ABSTRACTS

Thursday, 15 March 2018
Poster Discussion Session I
18:30 – 20:30

P02 - Association Between Air Pollution And Asthma: Modification By Dietary Inflammatory Potential

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Background

Air pollution, specifically fine particulate matter (PM2.5), has been associated with the development and progression of asthma by inducing oxidative stress and inflammation. Although fatty acids and antioxidants have been suggested to attenuate the adverse effects of PM2.5, the role of overall dietary intake has been poorly studied. Therefore, we aimed to investigate the modification of the association between air pollution and childhood asthma related outcomes by the effect of the inflammatory potential of diet.

Materials and methods

Spirometry and airway reversibility, exhaled level of nitric oxide, skin-prick testing, exhaled breath condensate and respiratory symptoms (wheezing, dyspnea or dry cough) of 845 children (50.8% boys, aged 7-12 years) from 20 primary schools was analyzed. Outdoor and indoor air quality measurements including PM (PM2.5, PM10) were conducted in 71 classrooms for one week. To determine dietary inflammatory potential, Dietary inflammatory index (DII) was calculated from a 24-hour recall administrated to children. The proportion of effects explained by the exposure to PM was measured by mixed-effect models and quantified using intra-class correlation coefficients. Adjustments for gender, height, asthma and DII were performed.

Results

Indoor levels of PM2.5 were inversely associated with the mid-portion of the maximal expiratory flow-volume (FEF25-75) (β=-1.30; 95%CI= -2.42 to -0.18). After adjustment for DII this association was no longer statistically significant (β=-0.56; 95% CI= -1.96 to 0.83). Indoor levels of PM2.5 explained 91.8%, 49.5% and >99.9% of the school effect on FVC, FEV1 and FEF25-75, respectively. The PM10 indoor explained 78.6%, 65.6% and >99.9% of the school effect on FVC, FEV1 and FEF25-75, respectively.

Conclusions

Our findings provide further support to the role of diet’s inflammatory characteristics modulating the effects of indoor air pollution on lung function. These results highlight the importance of children’s diet in order to provide a protective effect against air pollution.
P04 - Identification And Characterization Of An Alt A 1 Cross-Reactive Allergen From The Fungus Ulocladium Chartarum

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Keywords: Mold Allergy, Alt A 1, Ulocladium Chartarum, Alternaria Alternata, Ulo C 1

Background

Fungi represent one of the most important inducers of respiratory allergy. Even though many species that occur in the indoor environment have been identified, allergies caused by molds are often underdiagnosed due to the poor quality of mold allergen extracts and the still insufficient characterization of mold allergens. Therefore, the aim of our project is to identify and characterize new allergens from the most common mold species occurring in indoor environments in Austria.

Materials and methods

In order to identify novel allergens from fungal species, IgE immunoblots with sera from mold allergic patients were carried out, followed by nano-LC-QTOF mass spectrometric analysis of IgE reactive protein bands. This led to the identification of the first allergen from Ulocladium chartarum, a fungus belonging to the same family as the best studied indoor mold allergen source Alternaria alternata. This novel allergen shows high sequence homology to Alt a 1, the major A. alternata allergen, and was designated Ulo c 1. A full-length cDNA coding for Ulo c 1 was amplified from U. chartarum mRNA using the RACE-PCR approach and was cloned into the expression vector pET-17b. Recombinant Ulo c 1 was expressed in Escherichia coli as a soluble protein with a C-terminal hexahistidine tag and was purified to homogeneity by Nickel-affinity chromatography.

To characterize the IgE binding capacity of recombinant Ulo c 1, an ELISA was performed, where ELISA plate-bound rUlo c 1 was incubated with sera from patients sensitized to different fungi.
Results

These experiments showed that rUlo c 1 represents an IgE-reactive molecule. To investigate whether Ulo c 1 shares epitopes with Alt a 1, rUlo c 1 and U. chartarum extract were exposed to a rabbit antiserum raised against Alt a 1. The anti-Alt a 1 antiserum recognized recombinant Ulo c 1 and also natural Ulo c 1 in the fungal extract, indicating the presence of epitopes conserved between Alt a 1 and Ulo c 1. IgE inhibition blots, carried out with sera from fungal sensitized patients, showed that rUlo c 1 was able to inhibit patients’ IgE binding to Alt a 1, indicating the cross-reactivity between Ulo c 1 and Alt a 1.

