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Association between the Polymorphisms of IL-4 Gene Promoter (-590C>T), IL-13 Coding Region (R130Q) and IL-16 Gene Promoter (-295T>C) and Allergic Asthma

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### Abstract:

Allergic asthma is a multifactorial disease, influenced by genetic and environmental factors. Recent family-based studies have revealed evidence for linkage of human chromosomes 5q31-33, 12q15-24, 11q13 and 15q23.6 as regions likely to contain genes related to asthma. Among the candidate genes in these regions are the genes encoding for human interleukin-4, interleukin-13 and interleukin-16.

To evaluate this linkage, we examined an Iranian population of patients with asthma. A total of 30 patients with allergic asthma and 50 normal subjects were studied. Allergic asthma was confirmed using skin prick test and spirometry. DNA was extracted from blood cells and IL-4 (-590C>T), IL-13 (R130Q) and IL-16 (-295T>C) polymorphisms were determined by PCR-RFLP method.

Out of 30 patients with allergic asthma, the following genotypes for IL-4, IL-13 and IL-16 cytokines were found: IL-4 genotypes consisted of 17 (56.7%) CC, 8 (26.7%) CT and 5 (16.7%) TT; IL-13 genotypes consisted of 11 (36.7%) GG, 13 (43.3%) GA and 6 (20%) AA; IL-16 genotypes consisted of 23 (76.7%) TT and 7 (23.3%) CT. No patient showed CC genotype for IL-16. A higher proportion of case subjects with the C allele for the IL-4, G allele for the IL-13 and T allele for the IL-16 polymorphisms was found compared with the T, A and C alleles, respectively.

These results suggest an influence of genetic variability at the promoter of IL-4 gene (-590C>T) and a coding region of IL-13 gene (R130Q) on the occurrence of allergic asthma and no relationship between IL-16 promoter polymorphism (-295T>C) and this disease.

### Keywords:

[Allergic asthma](#) , [Interleukin-4](#) , [Interleukin-13](#) , [Interleukin-16](#)

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