

# Profiles of sensitization to birch pollen allergens in central-Russia children with hay fever

**Relevance.** The pathogenetic treatment of hay fever is allergen specific immunotherapy (ASIT). Its effectiveness depends on the right determined causal allergen and the correctly matched drug, but the extract for ASIT includes a large number of proteins with different allergenic properties.

**Objective:** to appreciate the profile of birch pollen's allergic components sensitization in children with hay fever before the ASIT inception.

**Patients and methods.** The concentration of sIgE antibodies to the extract of birch pollen allergens, as well as to allergic components (to the main allergen Bet v1, profilin Bet v2, polycalcine Bet v4, isoflavone reductase Bet v6; ImmunoCAP250, Phadia AB) was determined in 135 children (4 - 16 years) diagnosed with hay fever caused by birch pollen.

**Results.** All patients had high levels of IgE to the whole pollen allergen extracts and 9 variants of antibody response to allergic components: monosensitization to Bet v1 - in 68.15% of the children; cosensitization to isoflavone reductase (Bet v1 +, v2-, v4-, v6 +) - in 13.33%, to profilin (Bet v1 +, v2 +, v4-, v6) - in 7.4%. Profile of Bet v1 +, v2 +, v4-, v6 + was in 4.44% of patients. Other types of sensitization to pollen of birch trees were extremely rare: in 2.22% - to Bet v1 +, v2-, v4 +, v6-; in 0.74% - to Bet v1 +, v2 +, v4 +, v6-, or Bet v1 +, v2-, v4 +, v6 +, or Bet v1 +, v2 +, v4 +, v6 +. Thus, along with Bet v1 to sIgE in 29.63% of cases there were antibodies to one, two or three minor allergens (22.96; 5.93 and 0.74%, respectively). There was no single case of a positive response to minor allergens in the absence of a reaction to Bet v 1. In 2.22% of the children there were no antibodies to studied allergic components.

**Conclusion.** More than 30% of patients with hay fever caused by birch pollen have sensitization to minor pollen allergens: the prevalence of different profiles is ranging from 0.74 to 68%, and their presence requires a differentiated approach to the prescription of ASIT.

## Conflict of interest

The study was performed under the agreement number 14.607.21.0017 with the Ministry of Education and Science (RFMEFI60714X0017).