Conclusions

In summary, we identified and characterized Ulo c 1, a new fungal allergen form U. chartarum, which shows cross-reactivity to Alt a 1, the major A. alternata allergen. Recombinant Ulo c 1 represents an IgE reactive molecule that could be applied for component-resolved diagnosis and could therefore improve diagnosis of mold allergy.

P05 - Outdoor Pollution Impact On Daily Allergic Airway Symptoms

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Keywords: Outdoor Pollutants, Airway Symptoms, Traffic Pollution, Allergic Disease

Background

Rapid urbanization and increased energy consumption worldwide have exposed the human to increased quantity of ambient air pollution and a great variety of pollutants. Evidence shows that several of those act both as co-factors of allergic sensitization and as symptom exacerbation triggers.

This work focuses on the effect of pollutant levels on daily airway symptoms of allergic patients in Setúbal urban area.

Materials and methods

Random selected allergic patients with asthma and/or rhinitis, living in Setúbal region and attending our allergy department were asked to mark the days with airway symptoms on the October /November, 2017 calendar.
Portuguese Environment Agency (APA) site was consulted for daily pollutant levels measured by two monitoring stations (one “background” and the other “traffic”) from the same region and time period.

Data was collected and a temporal causal model was built, using levels of particulate matter under 10 micrometers (PM10), ozone (O3), nitrogen dioxide (NO2) and carbon monoxide (CO) from both stations as inputs and number of symptomatic patients in each day as target variable.

**Results**

A total of 115 allergic patients (75 females and 40 males, mean age 31.7 ± 20.7) were included. The temporal model pointed out PM10 (traffic station) as the more relevant “Granger cause” for airway symptoms. NO2 and O3 (background stations) and CO (traffic station) were also identified as causes, although with lower impact. Model R Square was 0.86.

**Conclusions**

In Setúbal urban area traffic related pollution appears to be the most important factor in daily airway symptoms of allergic patients. However every pollutant studied seems to have some impact.

**P06 - Building An Automatic Pollen Information Network In Bavaria**

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**Keywords:** Pollen, Monitoring, Network, Allergy

**Background**

The number of pollen measuring stations in Bavaria operated by the German Pollen Information Foundation (PID) decreased recently from five to three pollen traps. This, together with the advent of new technology, was the reason for the plans to operate the infrastructure of pollen measurements in Bavaria permanently by the public sector.

The ePIN project is part of the Bavarian Climate Adaptation Strategy and is commissioned by the Bavarian State Ministry for Health and Care (StMGP) and the Bavarian State Ministry for the Environment and Consumer Protection (StMUV), coordinated by the Bavarian State Office for Health and Food Safety (LGL) with support of the Bavarian State Office for environment (LfU) and
assisted by the Center of Allergy and Environment of the Technical University Munich (ZAUM).

**Materials and methods**

Recently, new techniques with automated pollen counting and characterization are available. Instead of manually feeding in data from the past, they can be made available electronically at short time intervals. In Bavaria, eight electronic pollen monitors are currently being installed in the following districts in Bavaria: Altötting, Feucht, Garmisch-Partenkirchen, Hof, Marktheidenfeld, Mindelheim, Munich and Viechtach. ePIN is supported by the local health authorities.

**Results**

The following results are expected in the ePIN project:

- a fundamental improvement in the quality of pollen forecast in Bavaria
- a substantial improvement of the data for the allergy and health related climate research
- a long-term improvement of the Bavaria-wide data basis for climate monitoring

In cooperation with the Leibniz Supercomputing Center, the ePIN pollen data is made available to the public on the LGL website free of charge. The institutions involved in ePIN (including clinics and public health departments) also have the option of integrating the pollen data into their website.

