R-tubes during spontaneous breathing for 5 minutes, which are processed to measure several inflammatory/fibrogenic markers.

**Results:** These molecules, including vascular endothelial growth factor (VEGF), hepatocyte growth factor (HGF), basic fibroblast growth factor (FGF), IL-1 receptor antagonist, IL-8 and epidermal growth factor (EGF) tended to be increased in asthmatic group. These markers were significantly increased in severity step 4 patients as compared to mild asthmatics. There was a significant correlation between the PM10 concentration 1 month before the sampling of EBC and EBC EGF concentration. NO2 concentration and several markers in EBC in patients with asthma correlated with each other. EBC pH showed a significant relationship with the distance from main traffic roads.

**Conclusions:** These results suggested that mass screening using simple methods such as EBC and appropriate biomarkers might facilitate the progress in the prophylaxis against hazardous health effects of DE exposures in subjects with high susceptibility to DEPs. This work was supported in part by a grant from Environmental Restoration and Conservation Agency of Japan.

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**The Relationship Between Maternal Atopy and Childhood Asthma**

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**Background:** The diagnostic difficulty of childhood asthma leads to widespread under-diagnosis, which negatively affects the quality of life of asthmatic children. The presence of atopy in children is often used as a clinical tool to assist in making the diagnosis. However, local studies have demonstrated that atopy occurs in fewer asthmatic children than previously thought. This brings into question the association between allergy and asthma. The purpose of this study was to determine if a family history of allergy is predictive of atopic asthma in children, by comparing allergy, history of asthma and allergic symptoms, in mothers of atopic versus non-atopic asthmatic children.

**Methods:** A random sample of children and their mothers attending the Children’s Chest and Allergy Clinic at Steve Biko Academic Hospital were enrolled. Skin-prick testing or radioallergosorbent test results, of the children were obtained from the child’s hospital records. Mothers completed a detailed questionnaire which included demographic details, a history of symptoms suggestive of ‘atopy’ and allergic diseases and a history of asthma. Skin prick testing was performed on the mothers.

**Results:** 100 children and their parents were enrolled. 64 mothers to atopic children were used as the study group and 36 mothers to non-atopic children were used as the control group. Of the 48 mothers with a positive skin prick test, 30 (64%) had atopic children (P = 0.836). Of the 16 mothers with asthma, 14 (88%) had atopic children (P = 0.045). Of the 70 mothers with a history of symptoms suggestive of an allergic disease, 45 (64%) had children with atopic asthma (P = 1.0). Of the 77 mothers who were considered to be allergic, 50 (65%) had children with atopic asthma (P = 0.806).

**Conclusions:** Both maternal skin prick positivity and a history of symptoms suggestive of allergic disease, are poor predictors of atopic asthma in children. This is true even in the mothers were considered to be allergic. However maternal asthma is a specific predictor of childhood atopic asthma with a good positive predictive and a high odds ratio. Further studies need to be conducted to compare the epidemiology of allergic asthma in different population groups.

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**Sensitization of Severe Allergic Asthma Patients**

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**Background:** The prevalence of asthma is high, the worldwide average being estimated at 10%, which makes it a public health problem. Many studies show a clear relationship between asthma and specific allergens. With sensitization to aeroallergens identified as a dominant risk factor for asthma.

**Objective:** The present study of asthma reports the allergic sensitization of patients with severe persistent asthma followed in the Division of Clinical Immunology and Allergy of University of São Paulo Medical School.

**Methods:** A total of 61 patients with severe persistent asthma defined according to the criteria of the Global Initiative for Asthma (GINA) were enrolled. Total IgE levels (IU/mL) were measured in serum and levels up to 120 IU/mL were considered within normal range. A battery of 7 aeroallergens (Dermatophagoides pteronyssinus, Blomia tropicalis, Aspergillus fumigatus, Penicillium nonatum, Lolium perenne, Felis domesticus, Canis familiaris, Blatella germanica and Periplaneta americana) was used in skin prick tests (SPTs), which were performed in each subject, on the volar side of the forearm. Histamine hydrochloride and normal saline solutions were used as positive and negative controls, respectively. The SPTs were read after 15 minutes and, a wheal at least 3 mm greater than the negative control was considered positive.

**Results:** The asthmatic patients had a mean age of 48 years and 75% were female. We found that mean total serum IgE levels were 518.4 IU/mL (between 17 and 4720 UI/mL). SPTs positivity was 91.8% for D pteronyssinus, 67.2% for Blomia tropicalis, 4.9% for P nonatum and A fumigatus, 6.5% L perene and Felis domesticus, 16.3% for Canis familiaris, 21.3% Blatella germanica, 13.1% for Periplaneta americana. Twelve patients were mono-sensitized and 23 patients were polysensitized to 3 or more allergens.

**Conclusions:** Most patients with severe allergic asthma were polysensitized, and dust mites, followed by cockroaches, were the main allergens.

