

## TLR4 gene polymorphism and inflammatory response in chronic periodontitis - Alina Smalinskiene - Lithuanian University of Health Sciences, Lithuania

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**STATEMENT OF THE PROBLEM:** periodontal disease is one of the most common chronic diseases in humans and is induced by microbial pathogens that reside in the oral cavity. The Toll-like receptor (TLR) family of innate immune recognition receptors plays a fundamental role in the induction of innate immunity, inflammation, cell survival, and proliferation. The presence of TLR4 has been shown to be essential for the progression of inflammation and related to the bone metabolism in periodontitis *Pelargonium sidoides* DC. root extract (PSRE) demonstrated possibility to exert stimulatory effects on the innate immune system. Purpose of this study: determine the prevalence of polymorphism of TLR4 rs1927911 gene in patients with periodontitis in association with clinical signs of periodontitis and assess the protective effect of *Pelargonium sidoides* DC root extract (PSRE). Methods: data from 40 patients with periodontitis, treated with PSRE and 20 subjects of the control group were studied. DNA extraction from patients' peripheral blood leukocytes using commercial DNA extraction kits was performed. Genotyping using a real-time polymerase chain reaction method was done. Statistical data analysis using IBM SPSS Statistics program was done. Results: the frequency of TLR4 rs1927911 (C/T) genotypes and alleles in patients with periodontitis and control group subjects was evaluated. Patients with periodontitis: 9.1% have TT, 39.4% - TC, 51.5% - CC genotype and 28.8% have T allele and 71.2% C allele; respectively in control group: 6.3%, 36.5%, 57.1%, 24.6% and 75.4%. No statistically significant differences, of all the studied genotype and allele frequencies, between periodontitis and control group were found. The impact of polymorphism of the TLR4 rs1927911 gene, correlation between polymorphism and susceptibility to periodontitis were evaluated and no statistically significant differences were found.

**Conclusions:** There was no statistically significant difference between TLR4, genotypic and allelic frequencies in patients with periodontitis and those in the control group. Continuing of TLR4 gene polymorphism studies by increasing the number of patients with periodontitis would be advisable. It could reveal the significance of genetic and environmental factors for the onset of the disease more. Polymorphisms of TLR 4 gene could be used as molecular markers for the prediction of the disease.

The conventional strategy for managing periodontitis essentially centered around evacuating pathogenic microscopic organisms, which brought about microbes obstruction and malady repeat. Plus, the host provocative reaction assumes a basic job in the obliteration of periodontal tissue. In the ongoing decades, the improvement of sequencing innovation empowered us to talk about whether the varieties of host's insusceptible related Deoxyribose Nucleic Acid atoms influenced the event and advancement of ailments. In this way, there is an incredible essentialness to talk about the quality variations of resistant related atoms for the anticipation and treatment of

periodontitis. Luigi[5] clarified hereditary variations may work in the event and advancement of AP through specifically taking part in the dysbiotic procedure. Hajishengallis and Sahingur[6] announced a polymorphic site in the TLR9 quality advertisement area differentially communicated and TLR9 quality and protein articulation expanded in CP. Cost like receptor 4 (TLR4) was an example acknowledgment receptor, which had a significant impact in intrinsic insusceptibility by acknowledging lipid-based structures of microbes and intervening intracellular signaling.[7,8] Furthermore, Many investigations announced the relationship between TLR4 polymorphism and periodontitis vulnerability, and they mostly centered around TLR4-299A>G or TLR4-399C>T of Caucasian yet led various ends. Along these lines, this meta-investigation and subgroup examinations were completed to additionally light up the connection between TLR4 polymorphism and periodontitis powerlessness dependent on the as of now accessible examinations.

### MATERIALS AND METHODS

All recovered written works fit the accompanying rules ought to be incorporated: the investigation tried TLR4 polymorphism and periodontitis helplessness, members in contemplates must be expressly determined to have CP or AP, the quantities of each genotype were accessible both on the off chance that and control gatherings. The investigation met the accompanying rules ought to be rejected: the audit or meta-examination about this topic, the article not depicted in Chinese or English, no control subjects or without solid benchmark group, members who were pregnant or lactating, freak type not identified.

The creators determined the chances proportions (ORs) and relating 95% certainty stretch (CI) to evaluate the relationship between TLR4 polymorphism and periodontitis in 5 hereditary models: allele examination (1 versus 2), homozygote correlation (11 versus 22), heterozygote examination (12 versus 11), predominant model (22+12 versus 11), passive model (11+12 versus 22). Heterogeneity was tried utilizing I2 measurements. Estimations of P50% showed evident heterogeneity and the arbitrary impacts model was considered to utilize; something else, utilize the fixed impacts model.

**Results.**[12] Publication inclination was recognized with channel plot in visual and with quantitative technique for Begg and Egger direct regression.[13,14] All information investigations were led by STATA programming, variant 12.0. Utilizing 2-sided P-quality and PG (rs7873784) polymorphism and CP about C and G allele and its recessive model was also significant in Asian, which indicated that the Asian people suffered from CP may due to TLR4C>G (rs7873784) and it possibly passed on to offsprings in the form of recessiveness.

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