**Conclusions**

The LGL is already conducting initial surveys on the use of environmental information services, including pollen forecasting. EPIN will also be used to investigate how pollen counts are used in the treatment of allergies. The feasibility of a study on the effects of climate changes on pollen count on sensitization is also being explored by the LGL in a pilot project (SEAL). Quantification of total protein in the extracts was possible within the range 2-20 µg/mL.
P08 - Exposure To Airborne Pollen And Fungal Spores In Alpine Versus Urban Environments: Indoors Vs. Outdoors, Circadian Patterns And Relationships With Symptoms

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Keywords: Aerobiology, Allergy, Alpine Environment, Fungi, Pollen

Background

Pollen and fungal spores (aeroallergens) are main causes of respiratory allergies. However, it is still unclear how everyday exposure to aeroallergens is related to symptoms. Is there therefore a ‘safe’ place or time period that we can ‘switch off’ allergies? To answer this, we investigated the spatiotemporal patterns of aeroallergens in an urban versus high-altitude location and fine timescales, integrating this information with daily symptoms in allergic and non-allergic people.

Materials and methods

The diversity and abundance of airborne pollen and fungal spores, for the whole spectrum of taxa, has been examined in 2016, in two locations in Bavaria, Germany: A) at the research station Schneefernerhaus, on Zugspitze mountain, at 2,650 m.a.s.l. and B) in the city of Augsburg (494 m.a.s.l.). Biomonitoring took place at ground level, using Hirst-type volumetric traps in Schneefernerhaus and Augsburg respectively. On Zugspitze, both indoor and outdoor samples were taken. All aeroallergen measurements were expressed as number of grains and spores per m2 of air. As a case study, grass pollen-allergic and non-allergic human volunteers were monitored daily during the peak of the grass pollen season in 2016, first in Augsburg and subsequently during a 2-week
stay on Zugspitze. Full factorial analyses were performed to check for co-
variance and cross-correlation among all variables.

**Results**

Aeroallergen diversity is higher in Augsburg. Urban Augsburg also shows overall higher pollen and fungal spore concentrations than those on Zugspitze. Aeroallergens are present throughout each day, with the peaks frequently taking place in the evening or at night, thus indicating long-distance transport of pollen and spores. This is more intense on Zugspitze. Outdoor measurements are significantly higher than those indoors. Symptoms are related to the current and previous days’ grass pollen concentrations. This relationship stands true even for non-allergic participants, who exhibited symptoms as well when aeroallergen exposure was higher.

**Conclusions**

Aeroallergen exposure can be high even in extreme environments, what is mirrored in symptoms. Therefore, it is still unanswered whether allergy ‘safe’ environments do exist, as aeroallergen exposure and allergy risk intervals can be even less predictable in extreme environments. The latter put individuals under extreme environmental stress, who, concomitantly, may become symptomatic even because of occasional or lower pollen exposure during only short intervals.

**P09 - DE NOVO SENSITIZATION TO RAGWEED IN CHILDREN FROM DIFFERENT REGIONS OF CROATIA**

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**Keywords:** Sensitization, Allergy, Ragweed, Pollen, Children

**Background**

Climate changes can induce alterations in biodiversity, which causes spreading of novel species (such as ragweed - Ambrosia sp.) that influence the prevalence and onset of atopic diseases, such as allergic asthma, allergic rhinitis, rhinoconjunctivitis and atopic dermatitis. As these species are not native to certain areas and regions they may act as novel and quite potent allergens in sensitizing the domicile population. Children's Hospital Srebrnjak was a part of FP7 project ATOPICA (Atopic diseases in changing climate, land use and air quality) supported by EU Grant agreement NO: CP 282687), during which we investigated the combined pan-European impact of changes in climate, land use and air pollution on allergen pollen-induced diseases with an accent on atopy due to ragweed sensitization.
Materials and methods

3590 children (aged 4-10 years), were recruited from 3 different regions of Croatia differing in airborne pollen concentrations (Slavonia, Zagreb and Dalmatia). Skin prick test (SPT) to the standard set of aeroallergens was performed in all of the participants. In addition, pollen concentrations and air quality data were gathered from authorized institutions for each region.