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**Reference Values and Influencing Factors of Exhaled Nitric Oxide in Healthy Korean Adults**

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**Background:** Fractional exhaled nitric oxide (FeNO) is widely used as an inflammatory marker for asthma. However, reference values and influencing factors of FeNO using Niox Mino, which is the only device achieving US FDA approval, are not well described in healthy Asian adults. This study aimed to suggest the reference values and influencing factors of FeNO in healthy Korean adults.

**Methods:** Subjects who were over 19 years old and did not have any history of rhinitis, asthma or recent respiratory symptoms were enrolled. FeNO levels were measured using Niox Mino. Age, gender, body mass index (BMI), smoking status and lung function were also measured to analyze factors associated with FeNO levels.
Results: The mean value of FeNO was 16.14 ± 10.04 ppb. The reference value of FeNO, which was defined as the value of 95% in distribution curve, was same or less than 34 ppb. In a univariate analysis, FeNO levels were not associated with age, BMI and smoking history. However, atopy status (18.2 ± 11.8 for atopy and 15.1 ± 8.5 for nonatopy groups, P = 0.008) and gender (17.8 ± 10.2 for male and 14.8 ± 9.8 for female groups, P < 0.001) were positively associated with FeNO levels. In stratified analysis, the significance of both variables remained unchanged (P < 0.001).

Conclusions: Our data suggested that the reference value of FeNO in healthy Korean adults seemed to be same or less than 34 ppb. Reference values of FeNO in Korean adults are influenced by gender and atopy status. This study was supported by a grant of Korea HealthCare technology R&D project, Ministry of Health and Welfare, Republic of Korea (A092076).

295 Association of Feno with IgE Levels in Patients with Allergic Asthma
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Background: Asthma is a chronic multifactorial disease characterized by inflammation with multiple triggers. Inflammation of the airways is the main pathologic pathway in asthma, and not only determines the diagnosis and severity of symptoms, but is also useful to establish treatment and predict potential complications. By measuring FeNO levels, an indirect level of pulmonary inflammation can be obtained since it is produced by alveolar macrophages in response to cytokines. One of the main known causes of this inflammatory response is an allergic reaction. This allergic reaction sets off a cascade of biochemical events that leads to the expression of inflammatory mediators, preformed or de novo, and IgE being the principal of such mediators. The objective was to evaluate the relationship between levels of FeNO and IgE to inflammation and allergy severity.

Methods: 50 patients (72% female and 28% male) aged 12 to 50 years old, diagnosed with asthma were taken from the Allergy and Immunology department. A complete medical history was performed, and the diagnosis was confirmed through a clinical history and spirometric criteria, according to GINA 2010. All medications that could alter the inflammatory process were taken away for 15 days. Lastly, total serum IgE levels were measured with electrochemiluminescence technique and the FeNO with standard procedures. The data was further analyzed using a Pearson’s correlation test.

Results: 21% of the participants showed normal IgE values (<100 UI/mL) and 33% of the participants had normal FeNO measurements (<20 ppm). A 0.29 coefficient was measured using a Pearson’s correlation test, which suggests a low positive correlation between the 2 observed variables.

Conclusions: The results showed a low correlation between the IgE and FeNO levels. This result does not allow for a correlation between both parameters; which leads to a conclusion that high levels of IgE from an allergic reaction is not necessarily going to lead to a high FeNO, thus a pulmonary inflammation. Additionally, it emphasizes the importance of the allergists and pneumonologists to work together when treating an asthma patient, given the multidisciplinary nature of this pathology.

297 Relationship Between Exhaled Nitric Oxide and Levels of Asthma Control in Asthma Patients Treated with Inhaled Corticosteroid
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Background: While asthma control is defined as the extent to which the various manifestations of asthma are reduced by treatment, current guidelines of asthma recommend assessment of asthma control without consideration of airway inflammation. Our aim was to investigate the relationships between fractional exhaled nitric oxide (FeNO), a reliable marker of airway inflammation, and levels of asthma controls in patients treated with inhaled corticosteroid (ICS).

Methods: We enrolled 71 adult patients with asthma, who had been treated with ICS more than 4 months. Asthma control was assessed by the physician based on the Global Initiative for Asthma guidelines, and by the patients and by using Asthma Control Test (ACT). Statistical analyses were performed to analyze the relationships between FeNO and measures of asthma control and clinical indices for asthma manifestations.

Results: There was no significant difference in FeNO levels between 3 groups according to levels of asthma control (controlled, partly controlled and uncontrolled) determined by the physician (P = 0.81) and by the patients (P = 0.81). In addition, FeNO values were not correlated with the ACT scores (r = 0.031, P = 0.807), while FeNO showed peripheral blood eosinophil counts (P < 0.001).

Conclusions: These findings demonstrated that FeNO levels are not related with the measures of asthma control in patients treated with ICS. Information of airway inflammation from FeNO concentrations seems to be discrepant from levels of asthma control.

298 Relationship between Aeroallergen Sensitization and Asthma Severity in Mexican Children
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Background: Asthma is the most common chronic disease in children. The aim of this study was to assess the association between asthma severity and skin test reactivity to common inhalant allergens.