. Antibody production was studied by ELISA in dynamics.

Results
Results. We have shown that NPs did not induce significant IgG after i.p. immunization while s.c. protocol provided a significant humoral IgG response to encapsulated allergens. Free allergens induced IgG in all immunization protocols used. The level of IgG production depended on the allergen and was comparable for free and encapsulated Asp f 3 and lactoferrin. OVA and HDM encapsulated allergens induced significant IgG production however the titers were lower than after immunization with free allergens. I.n. immunization with NPs or free allergens did not induce significant IgG response.

Conclusion
Conclusions. We have shown that IgG formation induced by encapsulated allergens depends on the route of immunization and is the most efficient after s.c. injections of NPs.
P11 Mite Component Resolved Diagnosis And Tailored Specific Immunotherapy
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Keywords: Component Resolved Diagnosis, Specific Immunotherapy, Mite

Introduction
Component resolved diagnosis (CRD) has become increasingly important in the assessment of allergic patients giving its ability to differentiate genuine sensitization from cross-reactivity. Besides, tailored specific immunotherapy (SIT) based on allergens with IgE response has been suggested to have a better efficacy compared to traditional one.

The aim of this study is to contribute to profiling of mite allergic patients.

Method
Clinical files of 398 allergic to mite patients (positive skin prick test to Dermatophagoides pteronyssinus (Der p) extract) were studied. Levels of Der p and Lepidoglyphus destructor (Lep d) total extract, nDer p 1 and rDer p 2 specific serum IgE were assessed. IgE immunoblotting with Lep d extract was performed in a group of Lep d IgE positive patients.

Results
Patients mean age was 21.7 ± 15 years, being 56.1% male. Among 398 mite allergic patients, 261 (66.9%) were positive to nDer p 1 and rDer p 2, 84 (21.5%) were single positive to nDer p 1 or rDer p 2 and 45 (11.5%) were negative for both. From 287 patients studied for Lep d reactivity, 240 (83.6%) had positive IgE for Lep d and 35 of those were studied by immunobloting, 60% being positive for Lep d 2.

Conclusion
In our group of patients nDer p1, rDer p2 and Lep d 2 appeared to be important molecular components to have in account for obtaining a tailored SIT. However, more studies are needed to prospectively define the efficacy of this approach.

P12 THE SAFETY PROFILE OF COW’S MILK ORAL IMMUNOTHERAPY IN OUR EXPERIENCE
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Keywords: Safety, Oral Immunotherapy, Cow’S Milk Allergy

Introduction
Oral immunotherapy (OIT) is considered able to modulate the immune response, and induce a clinically apparent desensitization in patients with persistent IgE-mediated cow’s milk allergy (CMA). However, its safety remains to be better quantified and risk factors identified before it can be formally added to recommendations for the CMA management.

Method
We reviewed the clinical records of children (4-18ys) who underwent OIT for CMA confirmed by DBPCFC since 2006 in CTs in our Allergic Pediatric Unit.

The specific AEs occurred during OIT up-dosing regimens were empirically classified into mild, moderate and severe.
**Results**

40 children with CMA performed OIT.

4 (10%) pts had severe systemic AEs (asthma, rhinitis, generalized urticaria & hypotension). Those patients were treated with intramuscular adrenaline, intravenous steroids, intramuscular antihistamines, and inhaled salbutamol. 3 of them had a clinical history of concomitant allergic asthma. None of them resumed OIT. The doses of undiluted CM causing severe AEs were: 2mL in 2 pts, 4mL in 1 pt and 8mL in 1 pt, respectively. Those pts had a median sIgE level of 98kU/L for α-lactalbumin, 115kU/L for β-lactoglobulin, 138kU/L for casein. 35 pts completed CM-OIT successfully. One, during the maintenance phase, interrupted OIT for the onset of eosinophilic esophagitis. 20 (30%) pts had mild to moderate AEs during the up-dosing phase. Symptomatic drugs were needed in 7 pts with moderate AEs. 20% of pts who continued the maintenance regimen had mild to moderate AEs during exercise, infections or menses but none discontinued the CM consumption.