Results

Our results showed that a total of 369 children were sensitized to ragweed pollen. Prevalence of ragweed sensitization was 14.84 % in Zagreb area, 14.26 % in Slavonia and 1.52 % in Dalmatia. Comparing the highest pollen concentrations during ragweed pollinating period among 3 regions, Dalmatia has the lowest concentration of ragweed pollen of 30-40 grains/m3, while Zagreb measures 250-300 grains/m3 and Slavonia 700-1000 grains/m3 per 24 hours.

After two pollen seasons of follow-up, de novo sensitized children were recorded: 2.88% in Zagreb area, 2.73% in Slavonia and 0.00% in Dalmatia. Pollen diary data (data on overall symptom score, eyes, nose, lungs symptoms/problems, usage of medicine and daily activity) also showed correlation between ragweed pollen concentrations and severity of symptoms.

Conclusions

In comparison to Dalmatia, region of Slavonia and Zagreb area measure highest ragweed pollen concentrations and also all of the de novo sensitized children, which leads to assumption that de novo sensitization rates are primary correlated to exposure levels to ragweed pollen.

P10 - A Comparison Of House Dust Mite Allergen In Rural And Urban Areas Of Southern Africa, And Associations With Atopic Dermatitis

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Keywords: House Dust Mite, Atopic Dermatitis, Aeroallergen

Background

Published literature indicates a very high prevalence of HDM allergy. Although comprehensive reviews of house dust mite (HDM) allergy exist, consideration of the link between exposure, allergenicity, and the pathologic consequences have not been thoroughly analysed in the African context. The aim of this research was to look at patterns of aeroallergen prevalence in the homes of 100 children between the ages of 12 and 36 months with proven eczema or atopy as well as
those with an absence of any allergic disease, so that an association can be made between exposure and disease prevalence. The study also aims to identify and compare differences in types of allergens encountered in rural and urban dwellings. The hypothesis is that greater exposure to certain allergens in the environment can increase likelihood of allergic disease, whilst early exposure to some might offer a protective effect.

**Materials and methods**

It was a case control study, with 50 cases and 50 controls, selected from within the SAFFA (South African Food Sensitization and Food Allergy) study. Cases included children with evidence of early atopic dermatitis, recruited from the Dermatology Clinic at Red Cross War Memorial Children’s Hospital in Cape Town. Samples of 50mcg were collected in a standardised manner from pillow covers and sheets, and ELISA testing done to dermatophagoides pteronyssinus and blomia tropicalis. Quantification of dust mite allergen was done by using a scale. Clinical data of allergic disease from individual questionnaires and skin prick testing results were used for analysis.

**Results**

Early results revealed a predominance of dermatophagoides pteronyssinus in both urban and rural samples, with no significant difference in exposure with cases and controls. Sensitization rates on skin prick tests were higher in the exposure group. There was no association found between severity of atopic dermatitis and HDM exposure.

**Conclusions**

Many international studies have found correlations between aeroallergen exposure and disease, with high progression rates from sensitization to symptomatic disease in the highly unexposed group. The rural lifestyle has long been considered to be protective. This study indicates that whilst animal and plant allergens in dust might differ in rural settings, house dust mite species remain constant. We also conclude that, unlike food and other environmental allergens, exposure to HDM allergen in early life, has not been strongly associated with allergy in this group.

**P11 - Can Coal And Wood Burning Products Be A Risk Factor Of Respiratory Symptoms? – Preliminary Study Of Household PM2.5 Emissions Influence On Health.**

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**Keywords:** Outdoor Air Pollutions, Particulate Matter, Respiratory Symptoms
Background

Sixty nine percentage of individual households in Poland produce thermal energy from coal burning (in 13.7% there are also fireplaces for wood and biomass). They are responsible for 55.8% of fine particulate matter (PM2.5) emissions which are responsible for 10-33% of cardiopulmonary mortality in Polish cities.

