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**Title**

**Comparison of the frequency of R381Q functional variant of  
IL-23 receptor gene, in asthmatic patients and control group.**

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## **Abstract**

### **Background:**

The interleukin-23 (IL-23) / T helper(Th)17 cell axis plays a key role in the development of inflammatory diseases such as asthma. The IL-23 receptor (IL-23R), expressed on activated T cells particularly on Th17 subtype, is involved in the expansion and maintenance of Th17 cells. It has been reported that a functional single-nucleotide polymorphism (SNP) (Arg381Gln;R381Q; rs11209026; 1142 G wild type→A reduced function) in the IL-23R gene decreases IL-23-dependent IL-17 production. R381Q in the IL-23R chain influence IL-23 receptor signaling and consequently Th17 response. The purpose of the present study was to investigate the association between a functional SNP, IL-23R R381Q, and asthma.

### **Methods:**

This study was performed on 209 patients and 200 normal controls. PCR-RFLP applied to determine R381Q variant of IL-23R in all subjects. PCR products were chosen at random for reverse sequencing.

### **Findings:**

Our results indicated that the genotype and allele frequencies of the IL-23R R381Q polymorphism is significantly different between asthmatic patients and control subjects in Isfahan population (P value= 0.001; odd ratio= 0.266; CI= 95%).

### **Conclusion:**

The present study suggested that R381Q polymorphism in IL-23 receptor may be a protective allele for asthma.

### **Key words:**

Asthma, Th17, polymorphism, single nucleotide polymorphism, IL-23R R381Q, rs11209026, Arg381Gln

**List of Article:**

**Association between Interleukin-23 Receptor R381Q Gene Variant  
and Asthma.**

## **ABBREVIATIONS:**

Arg: Arginine

AHR: Aryl Hydrocarbon Receptor

AHR: airway hyperreactivity

COPD: Chronic Obstructive Pulmonary Disease

CSF: Colony Stimulatory Factors

CXCL-1: Chemokine (C-X-C motif) Ligand -1

CXCL-8: Chemokine (C-X-C motif) Ligand -8

DCs: Dendritic Cells

EDTA: Ethylene Diamine Tetraacetic Acid

ELISA: Enzyme- Linked Immunoassay

Gln: Glutamine

GWAS : Genome-Wide Association Studies

Ig E: Immunoglobulin E

IL-4: Interlukin-4

IL-5: Interlukin-5

IL-9: Interlukin-9

IL-13: Interlukin-13

IL-17 A: Interlukin-17 A

IL-23: Interlukin-23

IL-25: Interlukin-25

IL-33: Interlukin-33

IL-23 R: Interlukin-23 Receptor

LTC4: leukotriene C4

MCs : Mast cells

MHC : Major Histocompatibility Complex

NK Cell: Natural killer Cell

NK T Cell: Natural killer T Cell

PGD2: prostaglandin D2

Th 1: T helper 1

Th 2: T helper 2

Th17: T helper 17

PCR: Polymerase Chain Reaction

RFLP: Restriction Fragment Length Polymorphism

RSV: Respiratory Syncytial Virus

SNP: Single-Nucleotide Polymorphism

TGF- $\beta$  : transforming growth factor  $\beta$

TSLP: thymic stromal lymphopoietin

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