

## The association of single nucleotide polymorphism of *interleukin-21* gene and serum *interleukin-21* levels with systemic lupus erythematosus

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**Background:** Systemic lupus erythematosus (SLE) is a common autoimmune disorder which commonly results from the combined effects of a large number of genes. Variations in the DNA sequence in the *Interleukin-21 (IL-21)* gene may lead to altered *IL-21* production and/or activity which can affect an individual's susceptibility to SLE. *IL-21* is a novel class I cytokine produced by activated CD4+ T cells, natural killer T cells and T helper ( ) cells. There is increasing evidence that *IL-21* contributes to the pathogenesis of SLE due to its biological activity.

**Aim:** To investigate the association between single nucleotide polymorphism (SNP) of *IL-21 rs2221903* gene and serum *IL-21* levels with SLE and to detect the possible association between *IL-21* serum levels and the pathogenesis of the disease.

**Methods:** This study was conducted on 30 SLE patients and 20 age and sex matched healthy controls. Serum *IL-21* levels were measured using enzyme-linked immunosorbent assay (ELISA) technique and SNP of *IL-21 rs2221903* gene was detected by genotyping assay, using real-time polymerase chain reaction (RT-PCR).

**Results:** Serum *IL-21* levels were significantly higher in patients compared with controls ( $p < 0.001$ ). Patients with high activity index of SLE had significantly higher levels of serum *IL-21* ( $p$  value  $< 0.001$ ). A statistically significant association was found between the T allele of SNP *rs2221903* and SLE, whereas; no association between SNP of *IL-21 rs2221903* genotypes and SLE or serum *IL-21* levels could be detected.

**Conclusion:** *IL-21* plays an important role in the immune-pathogenesis of SLE and could be used as a possible target for novel immunotherapy. The T allele of SNP *rs2221903* suggests that the *IL-21* gene may contain T/T11 1 Tt{ }0.5 (g{ }4 (i)-6 (o))8 (g)8(s)-8 0 -1.0

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