Materials and methods

Five hundred people from a middle-size city (Legionowo) in the Warsaw agglomeration were surveyed in an ongoing study on the exposure to PM2.5 from individual households. Annual concentration of PM2.5 and benzo[a]pyrene has been estimated. A survey has been conducted and 75 never-smokers have been selected for further investigation: 50 persons as an examined group and 25 peoples from the cleanest area of Poland (Podlasie region) as a control group. These people have undergone medical examinations (spirometry test, induced sputum composition, FeNO, CO in the exhaled air, total and specific IgE). A statistical analysis has been completed (e.g. ANOVA, GRM, PCA).

Results

Most peoples (56.4% of the whole examined group) demonstrated symptoms typical for exposure to particulate matter emission, like conjunctivitis (21.5%), rhinitis (34.2%), larynx inflammation (18.1%), frequent respiratory infections (16.1%) but also breathlessness/tightness and chest pain (14.8%). The results of the pulmonary function tests in the examined group, however, were in normal limits but statistically significantly (p<0.001) lower in comparison with the control group.

Conclusions

Exposure to PM2.5 of non-smokers may increase the prevalence of respiratory tract symptoms/diseases.

P13 - Allergenicity Of Airborne Pollen In Metro Manila, Philippines

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Keywords: Pollen Allergen, ELISA, Sensitization, Specific IgE, Cross-Reactivity

Background

Allergic diseases such as allergic rhinitis, asthma, and urticaria caused by pollinosis are a growing health problem especially in urban cities and developing countries. There is limited knowledge on the sensitization profile of Filipinos against a panel of pollen allergens. This study aims to determine and compare
the SPT, total IgE and pollen specific-IgE (sIgE) profiles of allergic subjects as well as identify the cross-reactivity between different pollen allergens.

**Materials and methods**

Pollen from fifteen selected plant sources which were representative of >1% of the total airborne pollen in Metro Manila was collected and extracted for use in sensitization tests. Volunteers were interviewed for their clinical history before conducting SPT and blood sampling. The blood samples collected from each test subject were assessed using Enzyme-Linked Immunosorbent Assay (ELISA).

**Results**

The best panel of pollen allergens for the skin prick test was Mangifera indica (40%), Acacia auriculiformis (17%), Mimosa spp. (17%) Amaranthus spinosus (13%), Lantana camara (12%), Pilea microphylla (10%) and Dichanthium aristatum (9%). Sensitizations to pollen increased up to the young adult stage (19-35 yrs old) and then declined in elderly stage (56 yrs old and above). Allergic subjects were likely to have rhinitis (61%) than asthma (43%) and dermatitis (37%). Pollen sIgE levels were low, and three of the pollen did not show any reactivity (i.e., P. microphylla, L. camara, and Dendrocnide meyeniana). However, the highest sIgE reactivity was obtained from M. indica (40%). There was a high correlation between SPT and clinical history while low correlation was obtained between SPT and sIgE (p=0.013, level 0.05). Both SPT and sIgE-positive allergic subjects were 40% and 18% monosensitized, and; 60% and 29% polysensitized, respectively. This polysensitization was also evident when pollen allergens show cross-reactivity in the inhibition assays. High inhibitions of allergen extracts were obtained against P. microphylla (100%), Terminalia catappa, Eucalyptus tereticornis, L. camara, D. meyeniana and Senna siamea (81-88%).

**Conclusions**

Allergic rhinitis and its co-morbidity, asthma, was the most common among allergic subjects. Skin prick test and clinical history are useful in detecting sensitization to pollen while specific-IgE should be used for validation of allergens. High percentage inhibition among the species indicated numerous cross-reactive proteins or similar epitope binding sites.
O01 - Exposure To Indoor Endocrine Disrupting Chemicals And Childhood Asthma And Obesity

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Keywords: Endocrine Disruptors, Asthma, Obesity, Children

