Udruženje
za preventivnu pedijatriju Srbije

KNJIGA APSTRAKATA

X NACIONALNI KONGRES UDRUŽENJA ZA PREVENTIVNU PEDIJATRIJU SRBIJE

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deseti nacionalni kongres Udruženja za preventivnu pedijatriju Srbije (UPPS) sa međunarodnim učešćem

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DACTYLIS GLOMERATA GRASS POLLEN FROM URBAN AREA RELEASES MORE SUB-POLLEN PARTICLES AND HAS STRONGER IGE RESPONSE IN ALLERGIC INDIVIDUALS THAN RURAL COUNTERPART

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Background and Aim: Epidemiological studies pointed at the connection between pollution (e.g., traffic emissions) and an increased percentage of people suffering from respiratory allergies, including the pediatric population. Field studies provided the most relevant assessment of the effects of the intensity and variety of urban and industrial contamination on the structure and allergenic potency of pollen allergens. Therefore, the aim of the present work was to compare allergenic profiles of *Dactylis glomerata* pollen (DGP) collected in the specific urban and rural areas (Kruševac and suburbs), to assess pollen structures and immunoglobulin E (IgE) reactivity to pollen of school children population allergic to grass pollens.
Material and Methods: Visible microscopy revealed pollen structure and ability to release sub-pollen particles (SPP). Electrophoresis of DGP enabled relative allergen abundancy comparison, including enzyme linked immunoassay (ELISA) with the sera of high school children allergic to grass pollen (collected at Torlak Institute, Belgrade). Heavy and transition metals were determined by inductively coupled plasma optical emission spectroscopy (ICP-OES), while polyaromatic hydrocarbons were determined by gas chromatography coupled to mass spectrometry.
Results: Pollen from urban area showed increased content of total phenolics and SPP release, significantly higher arsenic (12 times), cadmium (6 times) and chrome contents. PAH analyses did not reveal the presence of specific traffic pollution markers, such as benzo (ghi) perylene, benzo [a] pyrene, or higher molecular weight PAHs. The differentiating factors observed in urban DGP were acenaphthylene and anthracene, which are commonly formed during oil combustion. IgE binding was increased significantly in 5 out of 10 children allergic to grass pollen when comparing urban versus rural GDP protein extracts, respectively.
Conclusion: The effects of environmental pollution on the allergenicity of pollen are complex. One aspect is the increased release SPP, which increases the likelihood of contact with sensitive individuals, along with the adjuvant effects of toxic chemicals. The other is conformational and covalent changes in the structure of DGP allergens that expose further allergenic epitopes, with the possibility of oxidative protein modifications caused by increased content of toxic metals.

Key Words: grass pollen allergy, IgE reactivity, school children, pollution, Dactylis glomerata

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