**Conclusion**

In our experience, severe AEs were not rare (10%) and led to the OIT discontinuation since the induction phase. No fatal AEs occurred. No AEs occurred in the placebo groups of our CTs (n=23).

Mild to moderate AEs could be easily managed by symptomatic drugs.

We attempted to grade AEs caused by OIT, in order to achieve an appropriate and reproducible grading system.

OIT should be practiced only in clinical setting by well-trained physicians & nurses.

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**P13 Intralymphatic Immunotherapy With Birch- And Grasspollen Allergen**

**Allergen**

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**Keywords:** Allergic Rhinitis, Allergen-Specific Immunotherapy, Intralymphatic Immunotherapy, Seasonal Allergic Rhinitis, IgG4

**Introduction**

Allergy immunotherapy (AIT) is an effective disease-modifying and symptom-ameliorating treatment. Intralymphatic allergen-specific immunotherapy (ILIT) has been suggested as a less time-consuming alternative to conventional subcutaneous or sublingual AIT. However, early promising results have been disputed. The aim of our new studies was therefore to expand our previous trials, to further assess the safety and efficacy of ILIT.

**Method**

In our first and previously reported study, 15 patients with pollen-induced rhinoconjunctivitis were randomised to receive three intralymphatic inguinal injections of active allergen (1000 SQ-U birch- or grass-pollen) or placebo. In a second study an additional 21 patients were included. These 36 patients in total have been evaluated for clinical effects, safety and circulating immunological markers before treatment, 4 weeks after treatment and at the end of the
Results
No moderate or severe reactions were recorded following ILIT in the three trials. Patients receiving active single allergen ILIT experienced a significant improvement in self-recorded seasonal allergic symptoms, as compared to placebo (VAS-score: 4.78±0.9, p=0.05). In a subgroup of these patients (“improved”), a reduction in nasal symptoms following nasal allergen provocation was also demonstrated (symptom score difference: 4.2±0.6 vs. 2.0±0.5, p=0.015). No changes in total IgE or IgG4 were found. However, the affinity of allergen specific IgG4 following active treatment was significantly increased, as compared to non-improved patients (improved: 58.8±9.4 % bound; non-improved: 32.9±5-6 % bound, p=0.04). This could be correlated with clinical improvement, on an individual level. The results from the dual allergen study are currently being analysed.

Conclusion
Our studies show that ILIT is a safe and effective treatment for pollen-induced rhinoconjunctivitis, markedly reducing seasonal allergic symptoms.

P14 A Fusion Protein Consisting Of Recombinant Ara H 2 And A C-terminal Part Of FGL2 For The Treatment Of Peanut Allergy
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2. Oslo University Hospital, Oslo, Norway
Keywords: Peanut, Ara H 2, Fusion Protein, Recombinant, Immunotherapy

Introduction
Fibrinogen-like protein 2 (FGL2) has been associated with immune suppression via its binding to the inhibitory Fc-gamma receptor-IIb. The aim of this study is to investigate a fusion protein containing peanut allergen and FGL2 as allergen specific immunotherapy.

Method
The fusion protein was expressed in an E. coli expression system, purified by immobilized cobalt affinity chromatography and investigated by SDS-PAGE and western blotting studies. Basophile activation test (BAT, CD63+ expression) was performed with blood from Norwegian peanut allergic individuals.

Results
The major peanut allergen, Ara h 2, was fused to a functional C-terminal part of FGL2 via a short linker. Western blot studies showed that the 31 kDa fusion protein was recognized by Ara h 2-specific IgG, and serum IgE from peanut allergic individuals. Dose response-studies of BAT showed a reduced activation in presence of the fusion protein compared to Ara h 2 as a single protein. The reduced activation of basophils was not caused by hindered IgE binding to Ara h 2 in the fusion protein compared to single Ara h 2.