Background

Children are daily exposed to several environmental air contaminants, some of which may act as endocrine disrupting chemicals (EDC). Despite their widespread occurrence indoors, the understanding of the extent of the exposure as well as the health effects is still limited. Therefore, we aimed to assess the association between exposure to EDC and asthma and obesity in school aged children.
Materials and methods

Data on 815 participants (49.2% girls, aged 7-12 years) from 20 primary schools were analysed. Current symptoms were assessed through questionnaire and asthma defined based on lung function assessed by spirometry and airway reversibility. Body mass index (BMI) z-scores were calculated according to CDC growth charts. Measurements of indoor air quality were taken in 71 classrooms for one week to assess the concentrations of 13 volatile organic compounds and 2 aldehydes that have been identified as EDC by The Endocrine Disruption Exchange. Principal component analysis (PCA1, PCA2) was used to assess the effect of coexposures. Associations were estimated by regression coefficients and 95% confidence interval (95% CI), using linear and logistic regression models.

Results

Higher levels of ethylbenzene and 4-chloroethylene were found in classrooms with a higher number of asthmatic children (3.7 vs 2.9 µg/m3, p=0.024) and overweight (0.5 vs 0.4 µg/m3, p=0.020), respectively. Children exposed to higher levels of benzene had higher odds of having at least a 12% and over 200mL increase in FEV1 after bronchodilation (OR=1.67, 95% CI 1.02, 2.66). Levels of cyclohexanone and styrene were associated with increased child BMI (β=0.02, 95% CI 0.005, 0.04 and β=0.06, 95% CI 2.16E-5, 0.12, respectively). Additionally, ethylbenzene, o-xylene and hexane were significantly associated to nasal obstruction (OR=1.03, 95% CI 1.00, 1.08; OR=1.03, 95% CI 1.00, 1.07; and OR=1.58, 95% CI 1.57, 1.59, respectively), PCA1 and PCA2 to dry throat (OR=1.26, 95% CI 1.09, 1.47; and OR=0.86, 95% CI 0.74, 0.99) and PCA2 with eye irritation (OR=3.08, 95% CI 1.07, 8.82), although the concentrations of VOC were relatively low.

Conclusions

Our findings provide further support to the role of EDC on asthma and obesity development. Moreover, we have shown that even low levels exposure may increase asthma and obesity risk as well as asthma like symptoms, sore throat and nasal obstruction. Taken together these results highlight the need to tackle endocrine-disrupting compounds as indoor contaminants/pollutants impacting on children’s health.
O02 - Epithelial Permeability To The Olive Pollen Allergen Ole E 1 Strongly Depends On Bronchial Epithelium State And House Dust Mite Protease Activity

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Keywords: Epithelium, Permeability, Olive-Pollen, Proteases, Differentiation

Background

Recent studies have suggested that, in addition to disrupt tight junctions, allergens with proteolytic activity such as those from house dust mite (HDM) can contribute to allergic sensitization by altering epithelial barrier permeability via oxidative stress. The aim of this work was to analyse the effect of the co-exposure of the HDM protease Der p 1 on the epithelial permeability to Ole e 1, the main allergen of olive pollen, during the in vitro differentiation of human bronchial epithelial cells.

Materials and methods

Human Calu-3 cell line cultured at air-liquid interface co-exposed with Der p 1 after 2 and 7 days of differentiation was used as epithelial model. Epithelial permeability to Ole e 1 allergen was assessed by trans-epithelial electrical resistance measurements, western blot, fluorescence permeability studies and immunelabelling of tight junctional protein ZO-1.

Results

Ole e 1-permeability was mainly observed at day 2 when epithelial barrier was not completely formed. Permeability was significantly increased with the co-exposure to Der p 1 protease. In contrast, minimal permeability to olive allergen was found on a completely differentiated barrier at day 7, independently on the presence of the protease.