Conclusion
A fusion protein consisting of Ara h 2 and a C-terminal part of FGL2 was generated as a candidate specific immune therapy for peanut allergy.
**P15 High Affinity Interaction Between An Ara H 2-FGL2 Fusion Protein And The Inhibitory Receptor FcgRIIb, As Measured By Thermophoresis**

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Keywords: Allergen Specific AIT, Ara H 2, FGL2, Fcgamma receptorIIb, Thermophoresis

**Introduction**
Fibrinogen-like protein 2 (FGL2) is a natural ligand for the inhibitory Fcgamma receptor (FcγRIIb). A fusion protein linking the major peanut allergen Ara h 2 to the C-terminal part of FGL2 is currently investigated for allergen-specific immunosuppression. Thermophoresis is an easy, fast and precise method to quantify biomolecular interactions, by measuring changes in the mobility of molecules in microscopic temperature gradients. Our aim was to measure the affinity of the Ara h 2–FGL2 fusion protein for FcγRIIb.

**Method**
Recombinant Ara h 2, the C-terminal part of murine FGL2 and a fusion protein of the two were expressed in E.coli and purified by immobilized cobalt affinity chromatography. The affinity of the generated proteins for FcγRIIb was determined by thermophoresis. Recombinant mouse FcγRIIb was labeled with a fluorescent dye through N-hydroxysuccinimide crosslinking. In the thermophoresis, the concentration of labelled receptor was kept constant while the concentration of the fusion protein or single proteins was varied.

**Results**
A dissociation constant (Kd) above 15 uM was determined for the interaction between FcγRIIb and the C-terminal part of FGL2, while a Kd above 4 uM was determined for the interaction between FcγRIIb and the fusion protein. There was no measurable interaction between FcγRIIb and Ara h 2.

**Conclusion**
These results reveal that the fusion protein has a high affinity for its proposed receptor, which supports its potential as a candidate for allergen specific immune therapy against peanut allergy. To determine the Kd values more accurately, the thermophoresis needs to be repeated with higher concentrations of the proteins.

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**P16 Long-Term Assessment Of Allergen Specific Immunotherapy In Children**

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**Introduction**
Allergen specific immunotherapy (AIT) constitutes a complementary therapeutic option targeting the underlying immunological mechanisms of respiratory allergies and represents the only treatment with a potential for disease modification. However, scarce data are provided by previous literature about its long term effectiveness. Aim of this study was to evaluate the efficacy of AIT performed in children after discontinuation of treatment.

**Method**
This study evaluated 396 children affected by allergic rhinitis and/or asthma with positive skin prick tests (SPT) (>3 mm wheal) and/or specific IgE antibodies (>0.35 IU/ml) to aeroallergen extracts. Immunotherapy-treated patients underwent to three-year subcutaneous AIT. Untreated allergic children had the
same diagnosis, but they were not treated with AIT. After 18 years from the discontinuation of AIT, a postal questionnaire was administered to all patients on type, severity, frequency of symptoms, appearance of new allergic sensitizations or symptoms and use of medications.

**Results**
A response to the questionnaire was obtained by 212 children (54%). Among these, 108 had performed AIT and 104 did not. Treated patients had diagnosis of asthma in 67 cases and allergic rhinitis in 65 cases. Aeroallergen sensitization (positive SPT and/or specific IgE) among treated patients was detected for grass pollen in 84% cases, house dust mite in 35%, pellitory in 16%, trees in 13%, alternaria in 9%, cat epithelium in 3%. Overall, there was a reduction in symptoms and medication in 83% of cases at the end of AIT and 57% at 18 years after AIT discontinuation. In case of persistence of respiratory symptoms in adulthood, there was no statistically significant difference in severity of symptoms and new sensitizations to airborne allergens between groups.

**Conclusion**
AIT is an effective method of treating allergic respiratory disease associated with seasonal and perennial allergens, with a decrease of efficacy after long term discontinuation. Moreover, AIT has not proven to have a useful action to prevent the occurrence of new sensitizations to inhalant allergens.