Conclusions

Our results demonstrate that the epithelial permeability to Ole e 1 is strongly determined by both, the proteolytic action of Der p 1, and the differentiation state of the bronchial epithelium.
O03 - Pantoea Agglomerans Induces Epithelial-Mesenchymal Transition In Human Lung Epithelial Cells And Mice Lungs

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Keywords: Pantoea Agglomerans, Hypersensitivity Pneumonitis, Epithelial-Mesenchymal Transition, Lung Fibrosis

Background

Gram-negative bacteria Pantoea agglomerans is widely distributed in nature. It predominates in inhalable dust from grain, herbs and flax, and was identified as the most important cause of hypersensitivity pneumonitis (HP) in eastern Poland. HP is as a pathology in which a loss of lung function occurs due to fibrotic reaction in a highly inflammatory conditions as a result of repeated injuries of epithelium lining airways caused by the recurrent exposure to organic dust. Despite the fact that so many information about HP etiology and mechanisms of its development was gathered, many aspects, especially on the cellular level, are still unknown. This could be the reason for the lack of effective therapy. These studies focused on the interactions between P. agglomerans and alveolar epithelial cells as well as lung tissue with particular emphasis on the epithelial-mesenchymal transition (EMT).

Materials and methods

The studies were conducted on human normal lung epithelial cell line NL20 and on mice strain C57BL/6J. NL20 cells and mice underwent chronic exposure to saline extract of P. agglomerans cells (SE-PA). Morphological changes were evaluated under light microscopy, while expression of genes involved in EMT was evaluated by RealTime PCR.

Results

During incubation with SE-PA epithelial cells underwent a conversion and assume a fibroblast phenotype. Furthermore, SE-PA treated cells revealed decrease of epithelial cells markers (CDH1, CLDN1, JUP) and increase of mesenchymal cells markers (FN1, VIM, CDH2). Lungs collected from mice inhaled for 14 days to SE-PA revealed significant centrolobular and interstitial inflammation with marked infiltration of lymphocytes. Intensified inflammatory process accompanied by almost complete obstruction of lumen as well as
increased proliferation of fibrous connective tissue was noted in mice lungs after 28 days of SE-PA exposure. Histological changes correlated with epigenetic alterations including downregulation of epithelial markers (Cdhl1, Jup, Clcn1, Ocln) and upregulation of myofibroblasts markers (Vim, Fn1, Cdh2). Furthermore increase of expression of key factors leading to EMT was also noted (Tgfb1, Nfkb1).

**Conclusions**

Our results indicate, that SE-PA can induce EMT in human lung epithelial cells and mice lung tissue and the scale of changes is proportional to the time of treatment.

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**O04 - The Pollen-Sensitization-Pollinosis Relations In Japanese Cedar (Cryptomeria Japonica) In Jeju, Korea**

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**Keywords:** Pollen, Pollinosis, Sensitization, Japanese Cedar

**Background**

Japanese cedar trees (JC) are dominant tree species in Jeju, Korea. It is commonly hypothesized that exposure to allergens leads atopic sensitization, resulting allergies, rarely confirmed. We investigated the JC pollen counts-sensitization-pollinosis relations.

**Materials and methods**

In the two cities in the island (Jeju city and Seogwipo city), schoolchildren were invited to have skin tests and answer a questionnaire regarding pollinosis symptoms. The JC pollen counts were monitored in two regions.
**Results**

Among 1,225 schoolchildren (49.6% boys, median age 13 years), 566 (46.2%) were atopic. JC pollen season in Jeju was defined as extending from late January to mid-April. JC pollen season started earlier and lasted longer in Seogwipo city. The rate of sensitization to JC (17.6%) was in the third place following house dust mites, which is significantly different in the participants from two cities (23.8% vs. 10.4%, p < 0.001). A significant increment in the rate of sensitization to JC pollen with age was observed only in Seogwipo city. The prevalence of JC pollinosis was estimated to be 8.5%. The prevalence differed in those from two cities (5.3% vs. 11.3%, p < 0.001).

**Conclusions**

JC pollen is the major allergen for early spring pollinosis in Jeju, Korea. More prevalent in pollinosis is influenced with higher sensitization rates, related to longer pollen season. Climate difference during the flowering season may influence the pollen scattering in the atmosphere, resulting in the difference of sensitization in atopic individuals and, consequently, making JC pollinosis more prevalent.